

ORAL ARGUMENT NOT YET SCHEDULED

Case No. 16-1105

(consolidated with Nos. 16-1113, 16-1125, 16-1126, 16-1131, 16-1137, 16-1138, 16-1146)

IN THE UNITED STATES COURT OF APPEALS
FOR THE DISTRICT OF COLUMBIA CIRCUIT

NORTH AMERICA'S BUILDING TRADES UNIONS, ET AL.,
Petitioners,

v.

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION, ET AL.,
Respondents.

On Petitions for Review of a Final Rule of the Occupational Safety & Health Administration,
U.S. Department of Labor

**FINAL BRIEF IN INTERVENTION OF PETITIONERS-INTERVENORS NORTH AMERICA'S
BUILDING TRADES UNIONS, AMERICAN FEDERATION OF LABOR AND CONGRESS OF
INDUSTRIAL ORGANIZATIONS, UNITED STEEL, PAPER AND FORESTRY, RUBBER,
MANUFACTURING, ENERGY, ALLIED-INDUSTRIAL AND SERVICE WORKERS
INTERNATIONAL UNION, AFL-CIO/CLC, AND INTERNATIONAL UNION, UNITED
AUTOMOBILE, AEROSPACE, AND AGRICULTURAL IMPLEMENT WORKERS OF AMERICA**

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**CERTIFICATE AS TO PARTIES,
RULINGS AND RELATED CASES**

A. Parties and Amici

Petitioners in the cases brought by the Union Petitioners are North America's Building Trades Unions (No. 16-1105); American Federation of Labor and Congress of Industrial Organizations (No. 16-1113); United Steel, Paper and Forestry, Rubber, Manufacturing, Allied-Industrial and Service Workers International Union, AFL-CIO-CLC (No. 16-1113); and International Union, United Automobile, Aerospace, and Agricultural Implement Workers of America (No. 16-1113).

Petitioners in the consolidated cases brought by industry groups are Associated Masonry Contractors of Texas DBA Texas Masonry Council (No. 16-1125); Associated Subcontractors Association of Texas, Inc. (No. 16-1125); Distribution Contractors Association (No. 16-1125); Louisiana Associated General Contractors, Inc. (No. 16-1125); Mechanical Contractors Association of Texas, Inc. (No. 16-1125); Mississippi Road Builders Association (No. 16-1125); Pelican Chapter, Associated Builders and Contractors, Inc. (No. 16-1125); Texas Association of Builders (No. 16-1125); American Foundry Society Texas Region 3/Texas Chapter of the American Foundry Society (No. 16-1126); Texas Association of Business (No. 16-1126); Georgia Construction Aggregate Association (No. 16-1131); National Stone, Sand and Gravel Association (No. 16-

1131); American Foundry Society (No. 16-1137); National Association of Manufacturers (No. 16-1137); American Road and Transportation Builders Association (No. 16-1138); American Society of Concrete Contractors (No. 16-1138); American Subcontractors Association (No. 16-1138); Associated Builders and Contractors (No. 16-1138); Associated General Contractors (No. 16-1138); Association of the Wall and Ceiling Industry (No. 16-1138); Building Stone Institute (No. 16-1138); Concrete Sawing & Drilling Association (No. 16-1138); Construction & Demolition Recycling Association (No. 16-1138); Interlocking Concrete Pavement Institute (No. 16-1138); International Council of Employers of Bricklayers and Allied Craftworkers (No. 16-1138); Leading Builders of America (No. 16-1138); Marble Institute of America (No. 16-1138); Mason Contractors Association of America (No. 16-1138); Mechanical Contractors Association of America (No. 16-1138); National Association of Home Builders (No. 16-1138); National Demolition Association (No. 16-1138); National Electrical Contractors Association (No. 16-1138); National Utility Contractors Association (No. 16-1138); Natural Stone Council (No. 16-1138); Association of Union Constructors (No. 16-1138); Tile Roofing Institute (No. 16-1138); and Brick Industry Association (No. 16-1146).

Respondents are the Occupational Safety & Health Administration (16-1105, -1113, -1125, -1126, -1131, -1137, -1138, -1146); the United States Department of

Labor (16-1105, -1113, -1125, -1126, -1137, -1138); and Thomas E. Perez, Secretary, United States Department of Labor (16-1125, -1126 -1131, -1137, -1138-1146).

Many of the Petitioners also are Intervenors in the other consolidated cases. The parties that have not filed petitions for review but are participating solely as Intervenors in support of industry Petitioners are Portland Cement Association; National Concrete Masonry Association; Chamber of Commerce of the United States of America; State Chamber of Oklahoma; and Greater North Dakota Chamber of Commerce (Nos. 16-1105 and 16-1146).

The American Thoracic Society and American College of Occupational and Environmental Medicine have been granted leave to participate as *amici curiae* in support of Respondents.

B. Rulings Under Review

The ruling under review is the final rule entitled “Occupational Exposure to Respirable Crystalline Silica” issued by the U.S. Department of Labor’s Occupational Safety and Health Administration on March 25, 2016, 81 Fed. Reg. 16286, codified at 29 C.F.R. §§ 1910.1053 and 1926.1153 and reproduced at JA JA578-590, 592-606.

C. Related Cases

The cases on review have not previously been before this Court or any other court. There are no related cases.

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*Authorities upon which we chiefly rely are marked with asterisks.

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647 F.2d 1189 (D.C. Cir. 1980) 3, 9, 19, 20, 27, 28, 30

STATUTES AND REGULATIONS

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GLOSSARY

AFL-CIO	American Federation of Labor and Congress of Industrial Organizations
AFS	American Foundry Society
AISI	American Iron & Steel Institute
BCTD	Building & Construction Trades Department
NIOSH	National Institute for Occupational Safety and Health
OSHA	Occupational Safety & Health Administration
PEL	permissible exposure limit
UAW	International Union, United Automobile, Aerospace & Agricultural Implement Workers of America
USW	United Steel, Paper and Forestry, Rubber, Manufacturing, Energy, Allied Industrial and Service Workers International Union

STATUTES AND REGULATIONS

Relevant statutes and regulations are reproduced in the addendum to the Joint Brief of Union Petitioners.

STATEMENT OF THE CASE

The Union Petitioners-Intervenors¹ respectfully submit this brief in response to the Joint Opening Brief of Industry Petitioners (“Ind. Br.”) and the Brief for Intervenors Chamber of Commerce of the United States of America, *et al.* (“Chamber Br.”) (collectively “industry”).

The Brief for Respondents (“OSHA Br.”) demonstrates that substantial evidence supports OSHA’s conclusion that occupational exposure to silica at the pre-existing permissible exposure limit (PEL) presents a significant risk to workers and that compliance with the silica standard (“the standard”)² at issue in these cases is both technologically and economically feasible. In this brief, the Union Petitioners-Intervenors highlight several fundamental errors in the industry contentions to the contrary.

¹ The Union Petitioner-Intervenors (“Unions”) are North America’s Building Trades Unions; the American Federation of Labor and Congress of Industrial Organizations; the United Steel, Paper and Forestry, Rubber, Manufacturing, Allied–Industrial and Service Workers International Union, AFL-CIO-CLC; and the International Union, United Automobile, Aerospace and Agriculture Implement Workers of America.

² As in their opening brief, the Union Petitioners-Intervenors will refer to the standards for general industry and maritime and for construction collectively as “the standard,” except where the context requires otherwise.

SUMMARY OF ARGUMENT

The Preamble to the standard and OSHA's Brief to this Court clearly explain that substantial evidence supports the agency's decision to reduce the limit for occupational exposures to silica to $50 \mu\text{g}/\text{m}^3$. Industry arguments that the silica standard is unnecessary to protect workers from adverse health effects are at odds with the overwhelming weight of scientific opinion presented to OSHA.

OSHA properly rejected industry's claim that workers no longer are at risk because the number of death certificates on which silicosis is listed as a cause of death has declined. Scientific experts explained that, for several reasons, death certificates do not support the conclusion industry attempts to derive from them. In addition, industry's argument ignores the fact that hospitalizations for silicosis have increased, not decreased. And industry's argument ignores deaths from other silica-related diseases such as lung cancer. OSHA thoroughly considered the merits of industry's argument about death certificates, carefully explained why it was flawed, and properly concluded that death certificate data was not an adequate basis for assessing the risk silica exposure poses to workers.

OSHA also properly rejected industry's argument that a population threshold for the adverse effects of silica exposure exists at $100 \mu\text{g}/\text{m}^3$ – the pre-existing silica exposure limit. The scientific community overwhelmingly rejects the idea that there is a threshold for silica's adverse effects at such a level. Again, OSHA's

assessment of the scientific evidence permissibly relies on a reputable body of scientific thought. OSHA carefully considered industry's arguments and explained in detail why it disagreed with them. OSHA's conclusion that silica exposure at $100 \mu\text{g}/\text{m}^3$ poses a significant risk of silicosis, lung cancer, other non-malignant respiratory diseases and renal disease is clearly supported by substantial evidence.

Industry's challenge to OSHA's finding that the standard is technologically feasible in the foundry and construction industries lacks merit. Industry focuses its challenge in both industries on exposure variability, arguing that in order to be certain that exposures will always be below the PEL, each employer must reduce exposures to mean levels substantially below the PEL. Industry's argument ignores this Court's well-established test for determining feasibility, articulated in *United Steelworkers of America v. Marshall*, 647 F.2d 1189, 1272 (D.C. Cir. 1980), and its progeny, under which an exposure limit is technologically feasible if an industry can meet it in most operations most of the time. Under that test, industry's argument that OSHA has provided no assurance that the new exposure limit can be met in *all* operations virtually *all* of the time would be beside the point even if industry's assertions regarding the difficulty of reducing exposure variability were well-founded, which in any event they are not.

Finally, the Industry Petitioners attempt to convert the fact that OSHA requires respirator use for certain tasks listed on Table 1 of the construction

standard into a concession by the agency that that standard is infeasible. Nothing could be further from the truth. Table 1 specifies control strategies for the most common silica-generating construction tasks and deems employers that implement those controls to be in compliance with the standard, without their having to comply with the PEL. The feasibility test on which the Industry Petitioners rely – whether it is feasible to meet the PEL without resort to respirators – simply is irrelevant to whether it is feasible to comply with Table 1, which is the compliance option OSHA reasonably concluded that most employers would opt to utilize.

I. OVERWHELMING SCIENTIFIC EVIDENCE SUPPORTS OSHA’S CONCLUSION THAT OCCUPATIONAL EXPOSURE TO SILICA AT THE PRE-EXISTING EXPOSURE LIMIT POSES A SIGNIFICANT RISK TO WORKERS

Industry challenges OSHA’s conclusion that respirable silica dust poses a significant risk to workers exposed at $100 \mu\text{g}/\text{m}^3$ on several grounds. OSHA has persuasively rebutted each of these claims. The Unions join in OSHA’s arguments (OSHA Br. 21-67) that substantial evidence clearly supports the agency’s conclusion that silica exposure at the pre-existing general industry PEL poses a significant risk of silicosis, lung cancer, other non-malignant respiratory diseases and renal disease. Below we highlight the flaws in industry’s critique of OSHA’s analysis of the health effects of silica exposure, and the broad support within the scientific community for OSHA’s analysis.

1. Intervenor Chamber of Commerce suggests that because the numbers of deaths from silicosis that are reported on death certificates have been declining, occupational disease from silica exposure should be viewed as a relic of the past and not properly a current regulatory concern. Chamber Br. 11-16. The rulemaking record makes clear that industry's reliance on death certificate data is fundamentally flawed.

In the first place, the data on which the Chamber bases its argument looks at deaths from silicosis across the entire population, even though most of the Americans included in the mortality statistics have not been exposed to respirable silica dust. The reported rates for silicosis mortality in the general population provide no information about the silicosis mortality rates among workers exposed to silica. For that reason alone, raw numbers of silicosis deaths reported on death certificates in the United States are of little value in determining occupational risks to exposed workers.

There are several additional reasons that reliance on death certificate data to measure the risk from exposure to silica is unwarranted. First, most medical providers who fill out death certificates have no familiarity with silicosis or other occupational diseases and fail to recognize these conditions when determining and reporting the cause of death. JA4216-4222. One study found that silicosis was listed on the death certificates of only 14% of individuals with confirmed

diagnoses of silicosis. JA4372. Thus, many more people are dying from silicosis than the statistics cited by the Chamber suggest.

Second, the decrease in deaths from silicosis parallels the decrease in the number of workers occupationally exposed to silica. As one expert observed:

[T]he number of workers in Michigan foundries peaked in 1973 and in 1991 the number of workers decreased by 75%. And lo and behold, if you look at the Michigan surveillance system and lag it by 23, 20 years, the number of cases we are seeing has decreased by 83% parallel to the decrease in workers at risk.

JA4375-76.

NIOSH agreed that reliance on silicosis mortality data from death certificates was a poor indicator of current risk to workers and “represent[s] a misuse of surveillance data.” JA4468. One peer reviewer commented that attributing declining mortality to reduced exposures, rather than to declining employment, was “spurious.” JA4266.

Third, the Chamber cites silicosis death certificate data only through 2014, *see* Chamber Br. 12-13 (citing data from a CDC website), and as OSHA notes in its brief, data for 2105 show an uptick in silicosis deaths. OSHA Br. 49 and n. 27 (citing Centers for Disease Control and Prevention WONDER database, available at <http://wonder.cdc.gov/mcd-icd10.html>). The 2015 data include 5 deaths from silicosis of workers age 44 or younger, whose only exposure to silica would have been after OSHA adopted the pre-existing PEL in 1971. *Id.*

Fourth, as OSHA has pointed out, the death certificate data cited by industry pertains only to *silicosis* deaths. It does not include deaths from lung cancer, non-malignant respiratory diseases or renal diseases caused by exposure to silica. 81 Fed. Reg. 16306/2, 16322/3-16330/2. (“Preamble”) (JA22, 38-46). Thus, this data does not reflect the majority of deaths from silica-related diseases. In this connection, mortality data submitted by the International Union of Bricklayers and Allied Craftsmen indicate that deaths from lung disease among its members, a group of workers regularly exposed to silica, are as prevalent now as they were 30 years ago. JA5280-86.

Fifth, even if death certificate data were a useful tool in evaluating the current risk to workers, OSHA would shirk its responsibilities under the OSH Act if it looked only at mortality data and ignored the morbidity risks to workers. OSHA is required to protect workers from all material impairment of health, not just death. 29 U.S.C. §655(b)(5); *see AFL-CIO v. OSHA*, 965 F.2d 962, 975 (11th Cir. 1992) (material impairment is not confined to permanent health effects). Testimony at the rulemaking hearing demonstrated that while fewer workers may be dying from silicosis, more are living with its debilitating effects. A 2003 study shows that the ratio of those living with silicosis to those dying of silicosis was almost 7 to 1; testimony at the rulemaking hearing noted that in recent years the ratio has increased to 15 to 1. JA4372. Furthermore, hospital discharge data

shows that the rate of hospitalizations for silicosis increased slightly between 1993 and 2011. JA5372. The data on silicosis morbidity refute industry's argument that silica-related diseases are no longer a significant worker health problem.

OSHA carefully considered all of this information in deciding that death certificate data reporting a declining number of deaths from silicosis was not an adequate basis for ignoring the overwhelming epidemiological evidence showing significant risks from silica exposure at $100 \mu\text{g}/\text{m}^3$. Preamble 16322/3-16330/2 (JA38-39). Both NIOSH and the external peer reviewers agreed with OSHA's interpretation of the data. OSHA's decision to not to base its risk assessment on the silicosis death certificate data clearly was reasonable.

2. Other than arguing that OSHA should have ignored the significant risks posed by silica exposure because of the decline in reported silicosis deaths among the population as a whole, industry's challenge to OSHA's finding that occupational exposure at existing exposure levels poses a significant risk to workers rests on the hypothesis that a threshold exists below which no workers will become ill from exposure to silica. Conveniently, industry pegs such a threshold at just above the pre-existing PELs of $100 \mu\text{g}/\text{m}^3$ (*see* Ind. Br. 25) and $250 \mu\text{g}/\text{m}^3$ (*see id.* at 37).

OSHA has explained in detail the flaws in industry's analysis of the scientific data showing risks from silica exposure at levels below $100 \mu\text{g}/\text{m}^3$, *see* OSHA Br. 34-42, but two key points are worth re-emphasizing.

First, OSHA conducted an independent, exhaustive evaluation of the scientific evidence showing that silica is a risk to exposed workers. The record includes hundreds of epidemiology studies linking silica exposure with silicosis, other respiratory diseases, and cancer. These studies show a causal link between silica and a variety of worker populations – in different industries, in different countries, with different job tasks, with different lifestyles and among workers of different ages. While OSHA recognized that there may be some misclassification of exposures in the epidemiology studies it relied upon, it also observed that “the silica literature is not unique in this sense,” and “mainstream scientific thought holds that valid conclusions regarding disease causality can still be drawn from such studies.” Preamble 16349/2 (JA59).

As this Court has previously recognized, even when there may be analytic flaws in individual studies, OSHA acts reasonably where, as here, it looks at a body of scientific literature on a substance's health effects and concludes that it “paints a striking portrait of serious danger to workers.” *Public Citizen Health Research Grp. v. Tyson*, 796 F.2d 1479, 1495 (D.C. Cir. 1986). OSHA was required to make its decisions about the health effects of silica on the basis of the

“best available evidence.” 29 U.S.C. § 655(b)(5). It “cannot let workers suffer while it awaits the Godot of scientific certainty.” *Steelworkers*, 647 F.2d at 1266. OSHA carefully considered industry’s argument that the agency should disregard the robust body of scientific evidence showing adverse health effects from silica exposure at levels below 100 $\mu\text{g}/\text{m}^3$ and thoroughly explained its reasons for rejecting industry’s interpretation of the scientific data. That is exactly what OSHA is required to do. The Court should defer to OSHA’s weighing of the scientific evidence.

Second, OSHA’s interpretation of the scientific data found overwhelming support within the scientific community. OSHA’s evaluation of the scientific evidence linking silica to debilitating disease mirrors similar evaluations by NIOSH, the National Toxicology Program and the International Agency for Research on Cancer. Preamble 16300/2 (JA16). OSHA’s proposal to reduce the silica PEL drew strong support from professional organizations, including the American Medical Association, JA2648, the American College of Occupational and Environmental Medicine, JA2489-2598, the American Thoracic Society, JA2629-2636, the Association of Occupational and Environmental Health Clinics, *id.*, the American Public Health Association, JA2648, the American Industrial Hygiene Association, JA2622-2628, the American Society of Safety Engineers, JA3837-3846, and virtually all of the occupational physicians who testified at the

rulemaking hearing, including Dr. Rosenman, JA4216-4223, Dr. Cone, JA2614, Dr. Welch, JA4546, Dr. Melius, JA4908, and Dr. Markowitz, JA4707.

Far from demonstrating that OSHA exhibited “confirmation bias,” as industry alleges, Ind. Br. 23, 29-30, such broad support for OSHA’s conclusions within the scientific community should increase the Court’s confidence that OSHA’s analysis is sound, because OSHA is permitted to rely on “a body of reputable scientific thought.” *Indus. Union Dep’t v. Am. Petroleum Inst.*, 448 U.S. 607, 656 (1980). *See also Am. Dental Ass’n v. Martin*, 984 F.2d 823 (7th Cir. 1993) (OSHA’s conclusions are reasonable when based on guidelines of the Centers for Disease Control); *Public Citizen v. Tyson*, 796 F.2d at 1487 (OSHA’s conclusions are reasonable when consistent with outside scientific opinion).

OSHA’s independent peer reviewers, five of whom were present at the public hearings for the testimony of many of industry’s expert witnesses, also rejected the idea that a no-effects threshold existed for silica exposure or, if it did, that the threshold level was as high as industry contended. JA4234-4276. Peer reviewers generally labelled industry’s argument of a silica exposure threshold as “misguided at best.” JA4246. Dr. Crump, an expert on risk assessment, found that OSHA was on “very solid ground” in its conclusion that data failed to establish a silica threshold. JA4254. Dr. Salmon observed that any thresholds observed in the epidemiology data “represented thresholds of observability rather than thresholds

of disease incidence.” JA4274. In short, Dr. Cox’s testimony on behalf of industry that no disease would occur in workers below a threshold dose of 100 $\mu\text{g}/\text{m}^3$ found no support in the record among independent scientists.³ OSHA acted reasonably in rejecting it.

OSHA relied in its quantitative risk assessment for silicosis and lung cancer on a linear, no-threshold risk assessment model, which assumes that each dose of silica contributes linearly to the risk of developing silica-related disease. This is consistent with its established practice, *see Public Citizen v. Tyson*, 796 F.2d 1479; *ASARCO, Inc. v. OSHA*, 746 F.2d 483 (9th Cir. 1981), and with generally prevailing guidelines for federal risk assessment. JA7988-7993, 7939-7957, 4948-4953.

Contrary to industry’s suggestion (and assuming *arguendo* that tort law is relevant here), courts consistently have accepted scientific testimony that each exposure to a toxin contributes to the development of disease as an adequate basis for finding liability in toxic tort cases. *See, e.g., Rost v. Ford Motor Co.*, No. 56 EAP 2014, 2016 Pa. LEXIS 2638 (Pa. Nov. 22, 2016) (accepting testimony that each asbestos exposure contributes to total dose and increases the probability of developing mesothelioma); *Oddo v. Asbestos Corp.*, 173 So. 3d 1192, 1209 (La. Ct. App. 2015) (same); *Dixon v. Ford Motor Co.*, 70 A.3d 328 (Md. 2013) (same);

³ Dr. Allen observed that “[t]he written and oral testimonies by Dr. Cox are replete with misrepresentations of OSHA’s risk assessment.” JA4249.

Rutherford v. Owens-Illinois, Inc., 941 P.2d 1203, 1219 (Cal. 1997) (asbestos was a substantial contributing factor to disease where it contributed in the aggregate to the total dose the plaintiff received). The tort cases cited by industry are not to the contrary. Those cases reject the notion that any single exposure to a toxin can be the cause of an individual's cancer; but courts that have rejected this "single hit" theory of disease causation have accepted the idea that each exposure contributes to the development of disease. *See, e.g., Rost v. Ford Motor Co., supra.* Thus, even if tort law is to be considered relevant to OSHA's standard-setting authority, common law principles for assessing liability in toxic tort cases are compatible with OSHA's assessment of silica risks.

The faux debate industry describes about the health effects of silica exposure cannot obscure the fact that many workers, including younger workers, are suffering devastating disabling effects due to silica exposure. The testimony of workers at OSHA's public hearing confirms that silica exposures in the workplace today pose a serious risk. JA4699, 4778, 4791, 4777-4778, 4784, 4788, 4792, 4796, 4581, 4561. The OSH Act directs OSHA to protect these and other workers from such illnesses. OSHA amassed a compelling scientific record to support a reduced PEL for silica. The agency should be commended for finally, after 40 years of delay, moving forward with these much needed worker protections.

II. THE INDUSTRY PETITIONERS' ARGUMENTS IGNORE THE SETTLED LEGAL TEST FOR TECHNOLOGICAL FEASIBILITY AND THE CLEAR RECORD EVIDENCE THAT THE STANDARD IS FEASIBLE

OSHA's brief shows that there is ample support in the record for the agency's findings that the standard is feasible for the foundry, fracking and construction industries. The Industry Petitioners' arguments to the contrary fly in the face of settled law.⁴

A. Foundries

1. In contending that the standard is technologically infeasible for foundries, the Industry Petitioners' lead argument is that a study by Petitioner American Foundry Society of exposure variability "demonstrated that for a foundry employer to meet a PEL of 50 $\mu\text{g}/\text{m}^3$ with even 84% confidence, *the employer would need to attain a level of 20 $\mu\text{g}/\text{m}^3$.*" Ind. Br. 57 (emphasis in original). Noting that OSHA "admitt[ed]" that "engineering controls will not be able to consistently reduce and maintain exposures to an alternative PEL of 25 $\mu\text{g}/\text{m}^3$ in ... foundries," *id.* at 58 (quoting Preamble 16461/3) (JA177), industry proclaims this to be "dispositive of the technological feasibility issue for foundries," *id.*, given the industry's claimed "need" to attain the level of 20 $\mu\text{g}/\text{m}^3$.

⁴ In this section, the Unions address the Industry Petitioners' arguments that the standard is technologically infeasible in the foundry and construction industries. With respect to the fracking industry, and on the subject of economic feasibility, we see no reason to add to what OSHA has stated.

Far from being dispositive, this contention is not even relevant, because OSHA is not required to ensure that employers can meet the PEL with the level of confidence the industry argument would require. As OSHA explained in the preamble⁵ and has noted again in its brief, the Industry Petitioners' argument "reflects a fundamental misunderstanding of the legal test for [the] technological feasibility" of standards requiring employers to control exposures through engineering and work practice controls. OSHA Br. 76. Under that test, the feasibility of such a requirement depends on whether the PEL can be met through engineering and work practice controls "in *most* operations *most* of the time." *American Iron & Steel Institute v. OSHA*, 939 F.2d 975, 990 (D.C. Cir. 1991) ("*AISI*") (emphasis added).

The record evidence establishes that that test is satisfied as to the foundry industry. See OSHA Br. 74-75. As OSHA found, AFS' own data show that "overall, exposures are *already* predominantly below the Final PEL." JA6140 (emphasis added). In a survey of exposure estimates for 92 foundries, touted by

⁵ The Industry Petitioners' assertion that OSHA neglected the AFS survey, *see id.* at 59 and n. 42, is simply wrong. In discussing both technological and economic feasibility, OSHA noted AFS's contention that, due to exposure variability, the standard would make it necessary for employers to reduce exposures to 20 $\mu\text{g}/\text{m}^3$. See Preamble 16460/1 (JA176) (citing testimony of an AFS witness describing the results of the exposure variability study); *id.* at 16475/2 (JA191) (citing the study itself). OSHA discussed AFS' contention at length and rejected it for reasons that were carefully considered and clearly expressed. *Id.* at 16449/1-16460/2, 16475/2-16476/1 (JA165-166, 191-192; *see also* JA6044-6046).

AFS as the most comprehensive and up-to-date information on exposures in the industry, 67% of the exposure estimates were below $50 \mu\text{g}/\text{m}^3$, with a majority of the exposures falling below that level for every job category in the industry but one. JA6140-6141 (presenting data from JA4050-4074).

The Industry Petitioners' brief relies on a less comprehensive AFS study which presented data for seven foundries. But in that study as well, most of the exposures were below $50 \mu\text{g}/\text{m}^3$ for most operations. See Ex. 2379, Figure 4 (JA4143). To be sure, the study declared that an employer that wanted to have an 84% level of confidence that *no* exposure would ever exceed $50 \mu\text{g}/\text{m}^3$ would need to reduce the *mean* level of exposure to $20 \mu\text{g}/\text{m}^3$. JA4117-4148. But that conclusion, even if it were well founded,⁶ is beside the point, because the test for technological feasibility in this context is whether the PEL can be met in *most* operations *most* of the time, not whether there is a high level of confidence that the PEL will be met in *all* operations *all* of the time.

Industry attempts to confuse the matter by noting that the AFS study applied a "NIOSH strategy" for dealing with exposure variability. Ind. Br. 56-57.

However, the NIOSH manual cited by AFS states at the outset that "the statistical procedures given are not regulatory in nature" but are simply "technical recommendations ... to assist employers." NIOSH, "Occupational Exposure

⁶ As we explain *infra* at 17-18, in point of fact the study's conclusion was unsound.

Sampling Strategy Manual,” p. 5 (JA2055). The NIOSH manual does not suggest that OSHA is required to set a PEL at a level that will provide employers with an 84% level of confidence that exposures will be below the PEL for all operations all of the time. *See* OSHA Br. 96-97 (discussing NIOSH testimony). Indeed, the statute would not permit OSHA to set a PEL at such a high level: In addressing a significant risk, OSHA must set the lowest limit that can be achieved in most (not all) operations most (not 84%) of the time.

2. Not only does the AFS exposure variability study ignore the applicable legal test, but the study makes a crucial error in assuming that the degree of variability that was reported for exposures at the seven foundries could not be reduced. *See* JA4117-4144.

As OSHA observed, whether variability can be reduced depends on “the origin of the variability,” Preamble 16476/1 (JA192), and the AFS study failed to consider that issue. Agreeing with the testimony of Dr. Frank Mirer that “[e]xposures go up and down not by magic but by particular conditions, differences in work methods, differences in control efficiencies, [and] differences in adjacent operations,” *id.* at 16460/1 (JA176) (quoting JA4432), OSHA found that variability in exposures to silica in a workplace results in large part from deficiencies in work practices and in the maintenance of ventilation equipment, factors an employer can correct. *Id.*

Furthermore, both the record and common sense indicate that installing engineering controls to reduce overall exposures also will reduce exposure variability, “and this reduction will provide employers with greater confidence that they are in compliance with the revised PEL.” *Id.* The AFS study failed to account for this. The exposure data reported in the AFS study goes as far back as 2000, *see* JA4121, and the study did not identify what steps the foundries had taken at that time to reduce exposures, including what engineering controls, if any, they had implemented for that purpose. Nor did the study say anything about the additional steps these foundries could take to reduce exposures, and how those steps might affect the degree of variability observed in exposure measurements. Rather, in asserting that a foundry that sought to have a high level of confidence that no sample would ever exceed $50 \mu\text{g}/\text{m}^3$ would need to reduce mean exposures to $20 \mu\text{g}/\text{m}^3$, the AFS study incorrectly assumed that reducing the mean exposure level by installing engineering controls would not reduce variability at all. *See* JA4117-4144.

Industry’s argument about exposure variability therefore is both legally irrelevant and factually unsound.

3. The Industry Petitioners complain nevertheless that it is not fair to define feasibility by reference to the exposure reductions that *generally* can be achieved, because OSHA might cite an employer for a *single sample* that exceeds

the PEL. Ind. Br. 58. Beginning with *Steelworkers*, 647 F.2d at 1272-73, and continuing with *Building & Construction Trades Department v. Brock*, 838 F.2d 1258, 1268 (D.C. Cir. 1988) (“*BCTD*”) and *AISI*, 939 F.2d at 991, this Court has squarely and repeatedly rejected that argument. As the Court put it in *AISI*, to the extent that exposures are subject to “random variability,” it nevertheless is the law that in pre-enforcement review OSHA need only satisfy a test of “general feasibility” by showing a “reasonable probability” that exposures can be reduced below the PEL in most operations most of the time. *Id.* Variability does not change that legal test; it simply means that “the general feasibility of the standard may still need to be counterbalanced by flexible enforcement.” *Id.*

In the case of silica, as with prior toxic substance standards, OSHA’s enforcement policies embody the flexibility to which this Court has referred. In *AISI*, as here, the nonferrous foundry industry made much of exposure variability, “seem[ing] to assume that a PEL was feasible only if all exposures in the workplace were below the specified level all of the time.” *Id.* at 1001. Citing *Steelworkers*, this Court found no merit in the industry’s contentions, noting that “OSHA’s enforcement policy takes into account that readings in excess of the PEL may be due to uncontrollable random variations.” *Id.* The Court made the same point in *BCTD*, observing that “[a]n employer using state-of-the-art work practices and engineering controls can, when found in apparent violation, seek to show the

inspector that the one-day measurement was unrepresentatively high.” 838 F.2d at 1268.⁷

OSHA’s approach with respect to silica is consistent with this Court’s decisions. OSHA explained in the silica preamble that “OSHA has, in the past, adopted fair and flexible enforcement policies to deal with the issue of exposure variability and will do the same for enforcement of the new silica standards.” Preamble 16757/3-16758/1 (JA473-474). OSHA’s brief confirms its commitment to that approach. *See* OSHA Br. 78-79. Under this Court’s decisions, that is the appropriate way to deal with exposure variability, without doing violence to the well-established test of *general* feasibility that applies in pre-enforcement review.

4. Aside from its argument about variability, the Industry Petitioners’ contention that the standard is technologically infeasible for foundries rests principally on “evidence ... [that] numerous foundries’ attempts to comply with

⁷ In addition to the flexibility OSHA brings to bear in deciding whether to issue a citation in the first place, this Court has recognized that in some circumstances an employer may assert “specific” infeasibility as a defense in an enforcement proceeding even though the applicable PEL has been upheld as generally feasible. *See Steelworkers*, 647 F.2d at 1273 & n. 125. As OSHA’s brief points out, the silica standard expressly provides that an employer that has not met the new PEL through engineering and work practice controls is not in violation of the standard if the employer shows that controls to achieve the PEL are infeasible in its particular work place. OSHA Br. 70, citing 29 C.F.R. § 1910.1053(f)(1) (JA579).

the *previous* OSHA PEL of 100 $\mu\text{g}/\text{m}^3$ were unsuccessful.” Ind. Br. 61 (emphasis in original).

In advancing that contention, the Industry Petitioners again ignore the test of general feasibility. Even if the handful of enforcement cases cited by the industry were considered to constitute evidence that “numerous” foundries were unable to reduce exposures to 100 $\mu\text{g}/\text{m}^3$ in certain operations, that would not mean that a PEL of 50 $\mu\text{g}/\text{m}^3$ is infeasible, any more than it would mean that the previous PEL of 100 $\mu\text{g}/\text{m}^3$ was infeasible; it would simply mean that the PEL could not be met in *some* operations *some* of the time.

Nor does the fact that, in some respects, “[n]o two foundries are alike,” Ind. Br. 63, argue for a strict test of feasibility. On the contrary, it is for that reason, among others, that pre-enforcement review requires only a showing of *general* feasibility, leaving individual circumstances that may be relevant to feasibility to be taken into account, where appropriate, in enforcement proceedings.

B. The Construction Industry

1. The Industry Petitioners’ attack on OSHA’s feasibility findings for the construction standard begins with the same mistaken premise – debunked above – that the agency must demonstrate “that employers can reach a level significantly below 50 $\mu\text{g}/\text{m}^3$ in order to ensure compliance with the PEL.” Ind. Br. 86. The industry then proceeds to assert that because, as OSHA acknowledges, employers

cannot directly control all of the worksite factors that influence exposures, employers similarly cannot control exposures as needed to comply with the standard. *Id.* at 86-89. Just as was true with respect to foundries, however, the conclusion does not follow from the premise. Rather, as OSHA found, based on extensive record evidence, much of the variability on construction sites stems from factors that employers *can* observe and identify, and can address through their control strategies.

To put this in context, construction workers are exposed to silica when they or other employees on the worksite perform tasks that fracture or abrade silica-containing material and generate respirable dust. The most common and effective methods of controlling these exposures are straightforward: collecting the dust at its source or suppressing it with water.⁸ During the rulemaking hearings, workers from across the construction trades testified to the wide array of readily-accessible controls conscientious employers are already using. Bricklayers demonstrated how water attachments built into stationery saws used to cut concrete block, and vacuum attachments on grinders used to cut out mortar joints, are extremely effective in reducing dust-generation. JA4802. A sheet metal worker described how vacuum hoses attached to hammer drills remove and store dust generated

⁸ These controls not only limit exposures to the individual performing the silica-generating task, but also limit bystander exposure to others working in the vicinity.

when workers drill concrete. JA 4555. A roofer explained how misters attached to saws suppress dust generated when cutting roof tiles, and the processes employed to ensure this work is performed safely. JA4568. He also pointed to new tools that enable workers to break tile without generating dust, thereby avoiding the potential for exposure altogether. JA4587. In fact, the building trades unions placed in the record a list of 130 commercially-available tool and dust control combinations. JA5296-5323.⁹

Hearing participants also demonstrated what the construction and equipment industries accomplish when they get serious about protecting workers.

Representatives from government, industry, labor, academia and the companies that manufacture the large-scale milling machines used to remove asphalt from street surfaces formed the Silica Asphalt Milling Machine Partnership to devise engineering controls to protect workers engaged in roadway milling. JA4626.

Working together, they successfully developed dust suppression and ventilation systems that “all but eliminate dust and potential silica exposure.” JA4627. All

⁹ Industry representatives similarly acknowledged the availability and increasingly wide-spread use of these kinds of simple controls. *See, e.g.*, JA4440 (Daniel Bosch, National Federation of Independent Businesses, reporting “widespread use of devices [attached to tools] that release water at the point of cutting,” and “greater use of tools with dust collection components”); JA2576 (Jerry Painter, Painter Masonry, Inc., reporting “increased . . . use of water and dust collection in our cutting of masonry units and concrete”); JA4534 (Kellie Vasquez, Vice President, Holes, Inc.: “we cut wet” whenever cutting concrete); JA4751 (Patrick O’Brien, Executive Director, Concrete Sawing and Drilling Association: “nearly 100 percent of the contractors use water on each and every job”).

six of the milling machine manufacturers committed to installing these systems in new equipment and providing retrofit systems for existing machinery by January 2017. JA4640.

To be sure, employers cannot use these technologies to control the “characteristics of materials being drilled, . . . wet or dry conditions, soil conditions [or] wind conditions,” which are among the kinds of variations to which the Industry Petitioners point in arguing about exposure variability. Ind. Br. 89 n. 50 (citing Preamble 16495/2) (JA211). However, employers can and do use these technologies in implementing measures to protect their employees in the face of these variable workplace conditions. As Industrial Hygienist Scott Schneider testified, “the goal of controlling exposure variability is to limit the number of variables to the most important ones and set limits or parameters on those.” JA4928. Matt Gillen, Deputy Director of NIOSH’s Office of Construction Safety and Health, confirmed that point in observing that employers mindful of workplace variables “can reduce the variation in the protection [they] get.” JA4477.

OSHA performed a comprehensive and exhaustive analysis of the standard’s technological feasibility in the construction industry, grouping the construction industry into 12 “application groups,” identifying job categories or tasks that involve silica exposure within each application group, evaluating the ability of engineering controls and work practices to reduce current exposures, and

concluding that it is technologically feasible for the construction industry to comply with the standard. OSHA Br. 70-71. OSHA's feasibility analysis was based on almost 900 samples from construction sites, which "necessarily took exposure variability" – and the industry's ability to address that variability in implementing controls – "into consideration." *Id.* at 94 n.57. Substantial evidence thus supports OSHA's conclusion that, despite variable workplace conditions, the construction standard is feasible.

2. The construction standard gives employers two compliance options: They may follow the conventional process laid out in most OSHA standards, monitoring exposures and devising their own control measures to comply with the PEL. Or they may follow the prescriptions on Table 1, and if they "fully and properly implement" the specified controls, they will be granted a "safe harbor" from monitoring or otherwise complying with the PEL. Preamble 16714/2, JA430; 29 C.F.R. § 1926.1153(c), (JA 492-595).

Table 1 consists of common construction tasks "widely recognized" to generate high silica exposures and "for which there has been considerable research . . . on the effectiveness of control strategies." Preamble 16719/2, (JA 435). Based on substantial record evidence, OSHA identified control strategies for nineteen of these tasks, which, with a few exceptions, use engineering controls that are "either commercially available from tool and equipment manufacturers or . . . can be

fabricated from readily-available parts” to consistently control exposures below 50 $\mu\text{g}/\text{m}^3$. OSHA Br. 91. In a few instances in which OSHA was unable to conclude that the specified controls could bring exposures below the PEL in every instance, the agency determined respiratory protection would also be required. *Id.*

The Industry Petitioners point to the presence of respirators on Table 1 and argue that by requiring employers to provide respirators when “one-third of . . . the task[s are] performed for just over four hours,” OSHA has, in effect, conceded that it is not “actually feasible to meet a PEL in most operations most of the time.” Ind. Br. 95, 97. This argument assumes that the percentage of tasks for which respirators are required directly translates into the proportion of “operations” for which the PEL cannot be achieved through engineering controls and work practices, and that this number proves the PEL cannot be met in “most operations most of the time” – assumptions OSHA has effectively refuted in its brief. *See* OSHA Br. 101-02.

More to the point, however, the argument completely misapprehends what the standard requires of employers, and thus, what must be demonstrated for the standard to be feasible. For the question in this case is not whether, in some abstract sense, it is technologically feasible for the industry to comply with the PEL without respirators. Instead, the question is whether it is feasible for the industry to comply with the requirements *of this standard*.

As this Court wrote in *Steelworkers*, “we cannot know if a standard is feasible until we know what it expects of employers.” 647 F.2d at 1267. A typical OSHA health standard expects “employers to meet the PEL solely through engineering and work practice controls ‘except to the extent that the employer establishes that such controls are not feasible[,]’” and where such preferred controls “cannot achieve the PEL,” the employer must add respiratory protection “to make up the difference.” *Id.* at 1269 (citing the cotton dust standard, 29 C.F.R. § 1910.1043(e)(1)). To pass muster in a pre-enforcement challenge to such a requirement, OSHA must establish a “general presumption . . . of feasibility,” by proving “a reasonable possibility that the typical firm will be able to develop and install engineering controls and work practice controls that can meet the PEL in most operations[. . .] without relying on respirators.” 647 F.2d at 1272. *See supra* at 15-19.

When it comes to Table 1, however, OSHA does *not* expect that an employer will “meet the PEL solely through engineering and work practice controls” that the employer will “develop and install.” Instead, what OSHA “expects” is that employers following Table 1 – which OSHA has reasonably concluded will constitute the majority of covered construction employers – will “fully and properly implement the engineering controls, work practices, and respiratory protection *specified [in Table 1]* for the[ir particular] task.” 29 C.F.R. §

1926.1153(c)(1), (JA592-593) (emphasis added). The Industry Petitioners' argument that the appearance of respirators on Table 1 proves it is not "actually feasible to meet a PEL in most operations most of the time" without resorting to respirators, Ind. Br. 97 (emphasis added), is thus a complete non sequitur, as it ignores the requirements of the standard.

3. When it comes to what the construction rule *does* "expect[] of employers," 647 F.2d at 1267, the Industry Petitioners argue that for five of the tasks listed on Table 1, OSHA only "permit[s]" wet methods,¹⁰ but that wet methods cannot be used in certain circumstances. Ind. Br. 98.¹¹ Construction Industry representatives made this argument throughout the rulemaking proceeding but, despite repeated requests for sampling data, never attempted to quantify how

¹⁰ The Industry Petitioners' assertion that the controls listed on Table 1 are the only controls OSHA "permits," *id.*, is inaccurate. Nor, as the Industry Petitioners further assert, does the absence of particular controls indicate that OSHA has found them to be infeasible. *Id.* at 98-99. The control strategies on Table 1 are the common tasks for which OSHA had substantial evidence that existing and readily available controls were sufficiently reliable that employers could be released from monitoring and complying with the PEL without sacrificing their employees' health. Employers that cannot or choose not to use those control strategies are not bound by Table 1, and can instead follow the optional method of complying with the standard by monitoring and by implementing their own combinations of controls.

¹¹ The Industry Petitioners also challenge the data supporting OSHA's feasibility findings for four tasks. Ind. Br. 99-105. As OSHA has fully countered those arguments, OSHA Br. 105-08, we will not address them here.

much of the industry is unable to use wet methods, or in what portion of their operations.¹² OSHA, on the other hand, found substantial evidence that employers have been able to overcome many of the purported barriers to wet dust suppression and concluded that wet methods are feasible most of the time. OSHA Br. 104; *see also* JA6526-6528.

Testimony during the hearing supported OSHA's conclusion. For example, while the industry asserts that cold weather can prevent the use of water, workers noted that when it is too cold to use water, it is often also too cold to perform construction tasks such as mixing cement or mortar, JA4586 ("If you don't have water there to mix cement, you're not working"); performing terrazzo work, JA4814 (terrazzo "has to be 57 degrees in the building just to pour it, to grout it, to [do] anything"); conducting asphalt operations, JA4667 (asphalt has to be applied hot); and conducting demolition jobs with state or owner dust mitigation requirements, JA4676, 4685-4686. Furthermore, for work that is performed in freezing temperatures, the industry has developed various techniques for keeping water from freezing, including adding a variety of additives to the water, using in-

¹² During the public hearings, OSHA and other participants asked the Construction Industry Safety Coalition, the Mason Contractors Association of America and the Tile Roofing Institute to submit the exposure monitoring data that supported their claims that the standard is not technologically feasible. JA4532, 4533, 4753, 4857. None of these organizations submitted this data to the record.

tank water heaters, and wrapping the containers with heated tape. JA4642, 4643-4644, 4764, 4919, 4925, 5219-5224.

To the industry's assertion that water may not be available at the worksite, witnesses discussed how contractors routinely devise ways to make sure water is available so they can perform their work uninterrupted, protect the environment and protect their tools. As an executive from the Concrete Sanding and Drilling Association explained, “[n]early 100 percent of the [association’s] contractors use water on each and every job, and this has to do with extending the life of the blade,” although it also “has the additional benefit of containing silica particles.” JA4751. Finally, while the Industry Petitioners argue that “introducing water would create greater hazards for employees,” Ind. Br. 98, none of the workers who testified during the hearings – *i.e.*, those at most risk – raised this as a concern. In fact, a roofer testified that it is easier to manage any hazards potentially caused by using water than to manage the visual hazards that are created by the excess dust generated by dry cutting. JA 4570.

In short, substantial record evidence established that the construction industry has already exhibited a tremendous degree of ingenuity in surmounting barriers to using wet methods. It is, moreover, entirely reasonable for OSHA, through this rule, to force the industry to continue to “develop and diffuse new technologies” to control employee exposures. *Steelworkers*, 647 F.2d at 1266. If,

as the Industry Petitioners contend, there remain an indeterminate number of situations in which an indeterminate number of employers cannot follow the wet methods prescribed on Table 1, *and* these employers also are unable to comply by means of the alternative method of devising their own control strategies, those employers – like the foundries discussed earlier – remain free to invoke OSHA’s forbearance under its “flexible” enforcement policy, Preamble 16757/3-16758/1 (JA473-474), or to raise infeasibility or “greater hazard” as defenses in an enforcement proceeding. *See supra* note 7; *PBR Inc. v. Sec’y of Labor*, 643 F.2d 890, 895 (1st Cir. 1981) (employer asserting a “greater hazard” defense bears the burden of establishing that compliance with the standard would create a greater hazard than noncompliance; that alternative protective measures were either taken or not available, and that a variance application is inappropriate); *Noblecraft Indus., Inc. v. Sec’y of Labor*, 614 F.2d 199, 205 (9th Cir. 1980) (same); *John H. Quinlan*, 17 BNA OSHC 1194 (No. 92-0756, 1995); *Russ Kaller, Inc.*, 4 BNA OSHC 1758 (No. 11171, 1976). That, however, is a matter for another day. It does not undermine OSHA’s strong showing that the rule is generally feasible in the construction industry.

CONCLUSION

For the reasons stated above and in the Brief for Respondents, the industry petitions for review should be denied.

Respectfully submitted,

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Date: March 23, 2017

CERTIFICATE OF COMPLIANCE

1. This Brief complies with the type-volume limitation of Fed. R. App. P. 32(a)(7)(B) because it contains 7,336 words, excluding the parts of the Brief exempted by Fed. R. App. P. 32(a)(7)(B)(iii) and Circuit Rule 32(e)(1).

2. 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 it has been prepared in a proportionally spaced typeface using Microsoft Word 2010 in 14-point Times New Roman font.

/s/ Jeremiah A. Collins

Jeremiah A. Collins

CERTIFICATE OF SERVICE

I hereby certify that on this 23rd day of March, 2017, I caused a true and correct copy of the foregoing Joint Brief of Union Petitioners to be filed electronically with the Clerk of the Court using the Case Management and Electronic Case Files (“CM/ECF”) system for the D.C. Circuit. Participants in the case will be served by the CM/ECF system or by U.S. mail.

/s/ Jeremiah A. Collins

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