INFORMAL PUBLIC HEARINGS FOR THE PROPOSED RULE ON OCCUPATIONAL EXPOSURE TO RESPIRABLE CRYSTALLINE SILICA

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UNITED STATES DEPARTMENT OF LABOR

OCCUPATIONAL SAFETY & HEALTH ADMINISTRATION

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March 28, 2014
9:30 a.m.

Frances Perkins Building Auditorium
200 Constitution Avenue, N.W.
Washington, D.C. 20210

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P R O C E E D I N G S

(9:30 a.m.)

JUDGE PURCELL: Good morning, everybody. My name is Stephen Purcell. I'm the Chief Judge for the U.S. Department of Labor. I'll be presiding over this hearing this morning.

Let me ask the panel when they begin to have somebody introduce the panel in its entirety. Also, when you're giving your presentation, if you would, please state your full name at the start of the presentation. And then when responding to questions, please make sure you identify yourself when you're responding to the questions.

The program this morning has changed a little bit. Instead of two different panels for the United Steelworkers, we're going to have both panels at one time. And with that, let me go ahead and ask, who wants to introduce the panel?

MS. FITZ: Good morning. My name is Ashley Fitz from the Health, Safety and Environment Department of the United Steelworkers. I'm from the Local Union 5668 as well as an intern, pursuing my master's degree in safety engineering.

On the first panel we will have Alan White from Local Union 593; Mike Wright, the Director of

Health, Safety and Environment Department for the United Steelworkers; Dr. Steven Markowitz, the Director of the Center for Biology of Natural Systems at Queens College, City University of New York and the consulting physician for the United Steelworkers; and John Scardella, the Program Administrator for the United Steelworkers Tony Mazzocchi Center for Health, Safety and Environmental Education.

The second panel will consist of Allen Harville from the United Steelworkers Local 8888; Rami Katrib, United Steelworkers Health, Safety and Environment Department intern; Jim Frederick, the United Steelworkers Health, Safety and Environment Department Assistant Director; and Anna Fendley from the United Steelworkers Legislative Department as a Legislative Representative.

JUDGE PURCELL: Thank you, Ms. Fitz. And who is going to start off this morning, as far as the panel presentations?

MS. FITZ: We're going to switch out a little bit, and we're going to start with Alan White, from the Local Union 593.

JUDGE PURCELL: All right, Mr. White.

MR. WHITE: Good morning. Can everybody hear me? My name is Alan White. I'm from Local 593 in Buffalo, New York. And it is an honor to be here, and I thank you for your time.

I may not look sick to you, but I am sick. I have silicosis. I worked in a foundry for 16 years. I'm not a supervisor. I am from the floor. I saw the foundry from a vantage point not seen by visitors or those who listen to management describe what goes on.

We clean up for a week before visitors come by, and only start operations when visitors are in position to see us start. Then they leave after a few minutes and we go back to normal; dirty, filthy and dusty.

The dust settles everywhere only to get stirred up again by brooms, forklift exhaust, and other things. Nothing cleans the crane rails 50 feet above the floor or the ceilings in the foundry like the concussion from an explosion, which happens every once in a while.

The operation at our foundry in Buffalo, New York, is more complex than it looks. A lot of training, smarts, guts and experience are the only things that can help you understand the finer points of how to pour 60,000 pounds of quality brass, bronze or copper each and every time.

In 16 years as a general helper, I performed every job in every step of our process, having trained on them immediately after I was hired. In addition to learning all the jobs, I learned about product quality, efficient work practices, and how not to blow myself up.

From materials testing and handling to furnace operation and furnace lining cleanup, repair, mixing, and maintenance, I was known as a good worker on every job in the department, and I worked with or around silica-containing products without knowing the dangers or any precautions to make a safer environment for myself.

I learned that a dust mask was hardly, if ever, needed to do most jobs in the foundry. Part of my training, which was encouraged by the culture of the foundry, was that respiratory protection was not necessary unless while skimming slag out of the brass furnaces, in order to avoid zinc flu. And that protection was only the dust mask.

I was test-fitted by the Safety Department for a dust mask, an N95 dust mask style respirator and a dual-cartridge respirator in my first year, 1995. I was told during that test fitting that the only respiratory protection I would need was the dust mask, and that I would never need to use anything else.

We were taught that while cleaning, digging or doing other jobs, that if we were overcome by dust, heat or smoke, we should go outside and get some air and come back when we feel better.

An employee who wore a respirator whenever he worked in the foundry was repeatedly called crazy. Never were there any warnings, and no information was freely available about the products we worked with.

In our safety training, there was always hearing and vision checks; forklift safety; slip, trip, and fall prevention; and accident prevention classes. Only recently, three years after I left the foundry, was there a brief class on respirators, not ever a mention of silica or its dangers.

It's easy to think that if there was a stricter OSHA silica standard in place when I worked in the foundry, I might not be sick. You're absolutely right.

There are other things you should know in order to have an understanding of some things that a stricter silica standard can do to help workers and also their employers avoid, based on what happened in my first-hand experience.

First of all, there was the growing problem of being out of breath sooner than I used to. That's a difficult situation for somebody that was always a competitor, especially since I didn't know why.

Then I received a big surprise during a conversation with the first doctor I went to, when I found out that I do have silicosis, and he told me that I would lose my job. That was a shock. He and the four other doctors all agreed that the diagnosis is silicosis.

Watching your wife and other loved ones cry as they figure out what silicosis is was a big hit, and then shortly after that, there's the radical pay cut from a transfer out of the foundry to a department where I knew no jobs, because I had to do that, because I chose my health over money. Thank God, because of my seniority, I was able later to get a decent job, to make some of that loss up.

Meanwhile, there was a recollection of past events that foretold of this silicosis, the getting out of breath sooner, the fading endurance of what used to be easy tasks for someone that considers themself in shape. But since I didn't know, I didn't know.

There are the compensation hearings, where the lawyers say that the company doesn't use any silica-containing products, and when that doesn't work, they try everything else under the sun. Company officials that praised me in the past lied about what I did while in the foundry. Matter of fact, I just got a call this morning, just been denied everything, so I got to go through the whole process again, which is very nice.

There was and still is the struggle on my new job to deal with irritants that will affect my breathing and my performance sooner than anybody else, because of the damage to my lungs, and also the resistance of the company to assist me in this matter even though they know my condition.

The Safety Department manager and a company official who was at my comp hearings wrote me up to discipline me recently, for wearing breathing protection, because in their words, it is not necessary, and in so many words, you don't need it because we say so.

Later on, it was, if you keep wearing that, eventually everyone will want to wear one. Thank God that I belong to the Steelworkers or I definitely would have been fired for trying to protect my already damaged lungs.

My union has never heard of anything so callous and careless, especially since they have allowed other people in the plant to wear the respiratory protection that they didn't want me to wear.

There are also difficulties outside of work, and issues for me to look forward to in the future. Walking while talking on a cell phone is very exhausting, as well as walking up the stairs from my basement to my second floor apartment.

I have increasing difficulty on my current job. Certain irritants like air fresheners, potpourri and cleaners make home life increasingly difficult -- excuse me, and I was told that it's down here -- excuse me, downhill from here for both home and work life.

What happened to me is preventable with this proposed standard in effect, and it can help companies, too. The company I work for can avoid losing a person who could fill any opening in the foundry, which costs time and money to replace.

As the amount of jobs known by general helpers is voluntary -- they can learn one job or all, or some number in between, the first two years I was gone, the company needed three people on the shift to cover the jobs that I used to cover when I was there. In addition, the mistakes made by people while in training cost the company money.

As much as they plaster "Your safety is our number one priority" throughout the facility, they could easily mention the dangers of working with silica and the corresponding protective measures and safety training all for less money than replacing a good worker -- or workers.

My employer is just like -- excuse me, every other employer in the world. They don't want someone to miss a lot of time from work, or be unable to perform their duties for whatever reason, especially after investing in training them.

That's why they interview, check references and require physicals and more, to make sure they hire the right person for the job. They want someone there for the long haul. If the employee has to stop working because of silicosis, the company loses.

Companies also preach continuous improvement to their employees. So they themselves need to accept this proposed standard as part of continuous improvement. With the new OSHA standard in place, there can be more warnings about silica and protective measures put in place to keep people like me from saying that a stricter standard could have helped me stay on the job. Thank you, and have a nice day.

JUDGE PURCELL: Thank you, Mr. White. I'm going to ask that we hold questions until the panel has completed its presentation. Who is going to speak second?

MR. WRIGHT: Is this --

JUDGE PURCELL: It's on.

MR. WRIGHT: -- working? Okay. My name is Michael Wright. I'm the Director of Health, Safety and Environment for the United Steelworkers. We're a union that represents 850,000 North American workers. We're the predominant union in steel, of course, but also in metals, generally, rubber, papers, chemicals, oil, glass, general manufacturing.

Our members are exposed to silica in a variety of industries, foundries and the glass industry, in particular, but also in many industries in operations like sandblasting, refractory manufacturing, and refractory tear-out.

In addition, we represent the majority of unionized metal and nonmetal miners, many of whom are exposed to silica, some of whom actually mine and process it. Of course, their exposures are regulated by MSHA, not by OSHA, but both are Department of Labor agencies, and I can't let the opportunity pass to urge the DOL to protect American miners with an equivalent rulemaking under MSHA.

Establishing a new silica standard is, of course, a matter of PELs and risk factors and technical controls, economic feasibility, sampling methodology and proper medical evaluations. But it is also a matter of human beings, of human health and human welfare, of fairness and justice.

Our first witness, Alan White, made that point far more eloquently than I ever could. Alan was to be followed by a second witness, Tim Tuttle. Tim is a long-term glassworker who now heads the union's Glass Industry Conference. Tim lost his father from silicosis.

He's seen coworkers contract the disease, and he knows the industry well. Unfortunately, he became ill yesterday -- not with silicosis, with a virus. He's asked if he could submit his testimony in writing, and with Your Honor's permission, we'd like to do that --

JUDGE PURCELL: Certainly.

MR. WRIGHT: -- during the evidentiary period.

Let me speak briefly about the proposed permissible exposure limit and the action level. We support OSHA's finding that silicosis -- that silica substantially increases the risk of lung cancer. Not every epidemiological study examined by OSHA showed a significant increase in lung cancer. They never do.

When we've dealt with any occupational carcinogen, there are always so-called negative studies, which we actually define as inconclusive studies, because they don't prove the absence of the risk. They only get to the point where they cannot prove its presence.

But many of the studies OSHA examined did show a significant risk, and even one well-conducted study should be sufficient. Of course, there's no need for OSHA to show a relationship between silica and non-malignant respiratory disease. That's been known since antiquity.

We support the 50 $\mu g/m^3$ PEL. In fact, based on health considerations alone, the PEL ought to be considerably lower. Although the proposed PEL considerably reduces the risk of fatal health outcomes, it still results in estimated risks considerably in excess of the lifetime risk of 1 per 1,000, which the U.S. Supreme Court found to be clearly significant in its benzene decision.

We think the risk estimates are good, based as they are on the six cohorts identified in the Steenland pooled analysis. But even if they are high by an order of magnitude, most of the estimated risks would still exceed the 1 per 1000 level.

Thus, the standard is based on feasibility. OSHA has conducted -- OSHA has collected far more data on feasibility than we have. But we do have limited data that indicates that at least in some of our -- that at least some of our employers are meeting the 50 $\mu g/m^3$ limit, and in fact are far below it.

My colleague, Rami Katrib, will describe those data later this morning. We think the OSHA analysis shows the standard to be both technologically and economically feasible with current technology, even though OSHA is empowered to set technology-forcing standards by the 1975 *Vinyl Chloride SBI v. OSHA* decision.

In fact, OSHA feasibility determinations have typically over-estimated the difficulty and cost of compliance. Estimates by trade associations have grossly over-estimated them.

We also support the 25 $\mu g/m^3$ action level.

There's no reason for OSHA to deviate from its policy of setting the action level at half the PEL. OSHA and NIOSH have both found 25 $\mu g/m^3$ to be measurable with current methodologies.

Some participants have testified that silica cannot be reliably measured at that level. Interestingly enough, we've seen sampling data from employers at levels well below 25 $\mu g/m^3$.

In fact, some of it comes from a lab operated by a witness who testified earlier that levels that low could not be reliably measured, even though his lab was reporting that to -- was reporting lower levels to one of their clients. And we'll introduce that later.

The USW has participated in almost every OSHA general industry rulemaking since the beginning. I've personally been part of most of those, beginning with the failed beryllium rulemaking in 1977.

The silica proposal is among the most thoroughly analyzed and supported Notices of Proposed Rulemaking that the Agency has ever put forward. It's tragic that it was delayed by the Administration for more than two years. Workers paid for that delay in death and disability.

We can't get those two years back, but we can move quickly forward to get this rule in place, and to lift the burden of silicosis and all the other health effects of silica from American workers. We urge OSHA to complete its work as rapidly as possibly, and the Administration to promulgate the standard without delay.

JUDGE PURCELL: Thank you, Mr. Wright. Is Dr. Markowitz next?

DR. MARKOWITZ: Thank you for allowing me to appear today. I'm Steven Markowitz. I'm an occupational medicine physician, and I run large medical surveillance programs, one for the Steelworkers, among Department of Energy workers, and I ran, for numerous years, a medical screening program for World Trade Center workers.

I'm going to address two issues today. One is the information that the OSHA standard requires that the licensed healthcare provider share with the employer. And the second issue I want to address is the use of a low-dose CT scan for screening for lung cancer.

The proposed silica -- the OSHA standard requires that the employer offer workers exposed to silica medical surveillance tests by a medical provider.

The provider will provide a written opinion to the employer that "will describe the employee's health condition as it relates to exposure to respirable crystalline silica, including any conditions that would put the employee at increased risk of material impairment of health from further exposure to silica."

As a practical matter, I find the language to be exceptionally vague. The phrase, "any conditions that would put the employee at increased risk of material impairment of health," does that include any chronic lung disease that the employee might have, in particular those not caused by silica?

So, for example, if I were the examining healthcare provider and I saw an employee, and he had what I identified as idiopathic pulmonary fibrosis, which is diffuse scarring of the lungs with an unknown cause, in this case, not silica, is that information that I would need to turn over to the employer because further exposure to silica might impair that person's health or not?

Or what if the worker has emphysema, which is a silica-related condition, and the provider believes that that emphysema is not due to silica exposure but to the employee's long-time smoking history. Is that information that the healthcare provider is supposed to turn over to the employer? It isn't at all clear.

But actually I'd like to discuss five other, I think, more important problems with the language in the standard. First, the sharing of medical information violates a person's right to privacy and autonomy.

A person's control over their medical records is enshrined in HIPAA regulations. HIPAA may or may not apply to occupational illnesses, but HIPAA certainly reflects a societal consensus about the primacy of control over health information held by the individual. Our health information belongs to us as individuals, and there have to be very compelling reasons for release of such information without our permission.

Now, this thinking has evolved over the past two decades, and certainly over the past four decades that OSHA has been promulgating standards. It's time now for OSHA to catch up with this thinking.

Secondly, requiring the sharing of health information laws assumes that the employers will act on that information without prejudice, or that such

prejudice is acceptable. And this -- clearly, these two assumptions are clearly not supported.
Mr. Frederick will talk a little bit more about the role of medical removal protection.

Third, I think employer notification of health conditions that pertain to silica exposure actually puts employers in a huge quandary. What are they supposed to do with this information, exactly?

It ignores the complexity of silica-related illnesses, especially, as I mentioned before, emphysema, which has a more common cause than silica exposure, namely cigarette smoking. Are employers or their providers supposed to separate out the role of smoking versus silica exposure?

Even if the employer is not required or expected to attribute the emphysema to silica or to smoking, what is to stop a rational employer, thinking a step ahead about workers' compensation, from -- and now alerted that the worker has emphysema by the healthcare provider, what's to stop that employer from beginning to collect information about smoking that might be used in a workers' compensation proceeding?

My fourth objection to sharing health information -- and I think this, actually addresses directly, part of OSHA's rationale for requiring the sharing of health information, is exactly what correction will the employer make when he or she newly learns that one of their employees has silicosis?

I think the rationale in the OSHA standard or preparatory material is intervention. What intervention is the employer expected to make? Of course, silicosis occurs as a result of exposure to silica that incurred many years ago, 15, 20 years ago or more.

The exceptions are accelerated silicosis or acute silicosis, but those are rare, and we're not really discussing those because the PEL will -- the proposed PEL will prevent those conditions from occurring.

I don't see what inference the employer is supposed to make about the magnitude or the effect of current silica levels, when finding out that one of their employees is newly diagnosed with silicosis. After all, that silicosis reflects exposure that occurred many years ago.

And, in fact, the employer and even the employee are unlikely to have the data, real data about the silica exposure from those many years ago.

Clearly, the best information about current exposure to silica is derived from exposure monitoring, as required by the proposed standard. And I don't think learning about a new case of silicosis is going to provide the employer with information that can really be acted upon, interpreted sensibly, in order to make some intervention in the workplace.

And then finally, the fifth, I think, objection relates to putting the provider in an unethical position, in terms of sharing information. If you look at the statement of the American College of Occupational and Environmental Medicine organization, and just quickly I will just quote from them, this is a 2012 statement.

"The physician should not provide the employer with specific medical details or diagnoses unless the employee has given his or her permission." So we occupational medicine physicians consider sharing medical information with the employer to be unethical, and therefore OSHA should not require it.

So the second topic is that low-dose CT scan, and let me just say, the Steelworkers, we've run a program of lung cancer screening since the year 2000 among nuclear weapons workers. We've screened

12,000 workers using low-dose CT scan for lung cancer.

We've identified 105 workers with lung cancer, most of whom were detected early as a result of those exposures, so we have a lot of experience in this area.

The low-dose CT scan is useful in two ways. One is, it can pick up silicosis earlier than a chest x-ray. And, secondly, it can pick up lung cancers at an early stage, when they're curable. For those reasons, it's disappointing to see that the OSHA standard doesn't address the use of low-dose CT whatsoever.

We would recommend at the age of 50 that the workers receive not a chest x-ray but a low-dose CT scan, due both to the increased risk of lung cancer beginning at age 50, but also the increased risk of silicosis, given the latency between exposure to silica, usually beginning at age 18, 20, 25, and the appearance of silicosis, usually not before age 50.

Now, this is using age, in part as a proxy for latency because we couldn't really figure out how to build latency issues into a standard.

There's concern about the radiation dose with low-dose CT scan. It's about 1 mSv. It's about 10 times that of a chest x-ray, but it's about eight times lower than the diagnostic CT scan. So you should understand that it's considerably lower than what is used -- what is referred to in the standard or the proposed standard as a CT or as a high-resolution CT scan.

That dose is much higher than a low-dose CT scan. And excuse me, and the radiation dose, actually is decreasing, with low-dose, every year.

Now, it would be optimal to apply low-dose CT or early lung cancer screening to workers who not only had silica exposure but also had a history of cigarette smoking, because that increases their risk of lung cancer. But I can't quite think of a practical way of integrating that into the standard.

So now an alternative to mandating low-dose CT for silica-exposed workers over age 50 would be to leave the decision about a chest x-ray versus a CT scan to the licensed healthcare provider. The problem with that is that there would be inordinate variability in how that's actually implemented, and secondly, frankly, the provider might be pressured by the employer to save some money and not use a CT scan but use a chest x-ray.

Finally, there's concern about classification system on the CT scan that we don't have it. But we have it for chest x-ray; we don't have it for CT scan. There is such a classification system used now in Europe and in Japan, and clearly that's not an insurmountable obstacle.

So let me just close by saying that lung cancer is the most important, common and lethal outcome among silica-exposed workers, in fact, among workers in general exposed to lung carcinogens, and not only that, but among the general population in the U.S.

We now have a method of detecting lung cancer early, and we can reduce lung cancer mortality, and we ought to use it now for workers exposed to silica as well as other lung carcinogens. Thank you.

JUDGE PURCELL: Thank you, Dr. Markowitz. John Scardella is next on the list. Mr. Wright, if you wish to change the order, just let me know, but --

MR. WRIGHT: No, we're fine.

JUDGE PURCELL: -- otherwise, I'll go down.

MR. WRIGHT: Thank you.

JUDGE PURCELL: Okay. Mr. Scardella?

MR. SCARDELLA: Thank you, Your Honor. My name is John Scardella. I am the Program Administrator for the United Steelworkers Tony Mazzocchi Center for Health, Safety and Environmental Education.

The Tony Mazzocchi Center provides training to approximately 30,000 members and their respective employers annually. The USW and our predecessor unions have over 70 years experience in providing training to all sectors of our membership.

In providing this training, the United Steelworkers has created hundreds of training programs, using a well-rounded approach to adult education.

In the instance of creating training surrounding silica, the curriculum would be written to reinforce the requirements of the standard, but also stress the health effects for those who are stricken with silicosis and other diseases, and health effects associated with silica.

The proposed standard for respirable silica requires that employees be informed of the dangers of respirable silica, by means of labels, safety data sheets, and employee information in training. OSHA emphasizes that it is important that employees are informed of the dangers of what they are exposed to, and what measures are taken to protect them.

Effective hazard communication requires that all affected employees be trained in the knowledge of specific operations that could result in exposure, specific procedures that employers have implemented to protect employees, the content of the standard, and the medical surveillance program required by the standard.

We believe that employee participation in any safety program is the best practice for adult learners to retain important safety information. We further believe that this training should be conducted prior to or at the time of assignment, and that an annual refresher training be required.

The best practice for adult learners is that training be provided in a manner in which all employees are able to understand. An example of an effective training can be protecting workers from hazards associated with particular work.

We should look no further than the asbestos standard, and in particular, 1910.1001. The training requirements within the asbestos standard, we believe, have helped save hundreds of workers exposure to this carcinogen.

Likewise, in this proposed standard, as in the asbestos standard, we believe the following elements or the best practices for training adult learners include the definition of silica, the health effects of silica, knowledge of the sources of silica in the employee's workplace, knowledge in ways to control exposure to silica in the workplace, and the annual training for employees who may be affected by exposure to silica.

Workers having this skill and ability, gained through training in recognizing hazards and the potential for exposure to silica, are essential elements of any training program. Training workers immediately prior to job assignment that may be potentially exposed to silica is the best training scenario for workers.

To further illustrate training effectiveness or the lack of effectiveness, we can look to the federal OSHA frequently cited standards using the NAICS code for iron and steel mills. From October of 2012 to September of 2013, their number one cited violation was overhead and gantry cranes.

The general industry standard does not have any training requirements for operators of overhead gantry cranes. It allows for a designated employee to be permitted to operate a crane covered in this section of the standard, thus allowing employer discretion in the training for these operators in this highly hazardous operation. Conversely, asbestos was the least cited for the same industries.

We believe the training is all-encompassing in the recognition of the hazards associated with silica, and not left to the discretion of the employers, who may not have the health and welfare of workers as their top priority.

The United Steelworkers agrees with the training approach as written in the proposed standard, but recommends that yearly refresher training be a requirement for that of respirable silica. Thank you.

JUDGE PURCELL: Thank you, Mr. Scardella. The next panel speaker will be Allen Harville.

MR. HARVILLE: Good morning.

JUDGE PURCELL: Good morning, Mr. Harville.

MR. HARVILLE: My name is Allen Harville. I'm with Local 8888 of the USW in Newport News, Virginia, Newport News Shipbuilding and Drydock facility. I've been on the Safety Committee there since 2001. I've been the Co-Chairman of the Safety Committee since 2003.

I started at the facility in 1974. I've been there approximately 40 years now. Our facility is a VPP Star site. The facility is comprised of shipbuilding shipyard facilities with drydock facilities, shipways, outboard docking facilities.

We have assembly platens, shops, machine shops, warehouses, and foundries. Foundries make up a big part of building a ship. You know, the large parts of the ship structure are cast.

The bearing structures for the shafts, the parts of the ship that -- where the shaft comes out of the ship is cast structure. As a result of that, the foundry uses large quantities of casting sand. They actually use it by the ton.

Part of my job on the Safety Committee is our joint committee with the company does monthly inspections, walkthroughs, and that of all the facilities throughout the yard. And it's a large facility.

The yard is about 2 miles long, and that's -- it's about a half a mile wide, and that's just the main facility. And there are a lot of offsite warehouses and facilities. There's some offsite shops. And then there are a lot of satellite machine shops and so forth.

One of the inspections we made at the foundry, of course, resulted in our committee deciding we needed to look into some issues we found there. And so that generated a request for some information on -- monitoring information for the silica sand, what was used, what was being used, who was being exposed and that sort of information.

What actually happened with the request was, the company told us the only way we'd get the request is to sign a nondisclosure statement. We still have not got that.

The reason we asked for the information to begin with is that we were trying to -- we're trying to protect our workers, here. I mean, my job as Co-Chair of the Health and Safety Committee for the Local is to protect my membership.

I've been there 40 years, and I've seen the old workforce come and go, and suffer the health effects of working there at Newport News Shipbuilding, and there are various health effects of working in the industry.

I've seen the old generation come and go with that effects, and I'm seeing the younger generation come in. And what I'd like to see out of the standard is that them be able to take away, and be protected, and not have to go away with, you know, any adverse health effects from this.

JUDGE PURCELL: All right, thank you, Mr. Harville. Appreciate your comments. The next speaker listed on the program is Rami Katrib.

MR. KATRIB: Thank you. Hello, my name is Rami Katrib, and I work in the Health, Safety and Environment Department at the United Steelworkers. I will be graduating in early May of this year with a master of public health, majoring in occupational and environmental health from West Virginia University.

First off, I'd like commend OSHA on the respirable silica proposal. The PEA is very well thought out and comprehensive. But as we've heard, it does leave a little bit of room for improvement.

As we've already heard, many provisions in the PEA such as medical screening and training can be found in other OSHA regulations, and it's time that we see these implemented with regards to respirable silica.

Many of the USW members work in industries such as glass, brick, and foundries. These industries put workers at high potential for respirable silica exposure. It's important that we do everything that we can to ensure that these workers do not suffer excess morbidity or mortality due to their occupations.

I'm here to give a short presentation on what the Health, Safety and Environment Department at the USW was able to determine from our members' workplaces with regards to respirable silica.

We started out by using the North American Industrial Classification System, NAICS codes, to get a comprehensive list of workplaces we represented that had potential respirable silica exposure.

We used NAICS codes that are associated with foundries, brick, and glass, in general industry as well as maritime. We then narrowed the list down to 70 workplaces by only including sites with greater than 174 USW members.

Starting in mid-January of this year, we began sending information requests to the employers of the 70 sites. Up until this past Monday, March 24, 2014, we have received a total of 10 responses to the 70 information requests, providing the sampling we asked for, unfortunately, none of which were from a refractory.

The majority of the employers have neglected to respond, and some have responded by refusing to provide us with any information.

Here are the four questions that we asked in the information requests. We asked for silica exposure monitoring records, summary of how silica is used in the workplace, a summary of the controls used to mitigate the exposure, and if any current or former members were experiencing any silica-related illness.

From the 10 responses we received, a scatter plot was compiled, depicting their exposure history. Each blue data point on the scatter plot represents an eight-hour time-weighted average personal sample taken during various operations within each work site.

The red line on the graph represents the current approximate PEL of 100 $\mu g/m^3$, while the green line indicates the proposed PEL of 50 $\mu g/m^3$.

As you can see from the graph, the majority of the sampling done was well below the current and proposed PEL. Also, a lot of the samples taken were below a feasible 25 $\mu g/m^3$ action level.

Interestingly, as Mike Wright said earlier, three out of the 30 personal samples that you see on this scatter plot, that are well below the 25 $\mu g/m^3$ action level, were analyzed in a laboratory whose vice president testified here saying that they could not report that low with any certainty. The report from the lab made no mention of any uncertainty in the samples that were sent to the employer.

MS. LINDBERG: Excuse me. Sorry to interrupt. If you could just note for the record which slides you're looking at as you go through them, for identification.

MR. KATRIB: Oh, okay. This is -- I was referring to Exhibit 1 when talking about this.

MS. LINDBERG: Thanks.

MR. KATRIB: Yes. Okay, next slide. All right, here is a list of some of the various operations that were included in the sampling reports that we did receive. As you can see, there's a lot of variability in the operations performed in the 10 glass and foundry worksites.

All right. In response to Question Number 3 of the information requests, the employers detailed what types of controls were used to mitigate the silica exposure at their workplaces. Almost all of them reported that engineering and administrative controls were used to reduce their exposure below the current PEL. These controls included dust collectors, local exhaust ventilation, enclosures, misting and work rotation.

As you can see from this scatter plot, which is Exhibit 2, the purple dots represent personal samples which were -- which controls relied solely on respirators. Four of the eight personal samples at or above the proposed PEL reported that they relied only -- solely on either N95 or powered air-purifying respirators, PAPRs, to protect workers, with no mention of any other types of controls.

In conclusion, the majority of employers did not send or refused to send any sampling, medical or control information. It cannot be determined the exact reason why they refused or ignored our information request.

A strong possibility, maybe they have never done sampling for respirable silica due to no current requirement in the standard. It is also possible that they have done sampling but do not want to provide it to us because of being out of compliance.

From the sampling data we did receive, it's clearly obvious that compliance with the proposed PEL and even a potential 50 percent action level is achievable in foundry and glass. It is also clear that numerous well-known labs that analyze the samples are confident in providing employers with sampling results as low as single digits.

Additionally, I'd like to read a couple of quotes that we've -- were in the reports that we received from employers. This is the first quote.

"Within the foundry area, there are a total of five dust collectors controlling external processes and fugitive emissions at the molding, melting and casting and shakeout areas. In all, these collectors capture more than 40 tons of particulate material each week. In addition to these collectors, there are point-collection sources on various hoppers and silos involved in the transfer and storage of sand products."

And this is the second quote. "Many of our operations such as tumbling and shaking are enclosed with exhaust ventilation and appropriate systems for collecting dust. In some cases, people are more integral to the process, such as manufacturing the cores and assembling the molds, sorting and separating cast parts from casting, metal, scrap metal, and finishing, grinding the castings.

"These processes typically have point-source exhaust systems to collect particulates containing the crystalline silica. In addition, we use work practices such as misting and rotation to reduce potential exposures." Thank you.

JUDGE PURCELL: Thank you, Mr. Katrib. The next panel speaker will be Anna Fendley.

MS. FENDLEY: Good morning. My name is Anna Fendley. My comments this morning will briefly cover two areas of the proposed standard. The first is access to qualified industrial hygiene professionals. Concerns have been raised about a lack of access to those professionals, and our union has a unique perspective about a solution to that concern.

Our union recognizes the value and the need of industrial hygiene professionals as a resource; however, we also know that the vast majority of our employers who fall under the requirements of OSHA health standards do not employ an industrial hygienist. Most utilize other safety professionals or third-party industrial hygienists in the assessment and evaluation of workplace occupational health hazards.

The Steelworkers also has a unique perspective on how to achieve industrial hygiene coverage at workplaces that do not employ industrial hygienists. We have worked with employers over the years to provide training to our members, and in some cases to safety managers or plant managers, to serve as industrial hygiene resources.

What we mean is that we take skilled, inexperienced steelworker members, shop floor workers, and provide them with training to understand industrial hygiene sampling protocol.

They then provide resources in a variety of roles in their workplace, including calibrating and setting up sampling instruments pursuant to specified protocol that is determined by the employer, performing air monitoring, properly collecting sampling media and submitting it to laboratories for analysis, receiving sampling results, reviewing them, consulting with resources and making certain that they are understood and interpreted by those who are affected.

And when internal or outside personnel are performing monitoring that our representatives participate in, they make sure that workers are engaged and properly involved.

The training that we provide has been developed by workers, curricula development professionals and occupational health and industrial hygiene persons. The training that we have provided is available to all of our members and to any steelworker employers. And we believe that workers in all workplaces could be trained on industrial hygiene protocol to assist in their workplace.

The second topic that I'd like to refer to is a written exposure control plan. We believe that a written exposure control plan is necessary to any successful employer or workplace. We want each USW employer to be successful, and planning to work around a hazardous or toxic substance is vital.

A written exposure control plan is included in other OSHA standards, such as lead. In general industry and maritime, requiring employers to have an exposure control plan is an important part of a final silica rule. Our written comments detail what we believe should be included in an exposure control plan, and as always, we believe that the employer should require a copy of that plan to be accessible to employees at all times, on all shifts. Thank you.

JUDGE PURCELL: Thank you, Ms. Fendley. The last speaker on the panel is James Frederick.

MR. FREDERICK: Thank you, Your Honor. I am Jim Frederick. I'm the Assistant Director of Health, Safety and Environment with the Steelworkers Union, out of our headquarters office in Pittsburgh, Pennsylvania.

I have been with the Steelworkers Union a little bit over 20 years and have been a Health and Safety Representative with labor unions for about 25 years, spending most of my time working directly with our local unions in the variety of workplaces that previous presenters this morning have talked about, and gaining experience of working with our members around health and safety in those workplaces.

We, as the union, have been strongly supporting OSHA's efforts on the proposed silica standard; however, we believe there's at least a couple of items that need to be discussed this morning in our presentation of areas of concern that we'd like to see added to the final rule.

I'll start with a few comments around medical removal protection. We strongly believe that medical removal protection and multiple physician review should be added to the final rule.

Without medical removal protection and multiple physician review, workers may not participate in screening programs. We'll talk a bit more about this, but again, we know the realities of what goes on in workplaces, and the number of reasons why employers put programs in place that keep workers from participating in things like a voluntary medical screening program.

In performing the review for the comments we're making this morning, we looked at the other OSHA standards from general industry that provide medical removal protection, including lead, cadmium, benzene, formaldehyde, MDA and methylene chloride, and formulated our comments based on some of the information materials from those standards.

What we took away from medical removal protection requirements in general industry OSHA standards is that there are essentially four important points that should be in play in order for medical removal protection to be utilized.

Those include, when exposure and occupational health outcomes are documented, when medical removal protection is necessary to encourage worker participation in medical surveillance, when it's necessary to protect wages and benefits of affected workers, and when removal will medically benefit the exposed and affected worker.

So starting with exposure and occupational health outcomes and when those are documented, the OSHA proposed standard provides for a medical surveillance program to be integrated in affected workplaces.

The medical surveillance program will

provide documentation of occupational health concerns. We've heard this morning and in prior testimony of what a medical screening program will look like, from the proposed standard, and essentially it to some extent, will look like in a final rule.

The USW hopes that OSHA will reconsider the process, as already stated today, and provide for added privacy of the personal medical information, as well as the multiple physician review process. With these additions, silica-exposed workers can opt in to participation in medical screening, and provide their employer with a summary document pertaining to the medical screening results. This will protect the health information of the worker and also be more encouraging to those workers who need to participate.

As we said then, encouraging worker participation in medical screening -- medical surveillance, prior testimony has documented various reasons that workers might not participate in medical surveillance, for fear of job loss, other retaliation, and coercion.

Medical removal protection provides workers with a backstop, and a vastly improved understanding that negative medical results will not result in immediate loss of job, benefits, salary, et cetera as a result of participation in medical screening.

Through the years, there's -- particularly in recent rulemakings, OSHA has heard much information about the various programs in place in workplaces that keep workers from participating in whatever the issue at hand may be. Much of that can be found in the Steelworkers' comments on recordkeeping provided to OSHA earlier this year.

Protection of wages and benefits of affected workers, workers with initial diagnosis of silica-related health effects should be afforded work in an area that has a reduced exposure, and be assured that respiratory protection is not required, should a result of exposure to silica keep them from safely wearing a respirator. In addition, their pay and benefits should be protected.

And a medical benefit for exposed and affected workers; as indicated in prior testimony this morning, removal from additional exposure to silica is beneficial to workers who have been made sick from exposure to the hazardous materials in their workplace. Medical removal protection provides a means for workers to transition to work with no or low silica exposure.

OSHA MRP provisions and other standards provide protections for workers whose health may not improve as a result of the removal, an example of that being in the cadmium medical removal protection, where if a worker is no longer to wear a respirator due to the medical condition, medical removal protection still applies.

So these four items apply to silica too. Silica exposure and occupational health outcomes are documented. Medical removal protection is necessary to encourage participation in medical surveillance. Medical removal protection is necessary to protect wages and benefits of affected workers. And removing affected workers from silica exposures makes medical sense.

OSHA should add medical removal protection provisions to the final rule, based on the medical removal protections in OSHA's cadmium standard. OSHA should also add multiple physician review. The affected worker should be the afforded the opportunity to opt into MRP, and choose a physician for multiple physician review.

I think it's fair to say that anyone in this room, if diagnosed with a serious medical condition, is going to immediately, at least consider, a second opinion, and workers should be afforded the same opportunity to do so in an occupational setting, particularly around a hazard such as silica, that we know that health effects can result in such serious concern.

I'll now switch gears slightly, for just a couple of additional minutes and talk about retaliation of fear, and the things that are keeping workers from participating or potentially will keep workers from participating in the provisions of a final rule on silica.

And those include, in our mind, privacy of medical records, as we've discussed briefly already, multiple physician review access, and provisions for strong enforcement of discrimination for workers.

Privacy of medical records, OSHA should reconsider the provision in the proposed rule to ensure confidentiality of medical information for the healthcare provider, and add provisions for multiple physicians' reviews.

Summary information as well as detailed results should be provided to the worker who's experiencing health effects or occupational illness, without relaying the worker's screening records.

This added protection will increase participation in medical surveillance.

There's no doubt in our experience in other workplaces that workers will be more likely to participate in medical screening if they feel confident that their records will be private and confidential.

Again, in the multiple physician review realm, the primary instance for us is that workers certainly deserve the right to a second opinion, and that the ability for a worker to see an additional physician when necessary provides added protections and increases worker participation in medical surveillance.

A multiple physician review mechanism provides a means to overcome the fear of the employer-physician bias in the medical opinion and increases participation in medical screening.

There's a natural and existing concern by workers in workplace after workplace that our members are in and throughout our country, where workers are concerned with the bias of the employer-hired company physician. And we need to make certain that there are provisions in place to protect workers' rights around those concerns.

And lastly, as we said, the fear of retaliation. Provisions should be included in the final rule for strong enforcement of discrimination and retaliation protection for workers. We need to make certain that workers, if they are discriminated against in any way for participating in this or any other OSHA activity, have those protections.

With that, Your Honor, I believe our panels have completed, and we'll be happy to take questions.

JUDGE PURCELL: Thank you very much, Mr. Frederick. Before we go to questions, I'm going to mark the written testimony that I have and the slide presentations as exhibits. What's the next hearing exhibit?

MS. LINDBERG: We're at Number 77, Your Honor.

JUDGE PURCELL: All right. I'll mark as Hearing Exhibit 77 the written testimony of Alan White.

Hearing Exhibit 78 is the written testimony of Michael Wright.

Hearing Exhibit 79 will be the written testimony of John Scardella.

I'm going to mark Hearing Exhibit 80A as in apple, the hearing testimony of Rami Katrib, and then

80B, the slide presentation that accompanies Mr. Katrib's testimony.

Mr. Frederick, you had a PowerPoint presentation that accompanied your remarks. I'm going to mark that as Hearing Exhibit 81.

And then there were a series of photographs that were displayed during the presentation. They overlapped various witnesses. I'm going to mark that as Hearing Exhibit 82.

(Whereupon, the document referred to as Hearing Exhibit 77 was marked and received in evidence.)

JUDGE PURCELL: And I know there was -- Mr. Tuttle's testimony was going to be submitted after the proceeding. I'll note that as Hearing Exhibit 83. Were there any additional exhibits or testimony that you wish to submit?

MR. FREDERICK: I think that is -- this is Jim Frederick, and I believe that is what we had for this morning. We'll have some additional post-hearing comments --

JUDGE PURCELL: Okay. Thank you very much, Mr. Frederick. Let me see a show of hands from those individuals who have filed a Notice of Intent to

Appear who have questions for the panel this morning. All right, if you would, we'll start in the third row here. I believe --

UNIDENTIFIED SPEAKER: Can I defer to a colleague to go first?

JUDGE PURCELL: All right. The first individual that would like to pose questions, please come up to the lectern. State your full name and your affiliation.

MS. TRAHAN: Thank you, Judge. Chris Trahan with the Building Trades, it's T-r-a-h-a-n. I think my questions are for Alan White. What year did you start working at the foundry?

MR. WHITE: Alan White, 1995.

MS. TRAHAN: And how long had you worked at the foundry before you were diagnosed with silicosis?

MR. WHITE: Fourteen years.

MS. TRAHAN: And you mentioned you had been to multiple doctors. How many doctors have diagnosed you with silicosis?

MR. WHITE: In total, five.

MS. TRAHAN: Have you ever been involved in any industrial hygiene monitoring at your place of employment?

MR. WHITE: No, not in the foundry.

MS. TRAHAN: And before you started work at the foundry, were you exposed to silica in any other work?

MR. WHITE: No, not at all.

MS. TRAHAN: Do you know of workers who've been at the foundry for more than 20 or 30 years?

MR. WHITE: Yes.

MS. TRAHAN: More than 40 years?

MR. WHITE: Yes.

MS. TRAHAN: You transferred jobs when you found out about your illness. Do you think that moving jobs has helped your health?

MR. WHITE: Yes, a little bit.

MS. TRAHAN: Do you feel better after being in the new job, or the same?

MR. WHITE: About the same, yes.

MS. TRAHAN: If your employer offered medical screening programs, with a physician chosen by the company, is that something you would participate in?

MR. WHITE: Yes.

MS. TRAHAN: Would your coworkers participate in that type of voluntary medical screening?

MR. WHITE: Probably not.

MS. TRAHAN: Why not?

MR. WHITE: They don't trust the company.

MS. TRAHAN: Do they know you have silicosis?

MR. WHITE: Yes.

MS. TRAHAN: Do other workers in the plant have silicosis?

MR. WHITE: I don't think they know.

MS. TRAHAN: Do you know if any of your coworkers have health effects that might be related to their silica exposure?

MR. WHITE: Yes. I think so, but I'm not sure.

MS. TRAHAN: And I think this is my last question, Judge. Thank you. Do you believe that there's been a reduction in the amount of dust in the air in your foundry since you started work in 1995?

MR. WHITE: No, not really.

MS. TRAHAN: Okay. Thank you very much.

JUDGE PURCELL: Thank you, Ms. Trahan.

Who would like to go next? Okay, if you'll please come up to the lectern. State your name, and spell your last name for the record.

MS. SEMINARIO: Good morning. My name is Peg Seminario, S-e-m-i-n-a-r-i-o. I'm the Safety and

Health Director from the AFL-CIO. And good morning to all of you, and thank you very much for your testimony.

Some questions, starting with Dr. Markowitz. You mentioned the medical surveillance program that you have been conducting, I believe it is for the DOE energy workers, the Former Worker Program. Do you have any information pertaining to the efficacy of the early lung cancer screening with the CT scan that you mentioned? And could you enter that into the record?

DR. MARKOWITZ: Sure. I can, you know, summarize it here and provide additional detail in writing. 1999, it was published in *Lancet*, an article by Henschke and others, demonstrating that low-dose CT screening among smokers could detect early lung cancers. To the tune of 80 to 90 percent of lung cancers they detected were Stage 1 disease, the earliest stage lung cancer, when lung cancer is curable.

Lung cancer, in the absence of screening, is almost always not curable. Only 10 to 15 percent of times when people present with coughing up blood or shortness of breath, will they be cured of that disease. And Henschke showed that you could exactly reverse those odds.

So in 2000, we proposed, with the Steelworkers, to the Department of Energy and to Congress, to fund us to expand our conventional medical screening program to include a low-dose CT for lung cancer protection.

And over the past 14 years, we've -- with -- we have two scanners. One is in Oakridge, Tennessee, and one is a mobile unit that goes between Paducah, Kentucky; Portsmouth, Ohio; Harrison and Dayton, Ohio, to screen nuclear weapons workers.

We've screened over 12,000 workers, who have had exposure to radiation, to asbestos, to a variety of lung carcinogens, many of whom smoke cigarettes, many of whom quit smoking cigarettes, mostly above the age of 50. And we have detected 105 lung cancers, and 2/3 of them have been early stage disease.

So we have demonstrated that workers, if offered low-dose CT will -- are very interested in this, that they will come back for additional testing. When we see a nodule that we're not sure quite what it is, we ask them to come back at three or six months. And they do come back then. So they're very compliant with this, because they, above all, understand what lung cancer is, what it does, and how it kills.

We've done this not in the tertiary care medical centers, where it was proven otherwise to work, that is to say, Cornell or Memorial Sloan Kettering or Roswell. We've done this in Paducah, Kentucky and Portsmouth, Ohio and Oakridge, Tennessee.

So clearly it's feasible. Clearly workers are motivated and interested and will participate. They just need to be educated about its utility and be offered the scan.

MS. SEMINARIO: You recommended in your testimony that OSHA include low-dose CT scans in the final rule, and you suggested that these begin at the age of 50. At what frequency would you propose that these low-dose CT scans be conducted?

DR. MARKOWITZ: So for the purposes of detecting nonmalignant disease, that is to say silicosis, every three years is fine. The -- frankly, for lung cancer, no one knows the optimal interval. It's not three years. It's less than three years. It's probably a year, maybe a year and a half.

And so the way I think, to deal with that, is to have the licensed healthcare provider have the discretion, for workers who have exposure to silica but also other risk factors for lung cancer, to order a low-dose CT at a more frequent basis than every three years. That would be for detection of lung cancer. For nonmalignant disease, every three years is fine.

MS. SEMINARIO: Okay. On the question of -- or the issue of silica-related disease, and workers who are presenting symptoms of various silica-related disease, is it possible that they will be diagnosed as having, you know, something other than silica-related disease? Are there problems with the diagnosis of occupational diseases, in your experience?

DR. MARKOWITZ: In general, yes. Physicians are more ready to obtain information about more common exposures like cigarette smoking, and they're more readily apt to ascribe chronic lung disease to cigarette smoking.

But silicosis is certainly well described. It's well known. And the key, really, is for certain counters to incur, that a counter is that the worker is discussing with the physician their history of exposure to silica or other occupational exposures, and secondly that the physician has some experience, some expertise in diagnosing silicosis or other pneumoconioses.

MS. SEMINARIO: But is it possible that a silicosis victim will be misdiagnosed with something -- you know, some other condition?

DR. MARKOWITZ: Oh, sure. Sure. I mean, there are other causes of rounded opacities in the lungs, and without the information about silica exposure, a physician is likely to attribute it to idiopathic, meaning I don't know. So I'm sure it happens, and the statistics we have about the number of cases in a country, the hospitalizations, mortality, I'm sure, are underestimated.

MS. SEMINARIO: Thank you. A question for Michael Wright. As you indicated in your testimony, you personally, and the Steelworkers as an organization, had been involved in, with the development of many OSHA standards, you know, going, you know, way back to the beginning of the Occupational Safety and Health Act, including coke ovens, lead, arsenic, hexavalent chromium. Just go down the list, particularly in the area of the major health standards.

And as you mentioned, in many of those --

with many of those standards, there were estimates by employer organizations who claimed that the standards were infeasible, would be so costly to put industries, entire industries out of business.

The Steelworkers represents workers in a lot of these different sectors. There have been changes in the manufacturing sector, a lot of other things going on the economy. But has it been the Steelworkers' experience that after these standards have been applied, that they have had the kind of impacts that the industry has claimed?

Were they responsible for shutting down the steel industry, responsible, you know, for, you know, for other adverse economic impacts that were claimed by the industry when they were proposed?

MR. WRIGHT: Well, the best example is probably the very first. One of our predecessor unions, the Oil Company and Atomic Workers participated pretty heavily in the vinyl chloride hearings.

And during that rulemaking, several fairly prestigious research organizations brought in testimony based on extensive studies that showed that if OSHA set a 1 ppm vinyl chloride limit, it would be impossible to comply with. The industry would go out of business, and the very best case scenario is, the price of the plastic would more than double.

What happened, after OSHA ignored those warnings and went ahead, was the industry stayed in business, became more profitable, and the price of the plastic was actually reduced. Some of that was economic conditions. Part of it was, the standard actually induced improvement in the work process that actually saved companies money.

So that's the first example, and there are others. We were -- there were predictions of doom in the steel industry from the coke oven standard. We would never make coke in this country again. And we're still making coke in this country.

And the steel industry is in some economic difficulty now, due to things like imports, but it has nothing to do with their safety and health, or even their environmental obligations.

So we have never seen one of these predictions come true. We are still -- where industries have thrived or failed, it has not been because of safety and health regulation. It's been because of market forces.

MS. SEMINARIO: Just one last question, somewhat related to this area, and that has to do with the impact of OSHA standards on productivity. And there has been some discussion, and I believe in OSHA's PEA, their economic analysis, that they include an adjustment for a loss of productivity due to the standard.

And I won't ask them why that is included in there, but that has also been the claim of a number of the employer groups, that this standard will basically reduce productivity. Has it been your experience, again, based upon either individual standards or changing conditions in workplaces, when exposures are reduced, controlled at their source, a healthier environment, does that reduce productivity or increase productivity?

MR. WRIGHT: It does both, depending on the circumstances, if you define productivity as the output per person-hour. But in the steel industry, for example, we've had major environmental regulations over the past, say, 30 years. We've had several safety and health regulations which greatly impact the steel industry. Coke ovens is one, benzene is another.

And yet, the industry measure of productivity, which is person-hours per ton, has been -- per ton of steel produced, has been greatly reduced during those 30 years, by almost an order of magnitude.

MS. SEMINARIO: Thank you.

JUDGE PURCELL: Thank you, Ms. Seminario.

MR. WRIGHT: Can I -- before you sit down, can I answer a question that you previously asked one of the other participants? And that is about misdiagnosis.

We've -- part of why we're so keen on a three-doctor review mechanism is because we've seen, in some cases, what we believe to be deliberate misdiagnosis, by physicians acting for the company.

I would like to think that every physician acts completely ethically. But in one case, at least, we've got fairly dramatic evidence that it's not always true. That case is occupational noise exposure.

There's an unfortunate part of the OSHA record-keeping rule, which says that if an occupational -- if a physician or other health professional, acting for the company, decides that a hearing loss case is not occupational, the company doesn't have to record it.

We've got some plants where there's high noise exposure, and a lot of recorded hearing loss cases. We've got some with equally high exposure, where there has never been a hearing loss recorded, because in every instance, the occupational physician acting for the company decides that it's hunting, it's listening to rock music, it's yelling at your kids, everything they can think of besides occupational noise exposure.

We have some cases where workers have been compensated for hearing loss under the workers' compensation system, which operates by different rules. And yet, those cases have not been recorded.

Under the current standard, that's legal -- unfortunate, but legal. So that's why we think that the unbridled discretion of a physician or other health professional acting for the employer is a bad idea. That's not just misdiagnosis due to medical complications. That's deliberate misdiagnosis, and we want to make sure that the standard doesn't empower that.

MS. SEMINARIO: Thank you.

JUDGE PURCELL: Thank you, Mr. Wright. Next questioner, please identify yourself for the records. Spell your last name.

DR. MIRER: Frank Mirer, M-I-R-E-R, CUNY School of Public Health, and consultant to the AFL-

CIO. First I wanted to say -- I used to work for the UAW, and we brought witnesses from the local unions here.

And I want to say to Mr. White and Mr. Harvette [sic], I understand it's scary, but it's a tremendous contribution the record and our understanding of what's happening in the workplace to have people like you do this.

And so now I want to ask the question, let's start with Mr. Harvette. Would you agree with the proposition that every worker, given their seniority and skills, is in the best job they can get?

MR. HARVILLE: This is Allen Harville. Possibly yes, they are. Sometimes they're in the best job that they know they can get.

DR. MIRER: Okay.

MR. HARVILLE: Not necessarily in the best job they can get, but in the best job they know they can get.

DR. MIRER: And what's the most likely result if that worker goes to company medical and discloses increasingly severe symptoms from an exposure on the job they're in? What would happen? Would they be transferred?

MR. HARVILLE: In some cases they could be, yes.

DR. MIRER: So they'd be worse off, in their view?

MR. HARVILLE: Yes, possibly. Yes.

DR. MIRER: Okay. So I'd like to ask the same questions to Mr. White as --

MR. WHITE: Alan White. What was your question again?

DR. MIRER: Well, the first question is, are people in the best job they can get in the shop? And if they disclosed symptoms to manage -- well, we already know what happened to you, but if they disclosed symptoms to a management physician, would they likely be transferred to another job?

MR. WHITE: Well -- this is Alan White. Usually they're in the best job they can get at the time, because of seniority. And more than likely, they would be removed from that job post haste if they went to the company and said, you know, I'm getting sick or I'm having difficulty doing my job.

DR. MIRER: Okay. Thank you very much.

MR. WHITE: You're welcome.

DR. MIRER: So for Mr. Scardella, do you think training for silica, in particular where we have exposure measurements, training for silica for workers should include discussion of the exposure levels and specific measures and work methods which will reduce exposure?

MR. SCARDELLA: Absolutely. John Scardella. Absolutely. I think it's vitally important for workers to understand what the exposure or the potential for exposure is, and with that understanding, know that in fact, monitoring is an important factor, being -- knowing that in fact, those exposures are below the PEL. And I think that's a very important factor in the educational process.

DR. MIRER: Well, above the PEL would have impact, too. But do you -- in your experience, are regular rank and file workers capable of interpreting industrial hygiene numbers if they're properly explained?

MR. SCARDELLA: Absolutely. We do it all the time. We do it in any type of exposure that is part of our training curriculum. That is included.

DR. MIRER: Okay, thank you. Ms. Fendley, do you have confidence that hourly workers, people without college degrees going through your training program are capable of conducting industrial hygiene sampling and appropriately interpreting the results?

MS. FENDLEY: This is Anna Fendley. Yes, I am very confident that that's possible.

DR. MIRER: Yes. We always thought that our IH techs in the UAW were better at it than the management people, because they knew the job better. It's --

JUDGE PURCELL: Mr. Mirer, if you would, just ask questions please.

DR. MIRER: Sorry. So, do you think hourly people are better than management?

MS. FENDLEY: I think they can be, yes. Yes. They have a more intimate knowledge of the shop floor and the places where exposures are possible.

DR. MIRER: Okay. And, finally, both for Mr. Mike Wright and Jim Frederick, compared to the atmosphere in the workplace in 1976 or so when we were first talking about medical removal protection, is the atmosphere of intimidation and fear in the workplace for raising health and safety problems, is that better now, or worse now, than it was then?

MR. WRIGHT: I think in many ways it's worse.

JUDGE PURCELL: Wright?

MR. WRIGHT: Sorry. Michael Wright, and

I'm a little too far away from the -- a little too close to the microphone. Let me try that again. I think in many ways it's worse.

MR. FREDERICK: So -- and this is Jim Frederick. I'll just add to that, although I cannot provide personal experience from the middle 1970s, I certainly can, in the last 20 years, provide the experiences that I've had working with the Steelworkers Union and our members across North America.

I never thought, as a health and safety professional going to work for a union, that I was going to spend as much time as I do on any given day, dealing with workers that are treated horribly and are persuaded not to participate in health and safety for some reason.

And, again, we've provided a significant amount of information to OSHA in the past on this issue, again referencing back to -- most recently to the recordkeeping comments that we submitted earlier this year. But we spend a tremendous amount of time, of our department in -- out of the international union at the Steelworkers, I would estimate that on any given day, one or two of our staff are spending much of their day working on issues with our members specifically pertaining to the comment of your question.

DR. MIRER: And last question for my colleague from CUNY, Steve Markowitz, could you say something about how -- about the notification of results from the DOE screening that you conduct, who gets the report and how you recruit people to take these exams?

DR. MARKOWITZ: Sure. We're based in New York City, but we have under contract, clinics around the country who perform a medical protocol that we, in collaboration with DOE, dictate.

We get all the medical results from those examinations, and those are summarized and sent directly back to the participant. And they're shared -- if the participant has given written authorization, then they're shared with the personal physician of that participant. So certainly the DOE contractor, the DOE doesn't get any of that information at all.

DR. MIRER: So the DOE and the worker's employer don't get the report unless the worker decides to give it to them?

DR. MARKOWITZ: That's correct. That's correct. And we would have no -- you know, we would have no idea, actually, whether the worker ever decides to do that or not, to share it with the employer or use it for whatever purpose, actually.

DR. MIRER: So this is the way it's done when --

JUDGE PURCELL: Mr. Mirer?

DR. MIRER: Sorry. I'll go.

JUDGE PURCELL: Thank you. Thank you, Dr. Markowitz. Next questioner?

MS. NADEAU: My name is Liz Nadeau, N-a-d-e-a-u, and I'm with the International Union of Operating Engineers. My first question is for Allen Harville. What are the final products produced in the shipyard, and does building such large vessels require the foundry to produce large castings?

MR. HARVILLE: Allen Harville. Our final product, we build the -- right now we're building the Ford class aircraft carrier. We're overhauling the Nimitz class aircraft carrier. We're decommissioning the *Enterprise*, and defueling the *Enterprise*.

We're building, in a partnership, the Virginia class submarine program, with Electric Boat. We're in a partnership with them to build the Virginia class. We're currently building the *John Warner* and the USS *Washington*.

And as for your second part of your question, does that cause a foundry to build large pieces, cast large pieces? Absolutely. The bow piece on a aircraft carrier is a cast piece. The outboard bearing support for the shaft is a cast piece.

The hatch for the submarine and where it integrates into the hull is a cast piece. The tail section of the submarine is a cast piece. Those pieces, in some cases, are 40 feet long.

MS. NADEAU: Thank you. And to clarify -- same person, you stated that you are an OSHA VPP site and you requested silica exposure information but have not yet received it. Did I really understand this correctly?

MR. HARVILLE: Allen Harville. Yes, ma'am, you did understand that correctly. We gave the company a written request for information on the same request that Mr. Rami gave us, had requested the same criteria, you know, what's being used, monitoring data, has anybody been exposed, that sort of stuff.

You know, we asked for that information in writing to the company. I presented it to the director of O27's health and safety. We got a answer back at our monthly meeting that they needed a letter of nondisclosure signed by us from the company, stating that they had custody of the information, that we would not be allowed to get custody of the information.

We could see it. We couldn't copy it. We couldn't write it down. We couldn't make any notes. And if we disclosed it, we'd be terminated, that suing us wouldn't be enough. They would terminate us on site.

MS. NADEAU: Do you know workers who have been at the shipyard for more than 20 years or 30 years or 40 years? What are the greatest lengths of time that you know about?

MR. HARVILLE: Allen Harville. I've got -- right now we have a big hiring push on, because of the increase in production for the new class of carrier and submarine. I've got employees from one day to 50-plus years.

MS. NADEAU: And how -- are there a good many that are toward the more than 30 years, or?

MR. HARVILLE: I would say, right now we're about 60 percent 15 years and below, and 20 years to 40 years is probably 15 to 20 percent, and probably 5 percent with 30 years or more, 30, 40 years, 45 plus.

MS. NADEAU: Thank you. And do you know

any workers from the shipyard who have silicosis or other lung-related silica diseases?

MR. HARVILLE: We weren't given that information.

MS. NADEAU: All right. And has there been a reduction in the amount of dust in the air in the foundry in the past 20 years?

MR. HARVILLE: Not that I'm aware of.

MS. NADEAU: All right. My next question is to Mr. --

UNIDENTIFIED SPEAKER: Katrib.

MS. NADEAU: Katrib. Why did you select sites with more than 174 workers?

MR. KATRIB: Well, after we compiled the list of -- a comprehensive list of all the foundry, brick and steel -- or -- yes. So anyway, we got a comprehensive list, and we wanted to show sites that would represent the majority of our workers.

So we picked ones that had -- it's not the total workers that they have, necessarily, it's just the ones -- 175 or more of our actual members. And we found that that was going to be best representing what our workers are experiencing.

MS. NADEAU: Will you be able to provide additional sampling data received between now and the post-hearing comment period with your post-hear comments?

MR. KATRIB: If we receive more, because we still are -- actually we received one yesterday. It was too late to put into the PowerPoint. But as we receive them, we will add them to the post-hearing comments, and make a composite list of all of them.

MS. NADEAU: Okay. Do any steelworkers utilize an exposure limit below 100 micron cubes --

MR. KATRIB: Micrograms?

MS. NADEAU: Micrograms, yes.

MR. KATRIB: Actually, yes. We have foundries in Canada that we represent, and they use below -- they use 50 or below, just depending on the province.

MS. NADEAU: Okay. And final question for Jim Frederick, are workers fearful of retaliation based on their participation in the OSHA silica rulemaking process?

MR. FREDERICK: This is Jim Frederick, and yes, we worked with a number of other local unions across the steelworkers who were -- had some interest in participating in the hearings with us, however for a variety of reasons decided it was in their best interest not to, for fear of retaliation when they came back to work.

Mr. White has described some of what he has experienced as a result of being an activist on this issue, and trying to assist in a process of better health protections in his workplace. So certainly, yes.

And just as a quick aside, or a quick addition to Mr. Katrib's last answer, we also have one employer in North America, a global employer, who recognizes a standard of half of the current OSHA permissible exposure limit. They recognize 50. And that is Alcoa.

So we certainly have workers in both the United States and Canada that have workplaces with levels, permissible exposure limits below the current 100 $\mu g/m^3$.

MS. NADEAU: Thank you.

JUDGE PURCELL: Thank you, Ms. Nadeau. Next questioner, please state your full name for the record and spell your last name.

MR. KOJOLA: Good morning. My name is Bill Kojola, K-o-j-o-l-a, and I'm here for the National Council for Occupational Safety and Health. And I have one question for Mr. Harville, a couple of questions for -- on hierarchy of controls for either

Mike Wright or Jim Frederick, and then a couple of questions for John Scardella about training.

So I'll start with you, Mr. Harville. Just a moment ago you gave sort of a percentage breakdown of the age structure of your workforce in Newport News. Could you tell us for the record how many workers are we talking about, who work in your facility?

MR. HARVILLE: Allen Harville. Currently right now we have somewhere between 11,500 and 12,000 union-eligible workers at the shipyard.

MR. KOJOLA: Okay. So the proportions or percentages that you gave would apply to the 10,000 or 11,000 workers that are working in that facility?

MR. HARVILLE: Yes, sir. That's correct.

MR. KOJOLA: Okay, Thank you very much. Now I'd like to turn to several questions about hierarchy of controls, and I can address it to Mike or Jim, it doesn't -- it's your --

MR. WRIGHT: I'll start.

MR. KOJOLA: Okay, great. Thank you, Mike. So is it your understanding that what's known as the hierarchy of controls, is that not an ordered, sequential preference of controlling a worker exposure to hazards, beginning first with the elimination of the hazard, at the top of the hierarchy, followed by substitution with something less hazardous, then using engineering controls, administrative controls?

And then, lastly in the hierarchy, and sort of the last control measure that should be selected in the hierarchy is the use of personal protective equipment such as respirators. Does that adequately describe what the hierarchy is?

MR. WRIGHT: Yes.

MR. KOJOLA: Okay. So this proposed OSHA silica standard, just like all existing OSHA standards for chemical hazards, incorporates the --

JUDGE PURCELL: Mr. Kojola, let me stop you there. I think you can ask your questions a little more succinctly. It sounds more like you're testifying than asking questions.

MR. KOJOLA: Okay. All right. The proposed OSHA standard for silica incorporates this control hierarchy by requiring employers to first use feasible engineering controls and administrative controls, and then lastly, if those are not effective, then to use respiratory protection. Does the Steelworkers support this exposure control measure in the proposed silica standard?

MR. WRIGHT: Yes. We always have, in every previous standard, and we see no reason to change now. That's the best way to protect workers.

MR. KOJOLA: Okay. So for operations that generate large quantities of dust with high exposures to respirable silica, an engineering control approach like a local exhaust ventilation system would capture silica at the source of its generation, would it not?

JUDGE PURCELL: Mr. Kojola, again, you're testifying. If you have a question, please ask it.

MR. KOJOLA: Okay. An engineering control system like a local exhaust ventilation system would control exposure at the source, would it not?

MR. WRIGHT: Yes, it would. And that's actually a little ways down the hierarchy of controls. In some cases, we can control silica exposure by removing the silica. That's been done to a large extent in sandblasting, for example.

There still is some sandblasting that goes on in our workplaces, but mostly it's been replaced by blasting with other media that don't involve silica exposure.

And as you move down the hierarchy, you come fairly quickly to engineering controls. Ventilation is a very good one, and that can be applied, both on a very, very large scale, with very large ventilation equipment like we use in the steel industry, which basically removes contaminants from whole furnaces, down to, for example, in grinding and in some places where you're essentially grinding the sand off of a cast piece, the grinders can be equipped with ventilation systems on the hand-held grinder. So it's an effective control, really, at all levels.

MR. KOJOLA: So a local exhaust ventilation system would limit exposures to all workers engaged in an operation; isn't that true?

MR. WRIGHT: And it would, in fact, limit exposure to other workers as well, because there may be workers who are, for example, doing grinding on a piece. The ventilation system protects them, but it protects everybody else in the workplace who might breathe in the silica that escapes from that operation, were it uncontrolled.

MR. KOJOLA: So those would be the bystander exposures --

MR. WRIGHT: Yes.

MR. KOJOLA: -- those not necessarily engaged in the operation?

MR. WRIGHT: Yes.

MR. KOJOLA: And so, you know, you could have one local exhaust ventilation system --

JUDGE PURCELL: Mr. Kojola, attorneys like to ask leading questions all the time, that responses are just yes or no, and that's essentially testifying. Please limit your questions to questions, and let the panel respond to those questions.

MR. KOJOLA: The -- so in that situation, then, as you described, that would -- the local exhaust ventilation system would protect a number of workers; isn't that correct?

MR. WRIGHT: Yes, yes.

MR. KOJOLA: Those involved in the operation and those who may be as -- exposed as bystanders, is that correct?

MR. WRIGHT: Yes, as of course, would substitution. The place where you start protecting only the individual worker and not getting the residual benefits are when you start applying, to some degree, administrative controls, but certainly personal protection is a very individual thing.

MR. KOJOLA: Now, if you took that same operation that generated silica and you, instead of using a local exhaust, you put workers in respiratory protection, would every worker exposed have to be in a respirator?

MR. WRIGHT: Well, under the law, every worker -- well, first, if they could not control the situation down to the applicable and -- I'm sorry, down to the applicable permissible exposure limit, then everybody who is exposed above the permissible exposure limit would necessarily need to be in a respirator.

The -- and let me say, the way the hierarchy works is even if you, in the end, need respirators, you still need to do all of the other stuff, because the less load that respirator sees, the less dust it has to contend with, the more effective it's going to be. So --

MR. KOJOLA: So if there was no exhaust ventilation system, no engineering control, and workers were given respirators, you would need to put a respirator on every worker that was exposed; is that correct?

MR. WRIGHT: Well, the first thing we would need to do is have a frank discussion with the company about the other things they could do. And that frank discussion might be accompanied with an OSHA complaint.

But, again, assuming that you can't control it any other way, you can't get down to the PEL any other way, people, yes, need to be in respirators.

MR. KOJOLA: Okay. Thank you very much.

JUDGE PURCELL: Thank you, Mr. Kojola. And any further questions for the panel? Please state your full name and spell your last name for the record.

MS. WINNETT: Nicole Winnett, W-i-n-n-e-t-t. I'm here on behalf of my colleagues, Brad Hammock and Henry Chajet, who represent the Construction Industry Safety Coalition as well as the U.S. Chamber of Commerce.

JUDGE PURCELL: Thank you, Ms. Winnett. And who are your questions for?

MS. WINNETT: Mr. Katrine?

UNIDENTIFIED SPEAKER: Katrib.

MS. WINNETT: Katrib. I would like to know a little bit more about the sampling data that you were able to collect from employers. How many employees or samples does the PowerPoint represent?

MR. KATRIB: This is Rami Katrib. I don't have the exact number, but each sampling data was returned from a lab, and each -- some people had 4 personal samples, some people had 10, just depending on how many people they sampled.

MS. WINNETT: And were all of the samples personal breathing zones, or were some of them areas --

MR. KATRIB: Yes. All those -- they were area samples in the reports but I left those out. I just wanted the personal samples.

MS. WINNETT: And then were all samples based on a eight-hour time-weighted average?

MR. KATRIB: Yes they were.

MS. WINNETT: And do you know anything about the activities the employees were performing, other than their job position?

MR. KATRIB: A lot of them, just, the labs just -- or the employer just outlined what the actual job position was, didn't mention, you know, oh, industrial hygienist watching them for, to see what they were doing all day. But they just said that they were doing this type of position.

MS. WINNETT: So you don't know if there were any special activities that the employee was performing on the day of sampling?

MR. KATRIB: No, we wouldn't know that.

MS. WINNETT: And you wouldn't know if there was any down time, so to speak, where the employee was not necessarily exposed to silica during the work day?

MR. KATRIB: No, we wouldn't know that. But that's probably what -- that's what the point of a eight-hour time-weighted average.

MS. WINNETT: And my understanding is, based on the request that you made to the employers, that it only covered members where you had 174; is that correct? Members?

MR. KATRIB: 174 or greater.

MS. WINNETT: So that -- your request wouldn't have assumed, or wouldn't have requested information from smaller businesses?

MR. KATRIB: No, they wouldn't have.

MS. WINNETT: And my --

MR. FREDERICK: But to clarify, smaller than 174?

MS. WINNETT: Well, no. I mean --

JUDGE PURCELL: Please identify --

MS. WINNETT: -- yes, 174 members.

MR. FREDERICK: Sorry. That was Jim Frederick with the question.

MS. WINNETT: Like, where your members are smaller, so for instance, a smaller foundry or those kinds of things.

MR. KATRIB: Yes. And the data was for our membership, the United Steelworkers membership at a facility of that number and higher. It's not reflective of the total number of employees at the facility that are not part of the bargaining unit --

MS. WINNETT: Sure.

MR. KATRIB: -- in question.

MS. WINNETT: I understand. So I guess my question was trying to get at, is the fact that you didn't necessarily request samples from smaller businesses, such as people who have less than 100 employees?

MR. FREDERICK: We did not ask for information for less than 100 employees. Your Honor, I have one point of clarification I wanted to ask. I'm not sure that the questioner is -- has a Notice of Intent to Appear.

MS. WINNETT: I am here representing the Construction Industry Safety Coalition, which did file a notice of intent. Brad Hammock, my colleague who could not be here today, testified actually on Monday, as well as the U.S. Chamber of Commerce and my colleague, Henry Chajet, who testified last week.

MS. LINDBERG: Your Honor, we have no objection to her asking questions.

JUDGE PURCELL: All right, I'll allow it, Ms. Winnett.

MS. WINNETT: Thank you.

JUDGE PURCELL: In the future, please let me know ahead of time that you're not the individual that filed a Notice of Intent to Appear.

MS. WINNETT: Your Honor, I did mention that I was here representing Brad Hammock and Mr. Henry Chajet at the beginning of my testimony.

JUDGE PURCELL: Well, I didn't understand it to --

MS. WINNETT: Okay. I apologize.

JUDGE PURCELL: -- mean that you hadn't filed a Notice of Intent to Appear. Thank you.

MS. WINNETT: Apologize. My understanding is -- based on the testimony today, is that you're saying -- you guys, the union, the United Steelworkers Union is saying that because there was a laboratory that reported at 25 $\mu g/m^3$, that you believe that it's technologically feasible, and that the sampling error -- that there's no sampling error at that rate?

MR. KATRIB: Well, as I said, that a lot of the laboratories --

JUDGE PURCELL: Mr. Katrib, please

identify.

MR. KATRIB: Oh, sorry, Rami Katrib. A lot of the laboratories reported well below the 25, and some even in the single digits of micrograms per cubic meter. And I searched all the lab reports and none of them mentioned anything about any inconsistency, any error. They reported that back to the employer as a confident sample.

MR. WRIGHT: Let me add to that -- this is Mike Wright, we did think it was ironic that one of the industry witnesses who said you could not reliably sample below 25 runs a laboratory that submitted results below 25 to one of its clients and said nothing about it being unreliable.

MS. WINNETT: But that doesn't necessarily --

MIKE WRIGHT: Presumably charged them for the service as well.

MS. WINNETT: But that doesn't necessarily mean that the sample data is -- that there is not a sampling error.

JUDGE PURCELL: Ms. Winnett, ask questions, please.

MR. KATRIB: No. Yes, this is Rami Katrib. It does not.

MS. WINNETT: And OSHA recognizes that there is error at trying to sample at that low of a level.

JUDGE PURCELL: Ms. Winnett --

MR. FREDERICK: We can't answer OSHA questions.

JUDGE PURCELL: Is that a question?

MS. WINNETT: Do you agree that OSHA has asserted, in the proposed rule, that it is technologically infeasible to sample at that level -- or that there's sampling error. I apologize. That there's sampling error.

MR. FREDERICK: This is Jim Frederick. That was not part of our testimony, either in our written comments or our presentation today.

JUDGE PURCELL: All right, Ms. Winnett, do you have any further questions regarding the testimony provided by the panel this morning?

MS. WINNETT: I would like to ask Ms. Anna Fendley.

MS. FENDLEY: Yes.

MS. WINNETT: Can you speak to the amount of hours that it would need to train someone in order to perform these IH services that you spoke about?

MS. FENDLEY: This is Anna Fendley. I am

going to defer that question to Jim Frederick.

MS. WINNETT: Okay, sure.

MR. FREDERICK: This is Jim Frederick. I actually oversee the training program in question for the union, and it has varied over the years. There has not been one set amount of time that we have done that. In some cases it has been as short as one week of training for a group of workers and managers to return to the workplace and participate in the process of air sampling.

In other cases -- excuse me, in other instances, in some of the other training, it has been multiple weeks of training performed over multiple years in order for those workers and their employer to feel comfortable for those workers to do, to perform the air monitoring, from calibration setup, monitoring itself, and then returning the media to the laboratory.

MS. WINNETT: Okay. Thank you. And would that amount of training need to be considered in the cost of the rule, you believe?

MR. FREDERICK: Again, that's not part of our testimony today, nor in our written comments. We are only providing an example of what we have experience with, with our members and our employers.

Much of that cost has been done -- has been absorbed by the union, proper, and our training entity, the Tony Mazzocchi Center, not the employer.

MS. WINNETT: And --

MR. WRIGHT: May I add to that? This is Mike Wright. I think it's clear that our employers have found that cost effective, when it comes to the difference between doing it that way and hiring an outside consulting industrial hygiene for -- so it is a cost-effective method for doing the required monitoring.

MS. WINNETT: Does the United Steelworkers, did they consider the cost of adding medical removal provision to the rule?

MR. FREDERICK: The purpose of our comments on medical -- this is Jim Frederick. The purpose of our comments pertaining to medical removal protection has been our comments of the Steelworkers, in an effort to ensure that we are properly representing our members to the best of our ability, and seeing what is necessary for this standard to be effective in workplaces.

Again, as indicated on the prior couple of questions, we certainly did not include that information in our written comments nor in our testimonies today pertaining to the cost benefit.

MS. WINNETT: Thank you. And -- all right, well, I was curious if you could speak to -- and this will be my last question, speak to the training that the United Steelworkers provide on silica to your members.

MR. FREDERICK: Again, this is Jim Frederick, and perhaps John Scardella should add to this if I leave anything out, but again, I have the, kind of the responsibility from the union to oversee the training program and the work of the Tony Mazzocchi Center.

We certainly have provided information through training to our members on silica. In fact, prior to leaving the hotel lobby this morning, I was talking with brother Harville about training that I am scheduled to come to his facility and perform in June, specifically on a number of items, one of which is silica.

What we have is our members have a need for this training. However, what we do not have is a demand and the ability from our employer counterparts to put our members into a classroom to receive the training at this juncture.

So where we are able to provide training to our members on silica is on their own time, at the union hall, in the evenings and on the weekends when they're off work, and to a very little extent in the workplace, in a labor-management setting.

JUDGE PURCELL: Mr. Scardella, anything you wanted to add to that?

MR. SCARDELLA: No thank you.

JUDGE PURCELL: Okay. Thank you, Ms. Winnett.

MS. WINNETT: Thank you.

JUDGE PURCELL: And just as a point of order, let me make it clear that questions of the panel or the individuals providing testimony are allowed for individuals who have filed a Notice of Intent to Appear.

If you want to ask questions and have not filed a notice, let me know. And if we have time at the end of the day, then that will be permitted. But please limit your questions to those individuals who have filed a Notice of Intent to Appear. Questions from the OSHA panel?

MR. PERRY: Yes, Your Honor, we do have some questions for the panel. But first, just let me, on behalf of the Agency, thank the Steelworkers panel for appearing today and providing testimony, and particularly Mr. Harville and Mr. White. It's always very valuable for OSHA to hear from workers who will directly benefit from regulations, to hear about your experiences. So I thank you for that.

So we'll begin our questioning with Ms. Iannucci.

JUDGE PURCELL: And that was Mr. Perry talking, by the way.

MR. PERRY: Pardon?

JUDGE PURCELL: That was Mr. Perry talking, by the way.

MR. PERRY: Yes, I was. Sorry, Bill Perry.

MS. IANNUCCI: Hey, this is Annette Iannucci. Good morning, and thank you again for testifying. My first question is, goes towards Alan White or Dr. Markowitz. Would you expect that a person diagnosed with silicosis but not experiencing any symptoms yet would be impacted, that this would have an impact in their life?

MR. WHITE: This is Alan White. Yes.

MS. IANNUCCI: Could you please explain how you think that would affect a person's life?

MR. WHITE: Well, it happens slowly, but it will affect them as they try to do a hard task like, you know, exercise or walking long distances or, you know, and it's a slow and gradual process. So it will impact them, maybe not by next Tuesday, but it will.

DR. MARKOWITZ: Steven Markowitz. Let me comment. So a person with early silicosis won't necessarily have symptoms or even know they have silicosis unless they've had a chest x-ray and had it correctly diagnosed.

But that person may not have symptoms, or they may have symptoms only if exercised in some way. But let's say they have no symptoms whatsoever. They've gone from being a well person to an ill person, and I think this would have an enormous impact, actually, on how they see themselves and how they see their future, actually.

Silicosis is generally a progressive disease. It is usually relatively slowly progressive. But it means the person so diagnosed will look to the future knowing that they are likely to get worse over time, are likely to need to curtail their activities, and in fact, probably sooner rather than later, certainly curtail their exposures and take protective measures. So I think it would have enormous impact even though -- even without symptoms.

MS. IANNUCCI: Okay, thank you. I'd now

like to look at the issue about medical privacy. There's some things in the proposed standard such as letting the employer know if somebody needs to see a specialist, or some things suggested to us such as providing the employer with information on restrictions on respirator use, or maybe a need to see a second doctor under multiple physician review.

Is this enough information alone to cue the employer in that there may be a problem with the employee? And if so, what advice could you give OSHA for addressing this?

DR. MARKOWITZ: Steven Markowitz. I think you're right. It could tip off the employer that there is a concern, although frankly, a consultation with a specialist is still in the process of identifying whether there is a real problem or not. So it doesn't necessarily mean that the person has an illness or not.

I think that if OSHA were to pull back on its proposed language about what the provider tells -- can tell the employer, pull back to only communicating with the employer either nothing, or whether the person is fit to do the job, then that would be a different context in which to view whether the provider wants to consult with a specialist or not, and in that sense, I think would give relatively minimal information.

MS. IANNUCCI: Okay. And my next question is to Mr. Frederick. Could you please describe how medical removal protections work under union contracts?

MR. FREDERICK: Do you mean the OSHA requirements in a union workplace, or other, outside of existing OSHA standard removal?

MS. IANNUCCI: Outside of existing OSHA.

MR. WRIGHT: We actually have three doctor review mechanisms.

JUDGE PURCELL: Mr. Wright.

MR. WRIGHT: I'm sorry, Michael Wright. We actually have three doctor review mechanisms in some of our labor agreements. They work about like OSHA does. They're -- if a worker gets a particular diagnosis or a particular restriction from a company doctor -- or doesn't, in some cases, but thinks they should, they have a right to go to a second physician.

And those two physicians, if they disagree, have the obligation to refer it to a mutually agreed third physician. And those -- some of those agreements predate the three-doctor-review mechanism in the OSHA standards.

Medical removal protection usually operates where somebody is removed to a different job in the company because of exposure in a particular job. Their wages and their benefits are protected as if they remained in the job from which they were removed.

MS. IANNUCCI: Okay. This is permanent removal to another job?

MR. WRIGHT: It can be permanent removal. It's probably more often permanent removal than temporary removal. And usually what will happen is eventually their wages and benefits will basically -- well, their benefits will remain the same because the benefits are usually the same throughout the bargaining unit, but the wages will eventually catch up. So it is permanent in the sense that they're always entitled to the kind of wages they had in the job from which they were removed.

MS. IANNUCCI: Okay. Thank you. And I have one final question for Dr. Markowitz. In terms of CT scans, are you concerned at all about possible health effects from radiation exposure, and are there any studies to show if that's safe?

DR. MARKOWITZ: Sure. I'm concerned, and

there's general concern about -- excuse me, Steven Markowitz responding, a general concern about radiation exposure; it is limited.

And there have been publications describing the projected risk from low-dose CT, say beginning in the early 50s -- a person in their early 50s, having an annual CT for lung cancer screening, and over the long run, 20 or 30 years later, that person incurring an increased risk of lung cancer as a result of that radiation.

There would be a very small but likely finite risk of lung cancer from annual screening with low-dose CT. And so the question is, the benefit, really, of the early lung cancer detection has to exceed the risk incurred as a result of that radiation exposure.

And that's why we wouldn't screen non-exposed individuals who never smoked, never had occupational exposures, didn't have a family history and the like, even though there is a very small risk of lung cancer among such individuals.

We wouldn't recommend that screening, because in those instances, clearly the benefit wouldn't outweigh the risk of the low-dose radiation over time.

But in most instances, with a history of significant occupational exposures, or with a significant smoking history, the benefit of a low-dose CT in early detection of lung cancer far outweighs the very small risk of the cumulative radiation dose.

MS. IANNUCCI: Okay, thank you everyone.

JUDGE PURCELL: Thank you, Ms. Iannucci. Any other questions from the OSHA panel?

MS. GORSE: My name is Joanna Gorse. My question's for Mr. White. Thank you again for coming and testifying. You mentioned that there's dust all over in the foundry and that you stir up dust with the brooms. What cleaning methods are used in the foundry?

MR. WHITE: This is Alan White. We have push brooms, corn brooms, some people still use compressed air, that just move dust and stuff out of the area. And then also we have a -- I don't know what to call it, but it's like a -- it looks like a Zamboni machine that's used in hockey, but it has a sweeper on the bottom of it.

And it has a capability to either dry clean or wet clean, but they usually run it through the foundry dry. So wherever it goes, it has a big cloud behind it.

MS. GORSE: Would it have been possible to vacuum when -- instead of using a broom?

MR. WHITE: Alan White. Yes, it is but, you know, using a broom, sometimes, is easier, and it takes less time, just like using compressed air is. That's generally the easiest thing to do, quickest thing to do, so that's, you know, just as popular as using brooms.

MS. GORSE: And are there instances when you couldn't vacuum, where you would have to use air or brooms?

MR. WHITE: Alan White. Yes, there are instances where we have to use air but, you know, usually with -- they substitute corn brooms or what we call deck brushes or bench brushes. It's like a small broom, so you can get down in, you know, small areas. So it's like half and half.

MS. GORSE: Okay. Thank you.

DR. COBLE: Good morning. My name is Joe Coble, and I wanted to ask Mr. Katrib a little bit more about his survey.

You indicated that you received 10 responses from foundries, glass and brick operations.

MR. KATRIB: This is Mr. Katrib. We

solicited 70, but we only received 10 from glass and foundries, none from brick.

DR. COBLE: Okay. How many of those were foundries?

MR. KATRIB: I don't have those numbers right off hand. I think the majority of them were foundries. If memory serves me correctly, it was eight foundries and two glass.

DR. COBLE: So the majority were foundries?

MR. KATRIB: Yes.

DR. COBLE: And then you listed some specific operations that the survey results indicated had been monitored?

MR. KATRIB: Yes.

DR. COBLE: Were the high exposures associated with specific operations that you could identify from yours?

MR. KATRIB: Well, with the majority of the sampling and the lab reports that were done, they didn't list the sampling with the operation. The employer listed the operations that were done and then provided the sampling. So there wasn't really a -- you couldn't really tie them together.

DR. COBLE: Okay. On your Exhibit 1, you showed a scatter plot of the points. Now, it looked like -- are those all of the time-weighted average values you were able to assemble from the data, the complete set of them?

MR. KATRIB: Yes. Personal samples, yes.

DR. COBLE: But it looks like about 80 percent or so are below 50. Is that correct, when I look at this?

MR. KATRIB: I would say approximately, yes.

DR. COBLE: So the majority of them were well below 50?

MR. KATRIB: Yes.

DR. COBLE: And were there non-detects in there?

MR. KATRIB: There were a few non-detectables.

DR. COBLE: Do you recall what the -- when you plotted these non-detects, how did you treat the non-detects? Did they give you a value, a less-than value?

MR. KATRIB: I don't recall, right off hand.

DR. COBLE: Okay. And did you know when the monitoring was conducted? Did they provide dates, in terms of what's the range of the dates in which these were collected?

MR. KATRIB: The majority of them were in the past, from 2011 to current dates.

DR. COBLE: Did you specify in your request any sort of date?

MR. KATRIB: We requested the previous five years of sampling if it was possible, yes.

DR. COBLE: Previous five years? Okay, yes. Okay, thank you. All right, well thank you. I'll leave it there.

MR. KATRIB: Thank you.

DR. COBLE: Oh no, I do have one more request. You mentioned you received a lab report from R.J. Lee, with the sampling results -- or one of the results came from the lab that testified.

MR. KATRIB: It was from --

JUDGE PURCELL: Mr. Coble, either finish your question and let Mr. Katrib answer. You can't talk over each other.

DR. COBLE: Would you be able to submit some of the examples of the lab reports that you cited as part of your post-hearing testimony?

MR. KATRIB: Yes.

DR. COBLE: Okay, thank you.

MR. MOCKLER: Hi. Tom Mockler. I had a

couple of questions. The first question had to do with captive foundries, and it -- particularly for Mr. Harville. Could you describe the foundry operations just in terms of employment at the facility?

JUDGE PURCELL: Can you move the mic a little closer?

MR. MOCKLER: Sorry.

JUDGE PURCELL: Thank you.

MR. MOCKLER: Could you describe the foundry operations at the shipyard --

MR. HARVILLE: Yes. This --

MR. MOCKLER: -- in terms of just magnitude of employment.

MR. HARVILLE: This is Allen Harville. I don't have exact numbers, but in my estimate, if you take into account the actual -- the foundry workers, the welders, crane operators, that kind of stuff, there's probably about 200 people there in the foundry.

MR. MOCKLER: Okay. And in the total shipyard, what would be the employment?

MR. HARVILLE: As I said later, there's somewhere between 1100 and 1200 -- 11,000 and 12,000 union eligible.

MR. MOCKLER: All right. Is there -- what are some -- just more broadly for the Steelworkers, what sort of captive -- what industries do you find your captive foundries in?

MR. WRIGHT: It depends on how you define it.

JUDGE PURCELL: Mr. Wright.

MR. WRIGHT: I'm sorry. Michael Wright. It depends on how you a captive foundry. We have some things which, for example, are foundries and machine shops and, you know, do we classify them as machine shops or as foundries?

But we have a fair number of those that make parts by a variety of methods, one of which is casting, another of which is in some cases forging and machining. The steel industry operates some foundries -- it's kind of a dying breed, but -- because they contract a lot of that work out now, but there are some steel foundries left.

But I would say the majority of our foundries are probably places that you would recognize as being primarily a foundry.

MR. MOCKLER: My other question was, is it a fair characterization, based on your previous testimony, that there are a number of facilities that your members work at, that are already in compliance with a 50 μg TWA?

MR. HARVILLE: This is Allen Harville. I don't know. They didn't give us the information.

MR. WRIGHT: Well, let me answer more broadly for the union.

JUDGE PURCELL: Mr. Wright.

MR. WRIGHT: One of the -- I'm sorry, Mr. Wright. One of the problems is that, of course, there is no requirement under OSHA to do monitoring for silica. And when we have gotten into some cases where OSHA comes into a workplace, does monitoring and finds that they're over the 100 level, and we get involved in those and, you know, work on settlement agreements.

And we've had some success in getting levels down below 50 as a result of putting in the engineering controls that respond to the OSHA citation.

I've been in -- I think the overall answer to your question, though, is that we have seen places that we believe are in compliance by the amount of dust in the air, and by the engineering controls they've installed. And we've seen other places -- Alan White's employer is a good example, where we believe they are not in compliance.

But I don't think we've seen a place where we think they could not be in compliance, if they installed the proper controls.

MR. MOCKLER: And those that have reached these lower exposure levels, they've remained economically viable?

MR. WRIGHT: Yes. We have, for example, foundries as has been said, in -- up across the border in some of the Canadian provinces, which have adopted a 50 µg standard. As a matter of fact, British Columbia is considering a 25 µg standard. And the foundry industry there is thriving.

MR. MOCKLER: Okay. Thank you.

MR. PERRY: This is Bill Perry. I have a few questions. Going back again to the shipyard and captive foundries there, how many captive foundry facilities are there at Norfolk?

MR. HARVILLE: This is Allen Harville. At Newport News Shipbuilding there's only one foundry that I'm --

MR. PERRY: There is just one?

MR. HARVILLE: There's just one.

MR. PERRY: Okay. So does it cast anywhere from very small to the very large, like you described, 40-foot long --

MR. HARVILLE: They cast items as small as the ship's plaque all the way up to, like I said, those items like the main hatch for the -- main hatch opening for the submarine, which is quite huge, the bow structure for the aircraft carrier that's, you know, 40 feet long.

They cast the outboard support structure for the shaft for the aircraft carrier. That piece is -- you couldn't fit it on this stage. I mean, it's huge.

MR. PERRY: Well, it is pretty cramped up here on this stage. I'll agree with that, so --

MR. HARVILLE: It's huge. They -- it takes a railroad car to carry that thing to the --

MR. PERRY: Okay. Very good.

MR. HARVILLE: -- to the aircraft carrier. There's about four of them on each -- four to six of them on each aircraft carrier.

MR. PERRY: Okay. And among shipyard employees -- not contractors, but shipyard employees, what other sources of exposure to crystalline silica are there in the shipyard outside of the foundry environment?

If you're not sure, you want to think about it, I would welcome you to submit that information in post-hearing comments. But we've gotten really very little indication that other than abrasive blasting, that there's much of an exposure issue in shipyards. And if that is incorrect, we would love to hear about it.

MR. HARVILLE: Again, it's Allen Harville. Well, again, like I said, you know, the foundries use the silica sand for the casting.

MR. PERRY: Yes.

MR. HARVILLE: And they use quite a large amount of that. Other than that, they -- the insulation department uses a lot of calcium silicate insulation on main steam pipes inside the engine rooms, and main machinery spaces inside the reactor compartments on, you know, primary and secondary systems inside the reactor.

Even though it doesn't -- I don't think it specifies that it's crystalline silica, it's calcium silicate. There's warnings all over it that state, you know, that it's danger of silicosis, you know, and you have to provide controls.

MR. PERRY: Would it be possible for the Steelworkers to submit safety data sheets for that material? Do you have those?

MR. FREDERICK: We'll request that from the employer. This is Jim Frederick. We'll request that from the employer, and it will somewhat determine whether or not that facility and that contractor agrees to provide them.

MR. PERRY: Very good. Thank you.

MR. WRIGHT: This is Mike Wright. Let me add to that, they have an obligation to provide it. Sometimes it takes us a while to enforce that obligation. So if we get -- we will, indeed, enforce it one way or another, but by the time we get it, it may be after the record closes. But we will get it.

MR. PERRY: Okay. Very good, thank you. Just one question for Mr. Katrib, just so we're really crystal clear about this, because you indicated that the -- I think, in response to a question from Dr. Coble, that the sample data that you did receive, that you requested and received covered a period of at least a few years, and came from the employer's usual exposure records. Is that correct?

MR. KATRIB: This is Rami Katrib. I would assume that that would be from their usual. It was -- mostly it was the information the employer typed out of what -- the four -- answers to the questions we asked, and then behind that would be just a lab report that they had presumably received from the lab.

MR. PERRY: Okay. So you got the lab reports?

MR. KATRIB: Yes.

MR. PERRY: So do you have any reason to believe that the exposure data you received was somehow not representative of typical workplace conditions at those facilities?

MR. KATRIB: No.

MR. PERRY: But you don't have any evidence to that effect?

MR. KATRIB: No.

MR. PERRY: Very good. Thank you. Just a question on the training of your members for industrial hygiene, to provide industrial hygiene services, that does include respirable dust sampling using personal respirable dust samplers, yes?

MR. FREDERICK: This is Jim Frederick, and yes. The answer is yes. The little bit more detail of it is that, and when we provided that training, we have done so in a pretty specific way, determined by the needs of the employer and local unions that are involved.

So we make certain that the training we provide matches the exposures and the hazards in their workplace.

MR. PERRY: Okay. Another training question, on Pages 14 and 15 of your written submission, you have a fairly detailed outline of the training that you recommend OSHA consider to require for any workers who are exposed to crystalline silica.

And on Page 5 you talk about having a competent person establish, relay the data, and so forth. What additional training do you think is necessary for the competent person that's above and beyond the training that you're recommending for everybody here?

MR. SCARDELLA: I'm not sure I understand the question on the competent person --

JUDGE PURCELL: Mr. Scardella.

MR. SCARDELLA: I'm sorry. Mr. Scardella. I'm not sure I understand the competent person. What we're saying in our written comments is that we would -- we like to see a comprehensive training program, including in all those elements that are listed.

That would be, in fact, our way of ensuring that our members are fully trained and understand not only the exposure, the potential exposure, but also the health effects of that exposure.

MR. PERRY: Okay. I see now what you're saying. Thank you. I may have misread something in here, but we will look at that again. Thank you.

MR. WRIGHT: This is Mike Wright. Can I add one thing to that answer?

MR. PERRY: Please.

MR. WRIGHT: We do think it's important for OSHA to be fairly detailed and fairly specific about what a training program could require, and that comes from sad experience with other standards.

The 1983 HazCom standard, for example, was not terribly specific. We had a little betting pool in my office about what employer would have the shortest training under the HazCom standard. The record was something under five minutes. That clearly indicates, I think, that OSHA needs to be pretty specific and detailed about what an employer is expected to impart to an employee.

MR. PERRY: Okay. I appreciate the comment. Thank you. I think the only other -- well, just two more, if I may, one dealing with exposure assessment.

In facilities in which your members work, have there been means other than collection of personal samplers used to assess exposures, such as use of real-time particulate detectors or use of area samples? And have these strategies been effective, in your opinion, to characterize worker exposures?

MR. FREDERICK: This is Jim Frederick. In specific to silica exposure assessment, there very well could be. However, we are not -- we have not been engaged and involved formally with an employer on that project in -- at least in recent years.

MR. PERRY: Okay. I think, actually, that's all I have. Thank you very much.

JUDGE PURCELL: Thank you Mr. Perry. Any further questions?

MS. LINDBERG: Just a few for me, Your Honor. This is Kristen Lindberg. In your written submission, you suggest that OSHA should require employers to provide PAPRs instead of negative pressure respirators on an employee request.

I'm wondering if you know whether employees take advantage of similar provisions under other standards where employers are required to provide PAPRs.

MR. FREDERICK: This is Jim Frederick

again, and yes, in varying workplaces with exposures requiring respiratory protection, either from an OSHA requirement or because of something negotiated by the union and agreed to by the employer, we have opportunities where workers can request additional, higher level of respiratory protection, such as a PAPR, and yes, they do take advantage of that in some instances, and in others, some workers choose not to.

MS. LINDBERG: Do you have any information on sort of rates of requests or something like that?

MR. FREDERICK: This is Jim Frederick again. I don't know that we do. We -- you know, we could provide some anecdotal information in our post-hearing comments, if that would be useful, to characterize some of this at some workplaces.

MS. LINDBERG: Yes. I think we'd appreciate that.

MR. FREDERICK: It may not be specifically pertaining to silica exposure, however I think it would still be useful for the record, to reflect what happens in other exposures.

MS. LINDBERG: Sure. Thanks. I think, Alan White, you touched on this earlier, asking again about rates of participation, this time in medical surveillance. Do any of you have any information on at what rate workers participate in medical surveillance under other OSHA standards?

MR. FREDERICK: This is Jim Frederick again. I'm not certain that we have surveyed our members to make that determination on a -- from the International Union. I'm -- you know, I would assume that our local unions that have required programs would have better information on that.

However, in another medical surveillance program, different from the one that was discussed earlier by Dr. Markowitz, that's been in place in the rubber industry for over 40 years, it's a voluntary medical screening program. And we could provide, in our post-hearing comments, the frequency of participation by our members in those workplaces in that program.

And, you know, generally speaking, it's in the 20 percent range, plus or minus a little bit in some cases -- in some locations higher and in some cases a bit lower.

MS. LINDBERG: Great. And do you know, does it make a difference in the participation rates if there's a medical removal protection provision in place?

MR. FREDERICK: Any instances, we've not

surveyed, kind of, the preliminary. The first question, I'm -- this is Jim Frederick again. I also don't believe we have specific information from that. However, again anecdotally, we could certainly speak with some of those local unions and provide that. Mike may have some -- Mike Wright may have some additional -- or Steve Markowitz may have some additional comment on that.

MR. WRIGHT: This is Mike Wright. Some years ago we look at in lead, and the participation rates were relatively high, above 50 percent. Also, in another industry -- and I have to see if we can get the data, because we have a three-doctor review mechanism and because we have, under the union contract, a rate retention provision, we have fairly high participation in the medical screening.

So we've seen it be high where we have those kind of protections, either by law or by contract.

MR. FREDERICK: And this is Jim Frederick. Let me just try to clarify the prior answer about the rate of the participation in the other medical screening program I spoke to about, you know, 20 percent.

The one thing that's important to note on that figure is that if you look at the participation over time of several years, three to five years, you find that the rate of participation is significantly higher. It's well over 75 percent of the population that's eligible.

It's just, you know, people -- it's an annual program, so people have kind of chosen after 40 years of the program being place and participating in the program, that they've self-selected to have it occur on a less frequent basis.

Also, the funding of it is also through a labor-management negotiated health and safety fund, and the funding for that program would actually not support the program if the participation was much higher. So since it's kind of leveled out and equalized in that, we've let it run at that participation rate.

JUDGE PURCELL: Dr. Markowitz, anything? Okay.

MS. LINDBERG: Let's see. You suggest that OSHA include an anti-retaliation provision in the Silica standard. Do you have ideas on what such a provision would look like?

MR. FREDERICK: We certainly can provide some additional thought on that in our post-hearing comments, if that would be useful to the Agency. We have experience with too many workplaces, in cases where both retaliation has occurred, and in workplaces where we have worked collectively with our employers to address problems pertaining to retaliation.

So, you know, I think it would probably be best suited, for the record, if we would provide some thought to that and put it together in our post-hearing comment.

MS. LINDBERG: We'd appreciate that. Also, if you have evidence, anecdotal or otherwise, about employees who have been retaliated against, based on medical information from medical surveillance, I think that would be helpful.

MR. FREDERICK: Certainly.

JUDGE PURCELL: That was Mr. Frederick. I may have missed it if you identified yourself, but just want to make sure the record's clear.

MS. LINDBERG: Just one final question, Mr. Katrib and Mr. Frederick, you mentioned that there are foundries in Canada that use 50 $\mu g/m^3$ as their maximum exposure level. Do you have any information on these foundries and their operations, and -- along with any exposure data?

MR. FREDERICK: Actually, if I could, Mike, do you want to take that one first?

MR. WRIGHT: I'll let you start.

JUDGE PURCELL: That was Mr. Frederick again.

MR. FREDERICK: I'm sorry. Yes, Jim Frederick. We can certain request from our local unions in Canada some additional information. In the time -- let me make certain that we only requested from U.S. locations the information request that we sent out in January. You know, as it was pertinent to OSHA's rulemaking process, we wanted to provide U.S. data.

We certainly can and will -- as we've evidenced by our experience with this survey, it takes a bit of time, and not yet knowing the date of closing of the post-hearing comments, we'll have to see if we get information back soon enough to be able to provide it.

MS. LINDBERG: Thanks very much. I think that's it.

MR. PERRY: That's all we have, Your Honor. And, again, thank you to everybody who appeared today to testify. We appreciate it.

JUDGE PURCELL: Thank you, Mr. Perry. I'd also like to thank the panel from the United Steelworkers. The time now is five minutes till 12:00. We'll adjourn for lunch and resume at 1:00 p.m. Thank you.

(Whereupon, at 11:55 a.m., a lunch recess was taken.)

A F T E R N O O N   S E S S I O N

(1:00 p.m.)

JUDGE PURCELL: Good afternoon, everyone. It's 1 o'clock. We'll resume the hearing. The next presenters are from the American Foundry Society. Who would like to introduce the panel?

MR. SPADA: I will, Your Honor.

JUDGE PURCELL: All right, if you would please.

MR. SPADA: My name is Alfred Spada. I'm with the American Foundry Society. We have Jerry Call, also with the American Foundry Society. Next to him is Tom Slavin, for Cardno ChemRisk. Behind me is Peter Mark from Grady Holdings. Next to him is Chris Norch, from Denison Industries, and next to him is Bob Scholz from TRC Consulting.

JUDGE PURCELL: Thank you, Mr. Spada. Welcome, gentlemen. I'm just going to follow the order that's listed. Well, actually, you gave me a different order, Mr. Spada. So I understand you're going to start with your presentation?

MR. SPADA: Yes, sir.

JUDGE PURCELL: All right, if you would, please.

MR. SPADA: Good afternoon, Your Honor,

officials from the Occupational Safety and Health Administration, and interested stakeholders. My name is Alfred Spada. I'm Director of Marketing, Communications and PR for the American Foundry Society.

I've worked in the metalcasting industry for more than 17 years, educating and advising foundries on best practices in management and production. Through those years I've had many opportunities to visit foundries throughout the U.S. and around the globe.

The American Foundry Society appreciates the opportunity to testify today. OSHA's crystalline silica rulemaking would have an enormous adverse impact on our industry. As we note in our written testimony, AFS has serious concerns with the Agency moving to cut the permissible exposure limit from 100 $\mu g/m^3$ to 50 $\mu g/m^3$, and to establish an action level of 25 $\mu g/m^3$.

The best available science, to our understanding, shows that the current OSHA PEL for quartz of 100 $\mu g/m^3$ is appropriate to protect against silica-related disease, provided it is adhered to strictly.

Accordingly, achieving full compliance with and enforcement of the current PEL is the best way to protect silica-exposed workers, rather than imposing draconian, expensive, and difficult to meet standards on the industry.

We will be dividing up our time among six witnesses, including myself. Our testimony will begin with an overview of our industry, its diversity and its challenges. The rest of our testimony will be focused on the following key areas of the Agency's proposed silica rule.

First, we'll discuss feasibility. OSHA's proposal is not technologically nor economically feasible for the foundry industry.

Second is compliance costs. OSHA vastly understates costs for the foundry industry to comply. In fact, the cost for the proposed PEL will exceed 9 percent of the foundry industry's annual revenue, and threaten the viability of foundries across the country.

Third item is measurability. It is difficult, if not impossible, to measure at this drastically lower PEL and action level.

Fourth, OSHA's proposal prescribes various control methods that contradict existing safety practices, and are simply not workable in the foundry industry. When we talk about the hierarchy of controls, the Notice of Proposed Rulemaking requires employers to establish engineering and work practice controls.

Respiratory protection is only permitted in four circumstances, and only then if the former controls do not sufficiently bring the exposure levels to or below the PEL. Regardless of whether the engineering and work practices will not achieve compliance with the proposed PEL, the employer is still required to apply them. This triggers a huge and wholly unnecessary cost.

AFS urges OSHA to eliminate the proposed hierarchy of expensive engineering controls and to recognize that respirator protection technology and equipment, which has advanced and evolved over the decades, is a significantly more effective and cost effective way to manage worker exposure.

Foundries will go out of business in the U.S. if they are required to spend millions of dollars implementing various types of engineering controls. Essentially this is a trial and error method.

There are certain critical operations such as grinding, knockoff, sorting and furnace relining, which defy compliance of the current PEL, which is twice what OSHA now proposes to impose.

Foundries are an essential part of our industrial base, supporting our defense industry, supporting our military. We can ill afford to lose the casting capability, or have it moved to non-U.S. locations that are subject to the vagaries of international politics.

I would like now to present Jerry Call, CEO of the American Foundry Society, to provide some details on the current state of the U.S. metalcasting industry.

MR. CALL: Good afternoon. I'm Jerry Call, CEO of the American Foundry Society. I have proudly served in this position for the past 10 years. I have more than 35 years of hands-on experience in metalcasting productions, human resources and safety positions within the foundry industry.

AFS is the major trade and technical association for the North American metalcasting industry. The association is comprised of more than 8000 members, representing more than 3000 metalcasting firms, including foundries, suppliers, and customers.

Our industry is dominated by small

businesses, with more than 80 percent of U.S. metalcasters employing fewer than 100 workers. One of AFS' core objectives, with which it has been at the heart of our organization since its inception more than 118 years ago, is to promote worker health and safety in the foundry industry.

AFS has developed and provided our industry with countless safety related support materials focused on controlling silica dust, and silica dust control has long been a topic of -- at national, state, and local foundry meetings.

Foundries have willingly invested billions of dollars to put in place a vast array of control measures to meet the current permissible exposure limit. It's important to take a few minutes to provide some background information on the casting process and the current state of the U.S. foundry industry, given the fact that OSHA's proposal will impact our sector more than any of the others.

Metalcasting is one of the nation's oldest and most important industries. It is the most cost-effective method to manufacture an engineered and shaped metal component. The process consists of pouring molten metal into a mold made of sand, metal, or ceramic, to form geometrically complex parts.

Castings are made in foundries from molten metal according to an end-user's specifications. This basic metal distinction between foundries is reflected in the characterization of foundries as either ferrous, iron or steel, or non-ferrous, aluminum, brass, bronze, copper, et cetera.

There are a number of processes available to produce castings. Sand molding, where the replica of the finished piece or pattern is compressed with sand and binder additives to form a shape, the final part, is probably the most common form of production.

The pattern is removed after the mold or impression has been formed, and then the metal is introduced through a runner system to fill the cavity.

The sand and the metal is then separated. The sand is returned for reconditioning and use, and the casting is cleaned and finished for shipment to the customer.

The foundry industry remains critical to the U.S. economy, as 90 percent of all manufactured goods incorporate engineered castings into their makeup, and using casting during their -- or using castings during their production.

Castings are used in cars, trucks, planes, railroads, ships, all types of machinery, air conditioners, refrigerators, lawnmowers, oil and gas field equipment, medical devices such as artificial hips and heart valves, water infrastructure, kitchen appliances, wind turbines, tanks, mining and agricultural equipment, just to name a few uses.

Briefly stated, castings represent a vital aspect of everyday life. Many manufacturing processes begin with castings. What happens to the U.S. foundry business will impact not only foundry industry jobs, but also jobs in other manufacturing sectors.

For example, machining is often performed close to where the casting is produced, so that the scrap and defects can be returned and recycled. If the casting is made in another country, it is a guarantee that some of the other manufacturing processes will be performed there as well.

The majority of castings produced in the United States are specifically engineered parts, custom designed for unique applications.

Castings, in general, are not commodities, like for instance, bearings or fasteners, where one style might be used in many applications. Generally speaking, most castings are made to order, with close tolerance levels required to meet a customer's strict requirements.

For the past 30 years, the metalcasting industry has shrunk significantly. In 1980, 4200 metalcasting operators operated in the U.S. In 2000, that number was down to 2800. During the recent recession, nearly 200 foundries, including some significant producers were forced to shut their doors.

Today we have 1978 foundries in the U.S. This significant reduction in number of facilities can be attributed to, in large part, from heightened foreign competition, technical advancements and tightening of federal, state, and local regulations.

Of the 1978 casting facilities in operation today, approximately 600 produce iron or steel castings while another 1400 manufacture aluminum, brass and bronze castings.

Metalcasting plants are found in every state in the nation. The industry provides employment to more than 200,000 men and women directly, and supports thousands of other jobs, indirectly.

The industry supports a payroll of more than $8 billion and sales of more than $34 million annually. Since 2001, the U.S. metalcasting industry is the world's second largest producer of castings, trailing only China and its more than 30,000 operating foundries.

In the last 20 years, foreign competition has had a tremendous impact on the U.S. foundry industry. In 1998, only 7 percent of the U.S. demand for castings was met by foreign competition. Today, 21 percent of demand is met by foreign competition, which equates to more than $7 billion. More than 24 percent of those castings are being imported from China.

Crystalline silica sand has been used for centuries by foundries because of its unique engineering properties and accessibility. It is vital to the foundry and manufacturing process, and is omnipresent in most foundries.

Foundries use more than 60 million tons of sand per year, and more than 60 percent of all metal castings are produced in the U.S. through the sandcasting process.

As we discussed in our written comments, at this time there is no casting technology available to eliminate the need of silica sand from the process. AFS recognizes that the need to use silica sand requires responsible efforts to protect employees. AFS has a long history of health and safety leadership, including research, education, and outreach efforts to reduce workplace health risk, particularly with respect to silica.

AFS has been actively involved with OSHA over the last 10 years in a variety of safety and health initiatives. In 2004, OSHA and AFS formally signed an alliance agreement, which has produced several joint publications, including *Control of Silica Exposures in Foundries*, *Heat Stress Management*, and *Personal Protective Equipment*, as well as a host of other activities and work products. We have enclosed a list of these activities.

AFS has conducted five Introductory to Foundry Operations Best Safety Practices seminars for OSHA compliance officers and consultation staff since 2009, at no cost.

AFS is providing an industrial hygiene engineering specialist to participate in an OSHA-sponsored industry training session about controls and best practices -- excuse me, about controls for Agency consultation staff in May 2014, in Denver, Colorado.

Since 2009, we have pursued renewal of our alliance, but unfortunately the Agency has not yet chosen to renew the foundry industry's alliance, although we continue to work with OSHA.

In addition, the foundry industry has a long track record of industry outreach, including many of the original ACGIH ventilation manual designs.

Foundries compete on many levels, but when it comes to health and safety, foundries have freely shared information about controls and best practices. Despite extensive, expensive, and sincere efforts, consistent compliance with the current PEL, which OSHA proposes to cut in half, has not proven feasible in critical areas of the foundry.

The U.S. foundry industry is critical to our nation's manufacturing capabilities, including our military. Every plane, tank, and ship employed by our armed forces contains from hundreds to thousands of pounds of castings in it.

While we must ensure the health and safety of all our workers, we must also ensure the longevity of our nation's manufacturing and military. Thank you.

JUDGE PURCELL: Thank you, Mr. Call. Mr. Spada, who's next?

MR. SPADA: I'm going to give a few brief comments before turning it over to Tom Slavin.

JUDGE PURCELL: Certainly.

MR. SPADA: Thank you, Jerry. I think it is critical to underscore a few of the points that Jerry Call just provided us with. There is great diversity within the metalcasting industry, as no two foundries look or operate alike.

Foundries vary in facility size from less than 1000 square meters to more than a million. We vary in number of employees, from less than five to more than a thousand. We vary in production rate, from making one casting a week to thousands of castings a day. And we vary in the size of castings we make, from less than a pound, over to over a hundred tons.

In addition, when you look at foundries from a production perspective, the processes are all over the board, depending on the type of material and type of production process they employ. For a melting process they may use a cupola, an induction furnace or a reverb furnace.

When they're talking about molding binder processes, it could be green sand, it could be no-bake, it could be lost foam, it could be permanent mold. In the type of mold binder or molding method they're using, it could be jolt, it could be squeeze, it could be lost foam, it could be shell.

You talk about the core chemistries they're using, hot box, cold box, gating and riser practices, cleaning and finishing. Again, it's to underscore that there is no foundry -- every foundry is unique, and every one employs a variety of different processes.

In the Preliminary Economic Analysis, OSHA recognizes differences in alloy types. But from an exposure and control standpoint, there are many other more significant differences between foundries. What might have worked to reduce silica exposures in one foundry might not in another. Basically we are not a one-size-fits-all industry.

Foundries have decades of experience of diligently working with dust and silica control technologies. Dust control, especially at the low exposure levels OSHA's recommending, is challenging and complex.

I would like now to allow Tom Slavin to come and give his testimony, and discuss more specific concerns related to OSHA's proposal.

MR. PERRY: Thank you, Mr. Spada.

Mr. Slavin?

MR. SLAVIN: Thank you, Judge. My name is Tom Slavin. I've been associated with the foundry industry for more than 40 years, 30 of which were with Navistar.

I'm here as Chair of the AFS Health and Safety Committee to talk about silica. Specifically, we believe that OSHA has failed to show that the rule is reasonably necessary and appropriate, and we base this conclusion on a number of items.

OSHA has failed to show evidence of the health risk below the current PEL, has failed to use best available evidence in its health assessment, has failed to show technological feasibility of meeting the proposed PEL, has failed to show technological feasibility of accurately measuring exposures at the proposed PEL, and failed to show economic feasibility of meeting the proposed PEL.

I'm going to focus today on primarily the third and the fifth point here, and summarize the others. Let me begin by summarizing the health risk information with a couple of observations about health risk.

I think most of us in this room have seen this chart before, that shows that the number of --

the incidence of silicosis deaths has declined dramatically. This is a great public health --

JUDGE PURCELL: I'm sorry, Mr. Slavin. Can you identify for the record the chart you're referring to?

MR. SLAVIN: This is -- by name or number? By -- it's -- I can give you a number, 8 in our -- in the book here. I mean, in the --

JUDGE PURCELL: Slide presentation?

MR. SLAVIN: -- slide presentation, if that works.

JUDGE PURCELL: Certainly.

MR. SLAVIN: Okay. Very good. So Page Number 8 in the slide presentation, the chart shows the dramatic decrease in silicosis. And, again, this is a great public health success story, and provides empirical evidence of success in reducing silicosis.

There are a few cases that remain unfortunately. We believe that these cases are from past exposures at much higher levels, or as is widely known, current exposures that exceed the current PEL.

We believe OSHA has failed to show evidence of a health risk below 100 $\mu g/m^3$. So as we understand the health risk assessment, OSHA appears to ignore empirical evidence in favor of theoretical models, and the models ignore the evidence of a threshold.

OSHA uses a linear model that is incapable of finding a threshold, should one exist, and from the testimony that's in the record, our conclusion is that there is clear evidence that a threshold exists.

Any other silica-related diseases that are discussed, including lung cancer, renal disease, should follow the similar trend as silicosis. As exposures are reduced, so should the other diseases. We believe finally that enforcement of the current PEL will continue to reduce residual disease.

Our conclusion is that OSHA has failed to use best available evidence. OSHA has ignored relevant studies in its health assessment. For example, there is a 2011 study of lung cancer in foundry workers from the United Kingdom. This information is in our written comments where we reference this.

The point here is that of 30 studies that are referenced in the U.K. study of lung cancer in foundry workers, only seven are included in OSHA's review.

In addition there are two other important

U.K. studies on silica carcinogenicity and on potency, and the important point here is that OSHA omits 40 percent of the references that are included in those other two studies. So our conclusion is that the scientific review is incomplete.

There have been people that have looked, reviewed in depth OSHA's review of the health risk literature and assessment, and concluded that OSHA's review is subject to a number of biases, study selection bias, data selection bias, model selection bias, model uncertainty bias -- in short, every bias in the book, as we look at it.

One of the most egregious examples is the Vermont granite shed worker studies. So you have the same population in two studies. The Attfield and Costello study was published in 2004. The study was updated by Vacek and published in 2011.

OSHA uses the Attfield and Costello study, and relies on it to demonstrate a lung cancer risk. They reject the Vacek study, despite the fact that the Vacek study includes more workers, more cases, has a longer follow-up, includes all exposure groups, has more exposure assessments, has more complete status determination.

There were 162 workers assumed alive in

1994 in the Attfield and Costello study who were actually dead. Vacek corrects all of these problems, and yet OSHA rejects Vacek. And we think it's because Vacek determined that there was no lung cancer risk, and that did not fit the bias that OSHA had to begin with.

So I'd like to turn now to technological feasibility, and point out that foundries have worked on silica control for decades. As Jerry mentioned earlier, silica control has been a frequent focus of AFS meetings, going back almost 100 years.

Foundries have invested vastly in controls. And despite extensive, expensive, and sincere efforts -- and I have to also say, largely successful efforts, still, consistent compliance through engineering controls has not proven feasible in many cases.

OSHA has failed to show the technological feasibility of meeting the proposed PEL. There are -- OSHA uses a series of cases to demonstrate feasibility, and those -- our review of those same cases indicate that they, in fact, demonstrate lack of feasibility.

In addition, the control capability is vastly overstated in OSHA's assumptions about how effective controls are. And OSHA's feasibility analysis uses the wrong target.

And another point -- and I'm going to be talking about these points in a minute. Another point is that OSHA fails to incorporate concepts of exposure variability and confidence in its analysis. And for that discussion, I will, at that time, refer to Bob Scholz.

So for now, I'd like to just discuss OSHA's review or OSHA's use of 18 case studies to demonstrate technological feasibility in foundries. And in those -- reviewing those studies, what is evident is that OSHA takes isolated data points out of context to try to show that controls are successful.

In fact, the case studies actually show controls are often unsuccessful, even to meet the current PEL. And controls are more difficult than OSHA's cookbook approach or assumptions that it uses in the feasibility assessment.

In many cases, the controls take several iterations. So a typical scenario is that a foundry is cited, enters into a process, and requests several petitions to modify abatement as it works through and tries this control and that control. And when that doesn't get the result they need, they try something else. And it's a process that is difficult and takes more time than the one year that OSHA is providing in the proposal.

One of the case studies has a sample result of 47 $\mu g/m^3$, one isolated sample result. OSHA points to this sample result as evidence that it's feasible to meet 50 $\mu g/m^3$ for abrasive blasting operator.

There is -- what's interesting is, in that very same docket submission that -- with that case study, there's a letter from the OSHA Area Director, that says -- referring to that very same sample result, says, "It is reasonable to expect that on any particular day an overexposure to silica could occur."

And this is the Area Director, referring to an overexposure to the current PEL. So if the OSHA Area Director -- and we believe is correctly looking at variability and correctly concluding that that 47 µg result does not provide evidence of control capability for even the current PEL, OSHA cannot turn around and use that result in its feasibility assessment to say that's evidence of meeting the proposed, much lower PEL.

OSHA overestimates control capability.

Another example is the cleaning and finishing operation, where they assume -- they look at a foundry that achieved a 69 percent reduction after installing a downdraft hood.

And OSHA then -- and this is without evidence of continued performance. This is just in taking a couple of isolated before and after samples. OSHA assumes that every exposed operator can -- in cleaning and finishing, can achieve the same 69 percent reduction.

The fact is, many foundries already use downdraft exhaust. And so certainly they can't achieve that result if they're already using that control.

And the other thing to point out is that controls are often selected for optimum applicability. And so what is chosen for a given situation isn't -- you can't extrapolate that experience to all the other foundries.

But OSHA doesn't stop there. They then add an additional 67 percent reduction for pre-cleaning castings.

Now, this is despite the fact that silica in cleaning and finishing operations is more often -- silica exposure more often due to burn-in sand than to dirty castings. And most foundries already pre-clean castings or clean castings before they get to cleaning and finishing operations anyway. So the additive approach of the 69 percent plus the 67 percent is inappropriate.

But, again, OSHA doesn't stop there. They add another 30 -- or subtract another 38 $\mu g/m^3$ because they assume a reduced background level from other controls in the foundry. So you're adding three different control measures and assuming fully effective benefit, and that's just inappropriate.

So I'd like to illustrate with this example, the magnitude of the challenge of controlling silica exposure. And this -- the example is that one gram of silica sand, about the same weight as contained in a artificial sweetener packet, would, if distributed in respirable size, generate exposure level above the PEL in a space the size of a football field 13 feet high.

And many foundries who operate in this same space use tons of sand, not grams. Another point to illustrate the magnitude of the challenge is looking at cleanroom criteria. And if you look at the ISO 9 level cleanroom criteria, and if you converted those particle numbers and sizes to -- using the density of silica, you would see a level of 66 μg/m^3.

So the point is that you can -- you could be close to cleanroom level concentrations and still be in trouble as far as the proposed PEL.

JUDGE PURCELL: Mr. Slavin, just for the record, you were referring to the chart contained on Page 13 of your PowerPoint presentation, entitled "Control Capability ISO 9 Cleanroom Could Exceed Proposed PEL."

MR. SLAVIN: Yes, Your Honor. I'm sorry. I'll try to do that.

So let me turn to the next chart, and this time, the title is "Compliance in OSHA PEA," which is the Preliminary Economic Assessment, "versus Compliance in the Real World." And it's what I call an ever-never fallacy.

So OSHA assumes compliance -- if you look at the Distribution B in this chart, which has a few samples below the PEL, OSHA assumes that that's indicative of feasibility, that that's evidence that -- feasibility of the proposed PEL.

In fact, someone who is trying to be confident of compliance has to have an exposure distribution that looks like the Distribution C in this chart.

In other words, they have to maintain exposures so that exposures vary from day to day, but the mean exposure has to be low enough that they have some degree of confidence that the upper control limit is below the proposed PEL.

And so you have two different versions, two different definitions of feasibility, and we believe that OSHA's feasibility definition is the wrong target. It needs to be a mean substantially below the PEL.

Because when OSHA comes in to -- on the enforcement side, if they find one exposure above the PEL, that -- you can be cited for that. So they don't look at the mean exposure. They look at one exposure over the PEL warrants a citation.

With that, I'd like to turn now -- turn this over to Bob Scholz to talk about exposure variability.

JUDGE PURCELL: Thank you, Mr. Slavin. Mr. Scholz?

MR. SCHOLZ: Thank you, Your Honor. I am a professional engineer. My name is Bob Scholz, professional engineer, certified industrial hygienist, and consultant for 34 years to the foundry industry.

I've been active for many years on the Safety and Health Committee that Tom Slavin heads up, of AFS, and have authored guidance documents which are pertinent to the discussion of control of air contaminant exposures in foundries. I'm making the following comments on behalf of AFS and the foundry industry.

OSHA has concluded that it is technologically and economically feasible for foundries to meet the 50 $\mu g/m^3$ PEL for respirable crystalline silica. OSHA bases that conclusion, in large measure, on its interpretation of foundry exposure data to which it has access.

The foundry industry, on the other hand, contests OSHA's stated interpretation. OSHA has documented its -- AFS has documented its objections to the OSHA interpretation in a technical paper contained in the foundry industry's docket, which this testimony will summarize. Next slide. It's called, "Charting of OSHA Results."

JUDGE PURCELL: And that's on Page 50 in the presentation. Thank you, Mr. Scholz.

MR. SCHOLZ: OSHA's interpretation of its foundry silica exposure database is graphically demonstrated in this slide. This figure sets out

OSHA's tabulated silica exposure results in 12 ferrous foundry job categories.

For each job category, OSHA has separated the exposure findings of workers into two groups, depending on whether the exposures were above or below OSHA's proposed silica PEL. It is obvious from observing the graph, looking at the red versus the green, that exposure measurements below the proposed PEL constituted nearly one half of all of OSHA's database.

OSHA considers the foundry workers associated with these results -- that is, with the red results, to have already achieved the proposed lower PEL exposure level. Confirmation that this is truly OSHA's interpretation is borne out in their discussion of each job category's results, in which they predict that additional exposure controls will need to be installed for workers in the above 50 $\mu g/m^3$ group. Next slide.

There is a down side of what OSHA has predicted with its data, and it's primarily in the fact that the variability of exposure has not been taken into account. That leads to that second bullet here, which doesn't show that workers with sampling results below 50 $\mu g/m^3$ can consistently produce result such results.

And we know, basically, that the protection that we're looking for in the foundry industry, against silica exposure, is a long-term protection. It's every shift, not just some shifts.

OSHA -- or AFS has pursued the exposure variability question by statistically analyzing silica exposure data in a preliminary evaluation involving a limited number of foundries. In order to address the impact of variability when interpreting foundry silica exposure results, AFS turned to published guidance provided by NIOSH. Next slide.

Basically, what NIOSH has said -- and NIOSH studied this situation -- I started in this field in 1970, and between '70 and '75 they studied it intensively, and came up with some guidance and a model.

And the NIOSH model predicts, based on repetitive sampling results, that confidence levels that can be established and assigned to data, on the degree of the data that is confidently below any particular target level.

NIOSH, in their guidance document, divides the variability that is experienced in exposure results into two categories. One is sampling and analytical errors, and the other is fluctuations due to the work environment itself.

And NIOSH considers the second of these two sources of variability to be predominant. In other words, exposures vary because of the myriad of conditions in the foundry that are variable in the process of doing work. Next slide.

A sample -- this is called the "Ideal Plot."

JUDGE PURCELL: And this is on Page 16 of the printed version of the PowerPoint presentation.

MR. SCHOLZ: Sixteen. This is an example that was created. This isn't foundry data, not to confuse anyone. But it's to illustrate the manner in which NIOSH goes forward with this.

NIOSH requires that a test be applied to a dataset to determine whether the exposure data fits the model. And this test plots the individual exposure results in a statistical, graphical format, as shown in the idealized example shown.

The exposure sampling results are first ordered from lowest to highest, just in a list, and the values, and then they're plotted at predetermined locations on the graph. The height of each data point on the graph represents the logarithm of the exposure level.

A dataset fits the model when, specifically when the data points approximate a straight line on the graph, which the points on here were purposely lined up to do. The straight line orientation of the data defines a lognormal distribution for which confidence levels can be established.

Confidence levels can be determined directly from the graph in terms of the percentage of exposure results that are expected to lie at or below a particular exposure level. In other words, it's predictive.

In this particular case, 50 percent of the measurements are expected to be below 73 $\mu g/m^3$ -- that number doesn't mean anything, and 95 percent of the measurements are expected to be below 225 $\mu g/m^3$, at the 95 percent level.

NIOSH's statistical approach was applied by AFS to analyze results from a limited number of repetitive silica exposure sampling datasets provided by seven ferrous and one non-ferrous foundry, and taken primarily in the period between the year 2000 and the present.

Five datasets were analyzed for individual workers, and 12 sets were analyzed for groupings of workers, with each group representing a single job category in a specific foundry, performing similar tasks and similar process equipment during shifts of normal production. Next slide.

So now we're getting into the foundry data that was analyzed. This one is called "Iron Foundry F01."

JUDGE PURCELL: And, Mr. Scholz, for the record, that chart as well as "Iron Foundry F02" will be on Page 17 of the printed version of the PowerPoint presentation.

MR. SCHOLZ: This figure presents the analysis of one of the five datasets, and this one for individual worker. The distribution appears to approximate a lognormal distribution -- meaning that it lines up in a straight line, of exposure measurements gathered over time, on an individual shot blast machine loader in a ferrous foundry.

The size of this dataset was quite limited. This is a small number of sample points to conduct this. However, the graph showed a tendency toward linear conditions in the 16 to 84 percent range. Under these circumstances, NIOSH guidance cautioned against extrapolating confidence limits outside of that range.

In case you're wondering why I use 84 percent -- why don't you talk about 90 or 95? With the datasets that we were working with, NIOSH guidance was delimited to that.

Now, the report that was issued on this data, that's in the docket, discusses the fact that there are measures that can be taken in the sampling design and implementation where higher confidence levels can be achieved. But we're working with the datasets that we had from the seven foundries.

The median, 50 percent exposure, that's -- in other words, half the data is less than, half is more than, was found to be at or below 39 $\mu g/m^3$, meaning it would meet the new PEL at the median.

And the 84 percent confidence level was expected to be at or below 90 $\mu g/m^3$. So you see the impact already, in that -- on the variability. If we're looking for a high confidence that the person is protected over the long term, basically we're not looking at mean data, the median data. We're looking at data at a higher confidence level to be below the standard. Next slide.

This is "Foundry 02." Here is a lot more data. In this case, this is for a whole group of -- in a job category. These are core makers in a ferrous foundry. The median exposure was again below 50, at 49, and the 84 percent confidence level was expected to be at or below 141 μg/m^3. Next slide.

This one is called "Variability of Silica Exposure Results." It's a chart.

JUDGE PURCELL: And that's on Page 18 of the printed version of the presentation.

MR. SCHOLZ: A summary chart for the 12 data evaluations conducted for different job categories is presented in this figure. For each of these distributions, the 84 percent confidence level point and the -- which is the median, the 50 percent level, are depicted.

So the red squares are the 50 percent, the median value, in other words, and the blue ones are the 84 percent confidence values. The ratio of these two confidence limits defines the geometric standard deviation of the data, which varied in these 12 datasets between 1.83 and 3.48.

The only reason I get specific about that is, NIOSH guidance has a comment on that, that these ratios are indicative of data that has substantial variability.

So this preliminary analysis shows that while workers can meet OSHA's proposed silica limit on some occasions, consistent compliance with the proposed standard was only predicted for one of the 12 ferrous foundry job categories, the top one. The automatic mold machine operators had a median of 14 and an 85 percent confidence of 35. All of the others had exposures that were higher.

AFS' interpretation of silica exposure sampling results, meaning that half the people are in compliance already, half need to be -- we need to work to get them in compliance, that interpretation, and AFS' interpretation now would paint the picture where much more engineering controls are going to be needed to achieve the 50 µg compliance because the whole labor force is affected -- be affected by it, because of the variability question.

There isn't this 50 percent of the workers that are already in compliance. And that the effort will extend to the entire foundry industry. Next slide.

Here's my conclusion. In order to address the impact of variability when interpreting foundry silica exposure results -- oh, sorry, sorry.

In conclusion, using NIOSH guidance, substantial statistical variability was found to exist in a limited evaluation of repetitive foundry silica exposure data accumulated by seven foundries for individual workers and groups of workers.

And you can see -- and I'm going to read these conclusions. Sorry to read them to you, but they're kind of critical to what was shown by this data.

Given this variability, in order for a silica PEL such as 50 $\mu g/m^3$ to be considered feasible, it should first be demonstrated that -- with a high degree of confidence, that protection against silica exposure to this level is achievable, in other words the task still remains to make that demonstration.

A statistical upper confidence limit should be established from repetitive sampling results, as appropriate to protect foundry workers over the long term.

I'm going to throw a personal comment in. OSHA likes to use its own data, and like Tom said, will cite on one data point. The foundry industry takes data, but that data isn't taken seriously.

When you start looking at the fact that we really need to know, statistically the reality of the protection that's being offered to workers, we need to burrow in on that. And we need to protect people for the long term.

That I think it's time that OSHA and the foundry industry got together on this data. Instead of OSHA ordering the foundry industry to take data on a certain sequence of dates, that the databases need to be combined. There's a great need in this to set priorities for control in the foundry, if we're going to keep improving, improve to the current standard and go beyond.

So this issue -- I know there's been a lot of discussion about this issue of data, and how it's taken and how it's interpreted, but it's something that there needs to be a joining of the minds on, between OSHA and industry. Personal comment.

So as far as the feasibility analysis goes, OSHA's feasibility analysis to date does not make a valid argument that this goal is achievable, the 50 µg goal. That's my end.

JUDGE PURCELL: Thank you, Mr. Scholz. Mr. Spada, I believe Mr. Slavin had some --

MR. SPADA: Mr. Slavin's up again, yes, sir.

JUDGE PURCELL: Okay. Thank you. Go ahead, Mr. Slavin.

MR. SLAVIN: Yes, thank you. Tom Slavin

again. I'd like to address one slide on the subject of sampling and analytical error. And our review of the situation and the comments is that OSHA's analytical error estimate does not include interferences or sample preparation procedures or inter laboratory variation.

In addition, the sampling error -- so we're talking analytical error on the one hand, missing some things. The sampling error also does not include a few things. The cyclone performance or ASTM has a sampling method for respirable dust that cites additional errors and biases.

And OSHA only looks at the flow rate sample problem or variation. And so if you add those other sources of variation in there, it looks like the sampling and analytical error is greater than 25 percent.

And as an additional comment, laboratories report. They don't necessarily report their sampling and analytical error. So you get a number from them, but it isn't necessarily -- you don't know what level of confidence that number has.

So what I'd like to turn to now is the idea of economic feasibility, and I'd like to show that OSHA has failed to show that the proposed PEL is economic feasible. Next slide -- next chart is on Page 20 of our slide exhibit, and it shows the annualized cost for foundry sectors.

What I'd like to point out here is that in the far right hand corner, OSHA estimates, for the four foundry sectors -- we're not including captives because the information is too difficult to get. So these are just the industry sectors that can be identified.

Those four sectors, OSHA assumes -- estimates a $44 million cost. URS has done an extensive reassessment, and has determined that the cost is actually $2.2 billion for those same foundry industries.

And as I'll get into a little bit further, we believe the URS assessment is conservative. Now, this represents 9.9 percent of foundry revenues, and 276 percent of foundry profits. So it's indeed a challenge. Next slide.

So one might wonder, well, who's right, or how can these estimates be so different? Well, I'd like to discuss a number of factors that will account for that.

So the first factor is discounted cost. Next slide. OSHA discounts cost -- this is Page 21 of our deck, OSHA discounts cost for those workers exposed over 100 µg/m^3.

And so in this example here, which comes from the preliminary exposure -- or economic assessment, OSHA notes, 660 workers exposed above 50 and 2/3 of those exposed above 100. So they therefore discount 2/3 of the cost. So you go from $900,000 -- you subtract $600,000 and come up with a cost attributable to the standard of $300,000.

There's some logic to this approach, and we're not quibbling about a full cost versus incremental cost. What I want to point out here is three problems with this approach.

One is that the exposure estimates are old and from enforcement data. So they're from 1979 to 2003 data, which don't reflect reductions. And even within that data -- there have been two reviews of the data that we cite in our written comments, that show a significant reduction in comparable industries, from about a 50 -- more than 50 percent reduction in comparable industries from the first study to the second study.

So -- and then our own foundry data indicates that the current results are lower still. Another problem with that estimate of exposures is that OSHA uses the enforcement data, which are high-biased to begin with.

When OSHA takes a sample, they don't pick a representative random sample of workers. They pick those most likely to be overexposed. So the sample results are biased -- to the extent that OSHA can figure out who's overexposed, the sample results are biased there.

So that's one problem. If you actually look at what the real numbers should be, it probably -- from our estimate, for the foundries -- I don't know what it is for other industries, but that 2/3 is reversed. Current exposures would be about 2/3 in that 50 to 100 category, and only 1/3 above the 100 category.

Another problem with this discounted cost assessment is there's no cost for those below 50. And as Bob explained with variability, we have to account for those people whose exposure is 50 or less.

And what the number is, whether it's 25, or 20 or 10, we're not -- we don't know. But there's -- there are people whose exposure below 50 still deserve controls, still need controls. So cost has to be added for those.

And then the third issue is, there's no additional cost to go to reduce exposures from 100 to 50. If you notice the per-worker cost -- and we'll talk about per-worker cost later. This per-worker cost is actually the true cost divided by four. We'll discuss that in a minute. But the per-worker cost here of $1400 for those over 100 and also the same cost for those over 50, and I'll talk about that next.

So this is on Page 22 of our slide deck. The economic analysis that OSHA uses is counter to economic theory. There's something that's called the law of diminishing returns that a lot of people are familiar with. The more stringent the standard you try to meet, the higher the cost involved in reaching that standard.

In some cases, you may reach a point where you can't get there at all, no matter how much cost you throw at it. So OSHA's linear assumption that it costs the same whether it's 50 or 100 is clearly not appropriate.

I like to use the example of cooling a room. Try to cool a room to 50 degrees. You may be able to do that by opening a window. But it's -- you may not be able to do it by opening a window, so you may try a fan.

And if that doesn't work, you may have to shut the window, turn the fan off and use air conditioning. And if that's not capable, you may even have to beef up the insulation to get where you need to do.

So there's these series of control options to get to the level you're trying to achieve. OSHA would assume that if you can open the window in the wintertime and reach a room temperature of 50, you can do the same thing in the summertime. And the only cost that they include in their estimate is the cost of opening the window.

And so our point is, it's clearly not appropriate. If you look at ventilation controls, there are many more things you need to do to control to 50, if you can even get there, in some cases. But you have to account for mass balance for your supply air.

To reach 100, you may not have to -- you may be able to do it with ventilation alone. To reach 50, that may not be possible. You need precise control of process variables, and you may have to customize off-the-shelf solutions.

The ACGIH ventilation manual diagrams are concepts that are useful, but they're not capable, in many cases, of reaching the type of level -- exposure levels that we need to get to with the proposed PEL. Next slide.

So if you were to assume a higher cost to reach the lower level -- and here I've asserted an assumption of a five times cost. And this is a reasonable assumption based on foundry experience, and in fact it may be a conservative assumption, but let's see what happens when you put that cost factor of five times in there.

The incremental cost associated with the OSHA proposal goes from $300,000 to $4 million. So it's a 13 times increase with just adjusting that marginal cost factor.

JUDGE PURCELL: And, Mr. Slavin, the figures you're referring to are in the chart on Page 23 of the presentation.

MR. SLAVIN: Yes. Thank you, Judge. I'm sorry. And the next figure that I want to refer to is also on Page 23, and this is a summary of Bob's exposure data, with one additional data line at the top. I've indicated the average of the foundry job categories that he included.

And I need to point out, just for clarity, that these aren't all foundry job categories. These are the ones that we had data that we could work with. And so it's the data that is available. We had a sufficient number of data points on the same job, the same foundry, the same worker, where we could do the statistics.

If you average those 13 points, you get an average of 46 $\mu g/m^3$ as the geometric mean exposure, which is below the PEL, but the 84 percent confidence limit, which means 16 percent of the examples -- of the samples would exceed 115 µg.

So the point here is that the target that we need to reach is not this mean exposure of 50. It's -- we need to move the tail of this distribution down.

Let me refer to the per-worker calculation. OSHA divides the control cost by the number of workers. Commonly, this is four, for most -- in most cases.

An example is this, the sand muller operator that we were just -- that we've been talking about here, using as an example. They take the $5600 annual cost and divide by four, assuming four workers are going to be protected by that one control.

The problem with that is that foundries

don't have four muller operators per muller, typically. In fact, many foundries have multiple mullers, for different sand chemistries, for molding and core-making sand, there are multiple mullers, and the number of foundry workers is less than four. It may be, in some cases, particularly with automated mullers, that you have more mullers that have to be controlled than you have muller operators.

It's -- in other cases, employees, especially in small operations, small foundries, may perform multiple functions, each of which has to be controlled. Cleaning and finishing room is another example where if you run different jobs, different size castings, you may have a work station for one size casting that you're running on a particular day or week or whenever, and you've got different stations for different parts.

And so some of those stations go unused on some days, and our -- and the consequence of that is you have to control all of those stations, even though you don't have four workers per station.

So let me talk about some underestimated costs. This is another issue with -- there are a number of cost assumptions built into OSHA's estimate that are inappropriate. I'd like to call out the one on ventilation, which is assumed to be an annualized cost of $5.33 per cubic foot per minute.

And industry experience, and also this conforms with EPA guidance. If you look at EPA guidance for a baghouse to meet pm 2.2, the costs are much higher. Industry experience is about $20 per cfm, and $7 for makeup air, that you also need to control the exposure. So we're looking at -- if you base costs on how much cfm you need, you should be using $27 per cfm.

Now, the URS cost reanalysis used $12 per cfm. So they don't use what we think is an appropriate. So that's why we say we -- that's one of the reasons we think it's conservative.

There are a number of other issues here where OSHA just under estimates. One of these is the last one -- this is the 15 gallon HEPA vacuum, next slide. The vacuum that OSHA proposes is -- or that OSHA builds into their cost assumptions, is about a $4000 vacuum for -- that has a 15 gallon capacity.

Well, foundries use tons -- hundreds of tons in some cases, of sand. And they really need a vacuum, a HEPA vacuum that is something on the order of the one on the right there, which is a 40 horsepower system with a 2 cubic yard capacity, and it costs about $16,000 -- or $60,000. Okay, and that's on Page 25.

So there are some missing costs that are included in OSHA's -- that OSHA identifies in their economic assessment -- or technological feasibility assessment. So they're saying that you can reach the PEL if you use these various control measures. So they include those items, but they don't include the cost for those items.

And so these are -- listed on this page are some of the items. And a couple of these things I've added some cost for. The non-silica sand is -- some foundries can use non-silica sand, or at least to use it in some applications, but generally it's not even feasible to use that.

But if it were, foundries use by, on average, each year, 3 million tons of silica sand. And at $85 a ton, if you use substitutes, which are about $700 per ton more, that's a couple billion dollars. So it's a big cost to miss, even though it's hard to predict exactly how many foundries could use that.

But there are a number of these costs that OSHA points to. In some cases, such as professional cleaning, they do -- that's a critical part of a foundry feasibility of meeting the exposure, and there's no cost built in for that.

There are also some costs that are excluded. They're not in either the technological feasibility discussion nor in the economic feasibility discussion. And they're -- listed here are a couple of those, cutoff saws, torch cutting, arcer operations.

And also, I'd like to point out the EPA modeling and permitting. And this is a huge problem, particularly if you have to upgrade baghouses. OSHA's rule and the ventilation improvements may trigger upgrading the entire baghouse for an operation. And OSHA acts -- really doesn't build in EPA obligations or constraints. And they really need to be considered, particularly in the economic assessment.

So let me just mention a couple of specific provisions that -- of the standard. One is exposure monitoring. We really believe we need source information, that eight-hour time-weighted average does not tell us what the source is. And if all you do is repetitive eight-hour time-weighted average, you're not going to learn anything.

So we believe that there is room for other kinds of measurement, real time monitoring, other alternative measures that can not only characterize exposure, but we can learn something about sources.

Regulated areas is a problem. The definition of regulated areas is based upon the time-weighted average exposure. And we're trying to figure out, well, what happens if you've got a maintenance worker who's -- moves around, spends part of his time in the office, and is overexposed on a time-weighted average basis, is the office part of your regulated area?

According to the way we read the proposal, that's the way it would work out. And we don't think that's appropriate.

Grossly contaminated is not defined. It's a term that's in there and not defined. We don't think that -- there's a report in our submission, our written submission, that's the only scientific report we know of that studied this issue of silica take-home contamination, if you will. And that shows there's no appreciable increase in exposure from the dirty clothing, dusty clothing.

And the other issue with that is the dusty clothing is based on a visible criteria, and we're really looking at respirable dust, not visible dust.

So we think the grossly contaminated is unworkable, and it's poorly defined, in any event.

I think I'm -- the compliance dates is another issue that I want to mention, and that's the fact that it takes, in some cases, more than a year to get an EPA review of your permit. That's after you've designed the control, figured out what you need and then submit that to EPA.

EPA asks for, in some cases, 18 months to review your permit before they let you even begin construction. So for OSHA to require a one-year installation of engineering controls is -- puts foundries in a catch-22 situation.

So, in conclusion, OSHA's failed to show a risk below the current PEL, and failed to show a reduction of risk with a lower PEL. We believe the current standard needs to be better enforced. We also think OSHA's failed to show technological and economic feasibility of the proposed PEL.

And we point out, finally, that the cost of the proposal, 9.9 percent of revenue, 276 percent of profit, will threaten U.S. foundry operations. Thank you.

JUDGE PURCELL: Thank you, Mr. Slavin.

Mr. Spada, I believe next is

Christopher Norch. Is that correct?

MR. SLAVIN: Yes, sir.

JUDGE PURCELL: Okay. Mr. Norch?

MR. NORCH: Thank you, Your Honor. It's a pleasure to be here today. My name is Chris Norch, and I'm President of Denison Industries, based in Denison, Texas. And I've worked in the foundry industry for over 30 years now, starting in high school when I worked in my family's iron foundry.

I have worked in every facet, every department of the foundry industry in both green sand, iron as well as non-ferrous. I've done every operation and not just for a day to put it on my resume. Every operation was done for months at a time so I could learn the shop floor from the ground up.

Today I oversee the day-to-day operations of a privately held aluminum foundry, which is comprised of 168 employees. I also serve as a member of the board of the American Foundry Society, currently as Vice President and as incoming President, as well as Chairman of our Texas Cast Metals Association.

Denison Industry specializes in the production of aluminum castings for the defense, aerospace, automotive, commercial, residential and transportation sectors, both domestically and internationally.

We're now exporting to five nations due to our excellence in both quality and service. The castings we produce are of complex geometry, and we supply to end users such as Allison Transmissions, the Saffron Group, Ingersoll Rand, Chrysler, Subaru, Boeing, Parker Aerospace, Raytheon, L-3 Communications, and many, many more.

Like many other foundries and manufacturers in the United States that compete in the global economy, we succeed through innovation, investment and the hard work of our dedicated employees.

In recent years, foundries across the country have expended hundreds of millions of dollars to reduce silica exposures in an effort to comply with the present standard, which OSHA proposed to be cut in half, as well to implore -- ensure our employees' safety.

In Page 28 of the written testimony, I've put a picture of our shop floor. At first glance, you'd say, wow, that's nice. That's a brand new installation, sure, it would be clean, but that's the foreground. What I'd like to point out is the surrounding composite environment. That is indicative of a foundry that is already operating and adhering to the 100 $\mu g/m^3$ PEL.

The critical role that castings play in our national security and nation's defense. The foundry industry is the backbone of U.S. manufacturing and continues to support its many end users, including the military market.

Approximately 10 percent of all castings produced are solely for military applications. Tanks, planes, ships, weapons, and a myriad of other military hardware contain thousands of cast parts. Our members have produced cast molds for personal armor, electronic housings for guidance systems, and transducer heads for sonar and radar equipment.

A couple of examples that you'll see of castings up here on -- they're listed again on Page 28. Bottom right, the epoxy painted black, that is the oil tank for every CFM56 737 engine. And at the bottom of the unmanned space shuttle over there you'll see the large aluminum casting. That is the booster rocket adapter that holds that unmanned shuttle to the rocket that takes it into space.

U.S. foundries are essential to supplying castings for a wide range of military applications and to our national security. I'm proud to say that Denison has supplied every Bradley transmission housing that's ever been placed in combat service. We provide Abrams tank crankcases and oil pans, Aegis radar components, laser guided bomb components, and a multitude of other castings that have helped protect our troops in combat.

We're now heavily engaged in supplying commercial aviation oil tanks and steering components, as well as the booster rocket adapters to take the new unmanned space shuttle to the International Space Station.

A couple other examples of castings that you'll see while I'm speaking; that is a prefinished version of the oil tank there, as well as a 1500 horsepower tank transmission.

Foundries have decades of experience with dust and silica control technologies. Dust control, especially at the low exposure levels OSHA is recommending is both challenging and complex.

Based on this experience and review of OSHA's proposal, I would like to discuss the following significant concerns with the Agency's proposed silica rule, regarding underestimated costs and OSHA's proposed prescription of control methods that contradict existing safety practices that are simply not workable in the foundry industry.

From the onset, my testimony focuses on both our facility as well as examples from members with excellent safety records, and which have made considerable investment to date in an effort to comply with OSHA's current silica PEL.

I have four points I'd like to focus on regarding the underestimated cost and the time to implement. First, EPA permits and increased ventilation: Currently, OSHA's primary reliance on engineering controls means that employers will rely on increasing the amount of ventilation and air movement to reduce the amount of silica in the workplace.

OSHA's analysis suggests that simply increasing ventilation rates will control exposures, but the law of diminishing returns means that the increase in the quantities of air to be moved, cleaned and replaced will increase exponentially.

Those changes in volume and the increased number of vents that exhaust respirable crystalline silica particulates will likely require foundries to update federal, state, or local environmental air emission permits. In addition, they'll result in greatly increased energy costs for the heating and cooling of these huge volumes of additional air.

In addition, OSHA's analysis does not address the fact that some foundries may not be able to obtain a permit to install additional ventilation, due to EPA's PM2.5 standard requirements.

In many cases, foundries which are operating under a grandfathered permit may be stymied in the attempt to add ventilation. In others, a small increase in exhaust will trigger an expensive upgrade to the best available control technologies.

Because of its case-by-case nature, the cost associated with EPA compliance cannot be determined for the foundry industry as a whole. Furthermore, OSHA hasn't even considered this factor in their Preliminary Economic Analysis.

Air quality permits take considerable time and monetary resources to obtain and modify. In the state of Texas, which is business friendly, the review process can take at least six months. The agency review period does not include the time to determine what, if any, changes are necessary that will require modifications to the air and operating permits of a facility, design those changes, prepare the appropriate documents and then submit the application.

OSHA estimates that a foundry will spend $9143 annually for engineering controls alone. One of our work member companies producing military castings with fewer than 50 workers provided us with the following estimate:

If they have to revise and put in a new dust collection system under the reduced PELs, they'll incur costs between $300,000 to over $800,000, depending on the type of system and the other changes in permitting needed.

This estimate doesn't include the cost of engineering time, new permits, if necessary, including zoning changes for the dust collection pads, and most importantly, lost production time.

Permit approvals in the state of Pennsylvania, which are not even guaranteed, can often take over a year. At an estimated cost of $20 per cfm to $30 per cfm, $9000 would purchase this between 300 to 400 cfm only of suction for this one small Ohio foundry. In the pollution control world, 400 cfm is a relatively small amount.

Other missing costs include several aspects associated with ventilation systems. Dust controls must often be located remotely from baghouses requiring extensive ductwork. OSHA does not include the cost for such ductwork, nor the engineering design or the installation costs.

Second point, regarding training: OSHA estimates training costs at $200 annually per foundry. This amount is the equivalent to the cost of having five employees attend a one-hour training session without including the cost for the trainer, training materials or facility use. Safety training is valuable, but training is expensive, and OSHA's figure woefully underestimates the true cost of such training.

Third point, exposure monitoring: Another area that OSHA has underestimated is the cost for exposure monitoring, which they currently estimate to be $2770 annually per foundry. This is vastly underestimated, since foundries will be required to monitor more than one day per year.

For example, one small foundry with 150 employees costs $3000 just for the day to have the consultant make a one-day, one-shift visit to the foundry, and during that visit, manage between six to eight monitoring pumps.

Foundries will have to be monitoring much, much more than that. In the recent month, we have obtained air -- the same sampling permits for exposure monitoring for our facilities, and the quote came back at $5430.

With OSHA proposing that the monitoring interval of every three months for those above the 50 μg/m^3 PEL, and every six months for those above the 25 μg/m^3 action level, the cost is at least four times too low. For a company with three foundries on site, obviously the estimate is then 12 times too low.

Finally, regarding respirators: OSHA estimates a cost of $522 annually per foundry. As noted by one small foundry, this number is clearly underestimated, as they spend $500 per month for respirators at the foundry, where they have a number of employees who are required to wear respirators while performing certain job duties. The respiratory equipment ranges from dust masks to full face, cartridge-equipped respirators.

We're going to continue on with the second counterpart, my colleague in the foundry industry, and he's going to touch more extensively on the various control methods that contradict existing safety practices and are simply not workable in the existing foundry.

But I do have a slide that's on Page 31. He's going to touch on some of the counteractions against sweeping and vacuuming, as well as wet vacs. I don't know how many people have spent a lot of time in the foundry, but those of you that have know that moisture, or liquid and molten metal don't mix.

Here's a perfect example of a foundry that had less than a juice can of water get into a furnace, and you can see that that subsequent explosion leveled the entire facility. So some of the practices that they're -- are looking to be proposed are certainly going to introduce a lot more safety hazards that have probably been imagined.

OSHA has proposed a ban on employee rotation. And this was one of the simplest and most rational counter points to begin with, because we and every other foundry rotate our employees for cross training and flexibility over their work shifts so as to sustain engagement, give workers the opportunity to have a far more extensive skill set than one based on repeated daily production activities.

The proposed rule prohibits job rotation as an allowed method to control silica exposure. Job rotation is a common practice already in place at many facilities. It's used to improve productivity, enhance safety, prevent fatigue, and prevent boredom.

Another common practice is employees filling in for other employees while they take their breaks, i.e., lunch breaks, bathroom, et cetera, or off the production line for a multitude of other reasons, such as safety training, temporary transfer, et cetera.

All employees who move between different job tasks experience different exposure rates while performing each task. We're concerned that if one of these job tasks is found to be above the proposed PEL, then any substitution of employees could potentially be deemed a violation of the standard.

This proposed prohibition of job rotation could then handcuff an employee to a specific job, which for a myriad of other safety and business related reasons may not be desirable. OSHA may well be creating a significant safety problem by prohibiting job rotation.

We strongly recommend OSHA revise its proposal to acknowledge that any other reason for the rotation creates a presumption that it's not for exposure control, and is permissible absent a showing by OSHA that the reason provided is not valid.

I'd like to wrap up by saying that AFS

foundry members routinely make significant expenditures on the equipment and training needed to keep our employees safe. OSHA has failed to portray accurately the foundry industry costs and workplace dangers associated with the proposed rule, and the significant adverse impact of the proposal on small foundries nationwide.

In addition, OSHA needs to work with other agencies such as EPA to avoid conflicting rules and to understand the impact that OSHA's rules will have on triggering foundries' obligations under EPA. Foundries have to meet rules from both agencies, and clearly OSHA has not considered costs or factored in time constraints associated with EPA requirements that will be triggered by the rule.

Moreover and of particular significance, OSHA's proposal is not cost effective and is inordinately expensive, because it would require the use of engineering controls when employees are fully protected currently by the use of respirators.

In fact, today's respirators are really personal engineering controls. They're far more sophisticated and better designed than the devices available in the 1960s, when the current policy was adopted as a good industrial hygiene practice. It's long past time for OSHA to fairly review and revise the policy to reflect current technologies and today's realities.

In conclusion, OSHA's proposal would significantly increase cost, slow down job hiring, eliminate a large sector of foundry jobs, and undermine our industry's ability to compete in the global marketplace.

The loss of U.S. foundries resulting from this rule will weaken the country's manufacturing base, and require foreign sourcing for critical defense parts. Foundries have been getting -- excuse me. Foundries have been an important part of our country's history, and they're critical to our future. Thank you.

JUDGE PURCELL: Thank you, Mr. Norch. I believe the next and last panel speaker is Mr. Mark.

MR. MARK: Thank you, Your Honor. I'm Peter Mark, Corporate Director of Safety, Health and Environmental for Grady Holdings, headquartered in Southfield, Michigan.

I've worked in the foundry industry for the past 30 years, starting out in a very small foundry, and working my way up to helping out at the corporate operations for Grady Holdings.

Grady operates 12 foundries and two machining centers in the U.S., as well as two foundries in Mexico. We manufacture safety critical and highly complex gray and ductile iron castings, and we've been in business for over 90 years.

Grady is the largest independent operation of iron foundries in North America, and we currently provide jobs for 4300 employees across America, and all of those are family supporting jobs.

Grady is committed to providing a safe and health workplace for all employees. Safety is one of our top priorities, and industry -- and we are doing so well at it that we are a leading -- in safety metrics for all of the industry.

Grady manufacturing operations have been recognized by public and private organizations for the exemplary job that we do in safety environmental achievements. Let me move the slide.

With the reduced PEL proposed by OSHA, the frequency of air quality testing will significantly increase the amount of air quality testing that will be given -- that we'll be required to do. Currently Grady uses a policy of testing every 18 months in areas where we know that there is a concern of exposure and silica.

The requirement to do this testing every three to six months is going to tremendously increase our cost of testing, and will not give us any significant -- more information. And we already know that we're basically going to be retesting the same areas that we know we have a exposure concern.

With the proper personal protective equipment, engineering controls, employee training and respirator protection, employees are not suffering from any ill health effects.

One Grady facility has spent a million dollars experimenting with numerous engineering practices, including several recommended by OSHA in attempt to meet the current OSHA PEL. Despite these multiple attempts over many years, employee exposures without respiratory protection -- and we have not been able to get under the current PEL. I don't know what slide you're on.

Employees working in these areas are provided with and use supplied air helmets, and we have a concern that OSHA does not consider that to be a viable engineering control.

Even if we get within compliance on regulations, we would continue to use the air supplied helmets because of the protection that it gives our employees for eye protection and face protection while they're grinding the castings. Supplied air helmets provide fresh, clean, cool air, and protect the employees both face and eyes.

At another Grady facility, we've spent over a million dollars to install an automated blast system prior to knockoff, or in other words, prior to the employee exposure. It costs around a million dollars a year to run and maintain this system, and along with appreciation of the system.

Under the proposed regulation, even with this system, 30 percent of our employees would be considered to be overexposed, and currently it's only around 5 percent of our employees that are considered to be overexposed.

Underestimating the cost: There is several underestimates of the cost to install and run the additional collection systems. One of these costs that's not collected in -- not calculated in, is the cost of the makeup air system. Whenever you remove air from a building, you have to make that air up in some way, shape or form.

The cost of makeup air -- to install makeup air costs around $4 per cubic meter, and then it costs around $7 to run and maintain those units every year. Installation of the collection system, again, costs around $21 for -- per cubic meter to install.

Ban on compressed air and dry sweeping: This is a significant concern for Grady. The proposed regulation is going to significantly reduce our ability to clean molds and castings when using compressed air.

We currently use compressed air to clean the molds off, just prior to being -- mating the top and bottom half of the mold, and the new regulation would not allow us to do that.

We also use the compressed air to clean the integral inner parts of some of our castings, obviously the smaller parts, weld bodies and those type of castings that we have to have every speck of dirt out of there in order to send it to the customer.

Compressed air is used to clean hard-to-reach areas under pieces of equipment also. It's not one of the options that we like to use, but we can't reach it with either a broom or that type of sweeping, and in order to have a vacuum that would create enough suction to draw up that dust and dirt that would be underneath those pieces of equipment would be -- create a hazard in itself.

We currently have installed a vacuum system to clean parts of our basement area, and we have to have a special device that has to be used all the time in order to keep an employee from getting his arm or fingers or such forth getting sucked into the vacuum, but it needs to be that strong in order to actually pick up the dirt and -- dust and dirt that we'd be talking about.

Wetting of any surfaces in the foundry industry is also a significant concern to us. Where our concern -- it is going to increase molten metal explosions, because any time you get a wet material underneath the surface of molten metal, it will cause an explosion-like reaction.

We have skimmers that we use on top of the molten metal to skim off the -- impurities off the top of metal. Those skimmers are given a water-based coating of material on them in order to keep them from melting in that skimming process.

We had, several years ago, where we had an employee use one of those skimmers that was still slightly damp, put it underneath a bath of molten metal and caused an explosion. He did get a minor injury to his leg.

Because of that, we have the policy that those skimmers have to be -- sit on the shelf to dry for at least 24 hours before they can be used. If we are being required to wet areas in the foundry, we're going to be having that possibility of those skimmers and other tools getting wet in that cleaning process, and potentially causing explosion and injury to our employees. Grady is strongly opposed to this aspect of the regulation.

Grady is requesting that OSHA's proposal on silica rules are overly burdensome, and will significantly impair the U.S. foundries' ability to compete in the global economy, and force some foundries to go out of business and others to shift production to offshore facilities. With that, I'd like to return the floor back to Al.

JUDGE PURCELL: Thank you, Mr. Mark. Mr. Spada, go ahead.

MR. SPADA: I just have a brief summary, Your Honor. This is Al Spada, American Foundry Society.

OSHA's silica proposal will have a devastating impact on the majority of the foundry industry and its employees. As you have heard here today, OSHA's estimated cost of the proposal alone on the foundry industry will be at least 9.9 percent of industry revenue and 276 percent of industry profit.

For a significant number of foundries, the rulemaking will be the final straw that destroys their whole business and the jobs of thousands of employees.

We are particularly concerned that OSHA has declined to conduct a second small-business panel review, under the Small Business Regulatory Enforcement Fairness Act, choosing to rely on a more than 10-year-old 2003 report.

We believe OSHA must convene a new SBREFA panel, with a requisite participation of small business, to review the Agency's silica proposal, as it is significantly different than that reviewed in 2003.

The new panel's findings must be made available for public review before OSHA proceeds further with this rule. Reliance on the panel that solicited input from small businesses regarding a different proposal a decade ago is simply not adequate outreach to the affected small business stakeholders.

Furthermore, the use of decades old data raises serious concerns that OSHA has not used the best available techniques to quantify the costs and benefits of the rulemaking.

Instead of unnecessarily throwing our industry of predominantly small businesses into turmoil by slicing in half a PEL that has triggered successful workplace protection, OSHA should do the following:

Change the formulaic PEL for respirable crystalline silica exposure in foundries to a simple value of 100 $\mu g/m^3$. They should work with employees to improve compliance with this newly adopted PEL of 100 $\mu g/m^3$ through training, outreach, and compliance assistance.

They should work with NIOSH to help develop innovative approaches to the issues of the industry. They should work with EPA to allow expansion of ventilation systems to reduce employee exposures under currently permitted criteria.

And they should withdraw this silica proposal, correct the flaws in its economic and technological assessments, and modify it to make it more economically feasible and allow the use of the most cost effective means of compliance for the foundry industry.

For their part, foundries will continue their successful effort to provide a safe and healthful workplace. On behalf of AFS, we appreciate the opportunity to testify today, and thank you very much for your time.

JUDGE PURCELL: Thank you, Mr. Spada. Before I open it up for questions, let me go ahead and mark and enter certain exhibits into the record.

The first one will be Hearing Exhibit 84. That is the PowerPoint presentation which includes not only points made by, I think most if not all of the speakers, but various charts as well.

Hearing Exhibit 85 will be the written testimony of Mr. Jerry Call.

Hearing Exhibit 86 will be the comments of Thomas J. Slavin.

Hearing Exhibit 87 will be the comments of Robert Scholz.

Hearing Exhibit 88 will be the comments of Christopher Norch.

And Hearing Exhibit 89 will be the comments of Peter Mark for Grady Holdings.

Each of those exhibits have been marked with those numbers and are admitted into the record.

(Whereupon, the documents referred to as Hearing Exhibits 84 through 89 were marked and received in evidence.)

JUDGE PURCELL: Any further exhibits, Mr. Spada, that you intend to offer?

MR. SPADA: None at this time, thank you.

JUDGE PURCELL: Okay. Thank you very much. With that, I'll open it up for questions. Could I see a number of hands of individuals who have questions? Okay. Do we want to start down in front? And please state your name, spell your last name and identify your affiliation.

DR. MIRER: Yes, Frank Mirer, M-i-r-e-r, CUNY School of Public Health and AFL-CIO. And just to make this more illuminating, I wonder if we could go back to one of Mr. Scholz' slides. And my -- keep going, keep going, keep going. That's fine. That one was fine. Okay.

And these comments were originally -- my questions come from Table 6 in the overall presentation. Okay. And so the question is, looking up there, we see the melting operator, the mold pouring operator with, I guess, the highest -- or among the highest exposures in the place, the pressure pour operator, exposures as high as 140 $\mu g/m^3$. And so my question is, is there any silica being generated by the activities of that operator?

MR. SCHOLZ: Maybe, maybe not. Is this on?

JUDGE PURCELL: Yes, it is. Hold it up to your --

MR. SCHOLZ: Okay.

UNIDENTIFIED SPEAKER: This is Bob Scholz.

MR. SCHOLZ: Oh, Bob Scholz, first thing.

JUDGE PURCELL: Thank you, Mr. Scholz.

MR. SCHOLZ: Okay. So you're -- I guess you're getting at the point that some operations aren't inherently a source, but the manner in which the foundry is ventilated, perhaps, and the manner in which it's laid out and the processes interrelate, that you can have the cross transference, cross contamination --

DR. MIRER: Yes.

MR. SCHOLZ: -- and have silica exposures, you know, for that reason, so that it may not be -- its source may not be the department itself.

DR. MIRER: Right. And at least from this graph, the highest exposure jobs actually are these jobs with no -- that are not a source.

MR. SCHOLZ: Okay. Now, which ones, okay --

DR. MIRER: Except for ladle relining. That's a separate issue. But melting operator, mold pouring and I guess pressure pour operator.

MR. SCHOLZ: See melting, in a lot of foundries, has more ventilation than any part of the foundry. A lot of the foundries are imbalanced, as far as supply and exhaust, and you'll have -- the melting department will be, can be a sump, possibly.

But there is a lot of silica in the melting department, especially when there is sprue return, when -- if scrap castings and sprue is returned for remelt, that causes an exposure in the melting department.

DR. MIRER: Okay. But -- okay. We don't have to beat that back and forth, be an argument, but I'm just -- I think we have some understanding that there's jobs that don't inherently generate silica where you're getting high silica readings in your data.

MR. SCHOLZ: Yes.

DR. MIRER: Okay. Let me go back, throw --

MR. SCHOLZ: Can I throw one more comment in there, Frank? A lot of the work that's being done now in the foundry industry involves the root causes analysis, using -- to -- before processes are attacked as far as improving ventilation or even prioritizing them, or doing a hazard analysis, even, the other techniques, then, the exposure monitoring to establish what are the sources of these contaminants.

DR. MIRER: You know, I think we're in agreement that real time aerosol monitoring is an important way of improving things. Going to --

JUDGE PURCELL: Mr. Mirer, before you go on, I'll just -- you may have done this but I didn't hear it. I just want to make sure the record's clear. You're referring to the chart captioned, "Variability of Silica Exposure Results for Job Categories."

DR. MIRER: Right. That's correct. And I can't -- I don't know what the number is, because it's not displayed there.

JUDGE PURCELL: I don't recall a page number it's on, but we should be able to find it based on the --

MR. SCHOLZ: It's on Page 18, I guess.

JUDGE PURCELL: So Page 18 of the PowerPoint presentation, printed version.

DR. MIRER: And so the same comment would apply to Table 6 in the overall testimony -- it's just visually displayed here, but we have 30 percent of furnace operators exposed above 5 µg/m^3. We have 33 percent of pouring operators. This -- I'm sorry.

I wanted to compliment you on collecting air sampling data and presenting it. I think you're one of the few industry groups that have done that, so I'm very pleased that you have done that. It adds to the record. But this is one the things that does add to the record.

So in each of these, we have substantial fractions of people in these non silica operations exposed above 50 and even exposed above 100; is that correct? I don't want to be dramatic. It's a table. It's in your --

MR. SLAVIN: Tom Slavin.

DR. MIRER: Tom, yes.

MR. SLAVIN: I don't know if you're directing it at Bob or --

DR. MIRER: I'm directing it -- Tom.

MR. SLAVIN: Okay, Tom. Yes, all right.

DR. MIRER: I have another question for you anyway.

MR. SLAVIN: So the data that we have doesn't give us much information about the sources. And in some foundries, what would be a job that's not a -- doesn't have a high exposure in other foundries, can have a high exposure.

The furnace operator example, in some foundries the furnace operator also does the relining, and so you do have a considerable -- as part of the melting process, as part of that function, if they're also doing relining.

And sometimes there's relining in between melts, where as the furnace lining wears away, you sort of use a high pressure silica addition to build up the inside of that furnace where there's some material that's worn away. And that can be a very high exposure.

I think that in looking at OSHA's estimates, their furnace operators turned out pretty high. And at first I was -- that was a mystery to me. But in researching that a bit, I did find out that some operations do have those multiple activities that could account for it.

So it's not fair to just assume that there's no silica source. But it is fair to say, we don't know whether that's the case or not.

DR. MIRER: I want to move off of that quickly -- for some other items quickly, and then I'll get off the stage here.

So Tom, ASTM E1132-06, the standard practices for silica operations, I guess you're familiar with it because you wrote it. And I'm familiar with it because I read it and commented on it.

So my question is -- and you're Chair of that committee, right?

MR. SLAVIN: I'm Chair of the E34 committee. The subcommittee that wrote it, I wasn't chair of that, but I was present at some of those discussions.

DR. MIRER: So is that recommended to AFS? Should they be complying with this standard practice, or do you think other industries should be, or included in the OSHA standard?

MR. SLAVIN: It's a consensus standard, and it's a recommendation a lot of groups were part of that, including -- the Foundry Society is also involved in another ASTM subcommittee, and was involved in that. So it was a -- you know, with a consensus process, you always have some differences of opinion but you come to an agreement that everybody can live with. And so it is a standard that we support.

DR. MIRER: Okay. So if OSHA were to

depart from some of those specific recommendations, they'd have to explain why they were doing it?

MR. SLAVIN: Well, you know, can't just sort of pick and choose the --

DR. MIRER: Right.

MR. SLAVIN: -- the pieces of it. Taken as a whole, we support the standard. And so yes, I would, let's say go down your line of reasoning one more step here.

DR. MIRER: Right. But training requirements and exposure determination and that are generally what --

MR. SLAVIN: We thought those were appropriate in that standard.

DR. MIRER: Okay. Very quickly, a couple of risk assessment issues: Do you or the Foundry Society agree with -- concur with Monograph 100F-39, the assessment of foundry exposures as known to be carcinogenic to humans, causing lung cancer?

MR. SLAVIN: Are you talking about the IARC monograph?

DR. MIRER: The IARC monograph.

MR. SLAVIN: I haven't reviewed that. I would -- you know, in general, I'd say no. We've -- I think we've come, since that time -- I agree with the assessment of Dr. Morfeld from the other day. I think he hit the nail on the head with his information and his evaluation of the other data that's out there.

You know, as -- being not an epidemiologist, I kind of look at, this guy says this, and this person says this, and you try to sort out. But as the judgment that we have, we don't believe that the IARC is the most up to date --

DR. MIRER: Well, it's dated 2012, I think, although it goes back a year or two before. But it's dated 2012, so that's pretty close to up to date, right?

MR. SLAVIN: Well, it's got an up-to-date date on it, but in terms of the literature or the interpretation of the data, I'd go with Dr. Morfeld's.

DR. MIRER: And also -- so you'd say the same thing about Monograph 100C about -- that directly addresses silica?

MR. SLAVIN: I haven't looked at that, so I can't really respond to that, frankly.

DR. MIRER: Okay. But you did cite this industry -- industrial -- Industry Advisory Council report in 2011, the British report?

MR. SLAVIN: Right. Right, we cited that. Let me put that in context. We cited that as an example of -- we don't know whether they're right or wrong. We don't know who's right or wrong. All we know is OSHA didn't -- there's 30 references there that are -- look to be valid foundry epidemiological references, and OSHA doesn't even look at them, other than seven of them, and they dismissed those seven.

So we're just saying, that -- you know, we'd like OSHA to have a -- we'll trust OSHA's determination if it's fair and complete. And we just don't think it's complete.

DR. MIRER: Well, it's fair to -- and yes, they left out my paper too --

(Laughter.)

DR. MIRER: -- although it was cited by IARC. But I submitted my paper --

MR. SLAVIN: So you agree with our comments then. Thank you.

DR. MIRER: I thought they had enough -- they had me with the original reference. But let me just say, the conclusion of that panel was that lung cancer risks were not doubled in foundry, and that's why they were going to protect their compensation fund by not compensating any of the lung cancer victims among foundry workers. That's what that report is about.

JUDGE PURCELL: Is that a question, Mr. Mirer?

DR. MIRER: No. Well, I just wanted to be -- so, on Page -- so that's my question. Now that you presented NIOSH's data again, do you have any other health data that you want to present to the record?

MR. SLAVIN: By other health data, I'm not sure what you're referring to.

DR. MIRER: Well, experience in the foundry industry, cases of lung cancer, cases of silicosis, cases of COPD.

MR. SARVADI: I want to clarify something. You said that this is --

JUDGE PURCELL: Identify yourself for the record.

MR. SARVADI: This is David Sarvadi from --

JUDGE PURCELL: Thank you.

MR. SARVADI: -- attorney, representing -- hi, Frank -- representing the Foundry Society.

Tom, can you clarify, were the data that are presented NIOSH data, or were these data collected from selected foundries in preparing for the --

MR. SLAVIN: This is Tom Slavin, and I'm totally confused here.

DR. MIRER: We're talking about the CDC chart that you presented. Do you have any --

MR. SLAVIN: Oh, oh, oh, that chart.

DR. MIRER: -- material in addition to that?

MR. SLAVIN: Right, right. Right, I understand now. So you're talking about the chart that showed the declining deaths, right. And I don't have any other -- again, this is data that's publicly available, and I'm just looking at this and trying to make sense out of, you know, how can somebody look at this data and say we've still got a problem.

DR. MIRER: Yes, but somebody might. Page 9, there's a footnote on a unpublished study about exponential costs. Is that one of the appendices here?

MR. SLAVIN: Hang on a second, just -- when you say -- our Page 9?

DR. MIRER: Your Page 9, the footnote on that page. What's that referring to? I think I know.

MR. SLAVIN: Oh, oh, oh. You're talking about our written testimony.

DR. MIRER: The written testimony, yes.

MR. SLAVIN: I don't have that in front of me.

DR. MIRER: I'm not going to be dramatic and hand it to you.

MR. SLAVIN: Oh, okay.

DR. MIRER: Well, that might make it easier to settle it.

MR. SLAVIN: If that's all right with you, Your Honor.

JUDGE PURCELL: Certainly. Go ahead, Mr. Mirer.

(Off microphone conversation.)

MR. SLAVIN: No surprise, Frank.

DR. MIRER: I just thought he'd have it. I don't -- and there's also a footnote on Page 11, which is the same question; is that in the appendix that we have, or is there other data somewhere?

MR. SLAVIN: Oh, the Footnote 9 refers to the survey of foundries. We summarized some of the data. We did not attach the survey. And I know Peg asked about -- the other day, I happened to be here, asked -- the same survey. I think that's -- yes, I think this is the same survey.

For the foundry industry, when we did this survey -- we can make the form available. It hasn’t been, but we'll submit the form to the record, the data gathering form. And -- but we've summarized the, I guess the information for -- in the written comments.

DR. MIRER: Okay. Yes, I'm just hungry for new data. That's the -- and then finally, my last question, the discussion of hierarchy of controls, isn't it true that the hierarchy of controls for the current standard, the 100 μg standard, that's -- it's the same hierarchy of controls for the current standard as the proposed standard?

MR. SLAVIN: Yes. That's correct. Right, right.

DR. MIRER: Okay, thank you.

JUDGE PURCELL: Thank you, Mr. Mirer. Who'd like to go next? Mr. Wright?

MR. WRIGHT: Thank you.

JUDGE PURCELL: Please identify yourself for the record, and state your affiliation.

MR. WRIGHT: My name is Michael Wright from the United Steelworkers, and I'd like to echo Frank's comment that, thanks for submitting data. I'd also like to thank you for employing our members, in as you say, family supporting jobs.

I'd like to begin with the NIOSH -- with the CDC chart that was presented, I think, as your first chart. What was the denominator -- that chart showed a -- you don't have to actually show it. Fairly simple questions. That chart showed a decline in silicosis cases as a rate. What was the denominator in the rate?

MR. SARVADI: Tom -- in fact, this is David Sarvadi, if I could. That's the CDC chart?

MR. WRIGHT: Yes.

MR. SARVADI: Correct?

MR. WRIGHT: Yes.

MR. SARVADI: I think the question should be directed to the Centers for Disease Control, since they put the data together.

MR. SLAVIN: Tom Slavin. If -- oh, I see, here's the -- there are two charts here. One is number of cases and the other is rate. So -- and according to this --

MR. WRIGHT: Rate per what? That's the question.

MR. SLAVIN: Rate -- deaths per million workers.

JUDGE PURCELL: Mr. Slavin, that's the chart on Page 8?

MR. SLAVIN: Yes. Yes, Your Honor.

MR. WRIGHT: Million workers, or million in the general population?

MR. SLAVIN: Oh, it's -- that's -- again, that's a good point. It probably needs to go to CDC to figure out. The point of putting this in here was not the calculation or the data that drives this. The point was the trend, and also the number of deaths, which I think is a reasonable figure.

But the key point is the trend. And I know that there are some -- there has been some discussion of, well you're not reporting all the deaths, or not including all the deaths. But the -- I think the key point is the declining trend.

And whether there's under reporting now or whether, you know, there's -- there's no reason to believe that the under reporting causes are different now than they were 20, 30, 40 years ago.

MR. WRIGHT: Is there reason to believe that there are fewer workers in silica-exposed occupations now than there were when those data were first collected?

MR. SLAVIN: I don't think this chart gets to that question.

MR. WRIGHT: Of course. Okay. Okay, fair

enough. A couple of questions for Mr. Mark and Mr. Norch. Do I have that -- Norch -- do I have those names right?

You're both operators of -- you're both part of the management of foundry companies as opposed to the Trade Association, so your testimony is especially valuable. One of you -- and I forget which it was, said that you had not seen disease, at least lately, among your workforce. What's your medical surveillance program? And that's directed to both of you.

MR. MARK: Peter Mark. It was my comment in regards to -- I don't remember exactly what the comment was.

MR. WRIGHT: It was said in your testimony.

MR. MARK: Medical surveillance program, it varies by location. We have some locations that have a medical surveillance program as outlined in the proposed standard, and in others that are on a respiratory surveillance program, medical surveillance program.

MR. WRIGHT: And are the results reported to the company, or are they kept between the individual and the physician doing the examination?

MR. MARK: It would be both. The employee would be informed of the results and the company would see the results if there was any concerning information.

MR. WRIGHT: And have you seen cases of silicosis in let's say the past 20 years, in those medical surveillance results?

MR. MARK: To my knowledge, we have not had any diagnosis of silicosis in those medical surveillance programs.

MR. WRIGHT: How about COPD?

MR. MARK: I would have no idea.

MR. WRIGHT: Cancer?

MR. MARK: To my knowledge, no.

MR. WRIGHT: Okay, thank you. And for your colleague, the same questions.

JUDGE PURCELL: Mr. Norch?

MR. NORCH: Chris Norch for the record. And your question was -- could you repeat it again? I'd like to answer it accurately.

MR. WRIGHT: If you could describe your current medical surveillance program.

MR. NORCH: Okay. As far as the employee screening, or just industrial hygiene practices?

MR. WRIGHT: I'm not --

MR. NORCH: Well, industrial hygiene, we

go -- we do quarterly air monitoring --

MR. WRIGHT: Medical. Medical screening.

MR. NORCH: Medical? The -- we do voluntary employee screening. And they don't just check for respiratory, for silicosis, things like that. It's a confidential assessment between the employee and the outsourced medical facility.

It's focused on overall wellness and well-being, so they do respiratory, cardiovascular. They do, you know, look for blood pressure, hypertension issues, cholesterol, things like that. And we offer that as a proactive benefit for the employee.

MR. WRIGHT: Would an adverse result be reported to the company?

MR. NORCH: No.

MR. WRIGHT: Okay. Finally -- I'm sorry, not finally, almost finally. Again, for both of you, what job categories require respirators?

MR. NORCH: Chris Norch, for the record. I'll start the -- we're an aluminum foundry, so we have, in the bench and grind operations, we utilize respirators there. In the core making department, when you're filling sand core boxes and molds, we have respiration there.

Again, I mentioned the grinding operation, any metal treatment, we do -- like I said, we do air quality surveys. And anything that we look -- that would be an area of concern, we make respiratory control, mandatory PPE.

MR. WRIGHT: And what types of respirators?

MR. NORCH: We have the cartridge respirators. We have the general industrial ones. Like I said, to the best of my knowledge, that's it.

MR. WRIGHT: And for Mr. Mark?

MR. MARK: Peter Mark again. You're looking for job titles of employees that use respirators, and it does vary by location. The primary locations are clean rooms, knockoff areas, and some of the mold areas, and then any reline operations, and most cleaning operations.

MR. WRIGHT: And what types of respirators are required?

MR. MARK: We go across the gamut of what -- everything from the N95 disposable type respirator to supplied air respirators, PAPRs, and full-face and half-faced respirators.

MR. WRIGHT: Yes. You indicated air helmets as well, I believe.

MR. MARK: Supplied air, correct.

MR. WRIGHT: Yes, yes. Do you know when

supplied air respirators were first developed?

MR. MARK: This is Peter again. Repeat your question.

MR. WRIGHT: When supplied air respirators were first developed, when they became available.

MR. MARK: I'm not an expert in that area.

MR. WRIGHT: Okay. But not recently?

MR. MARK: Yes. I guess I could say yes.

MR. WRIGHT: Yes. And how about cartridge respirators, for either of you?

MR. NORCH: This is Chris Norch. They've been in use at our facility, roughly the last eight years.

MR. WRIGHT: Were they available before then?

MR. NORCH: I have no idea when they were introduced.

MR. WRIGHT: And disposables?

MR. NORCH: As long as I've been in the business, I've seen disposable respirator -- you're talking about the dust mask --

MR. WRIGHT: Yes.

MR. NORCH: -- type?

MR. WRIGHT: Yes.

MR. NORCH: Been around as long as I can

remember.

MR. WRIGHT: Okay. Thank you. And, finally, for Mr. Spada, does the American Foundry Society have chapters in British Columbia, or a chapter in British Columbia?

MR. SPADA: Yes. Alfred Spada, yes.

MR. WRIGHT: How about other Canadian provinces?

MR. SPADA: Yes.

MR. WRIGHT: Are you aware of what the applicable PEL is in British Columbia?

MR. SPADA: No.

JUDGE PURCELL: Mr. Spada, if you could move the microphone over there?

MR. SPADA: Yes.

JUDGE PURCELL: Thank you.

MR. SPADA: No, I'm not.

MR. WRIGHT: And what about the federal Canadian regulation, which covers some workers?

MR. SPADA: No.

MR. WRIGHT: And other provinces?

MR. SPADA: No.

MR. WRIGHT: Do you believe that your foundries -- let me ask it differently.

Have your members in British Columbia

reported difficulties in meeting the existing PEL?

MR. SPADA: I haven't had direct discussions with the members of British Columbia about the PEL, so nothing to discuss on that.

MR. WRIGHT: So you have no indication that they're not meeting it?

MR. SPADA: I haven't had any discussions with them, so.

MR. WRIGHT: And I assume that goes for the rest of the Canadian provinces as well?

MR. SPADA: Yes.

MR. WRIGHT: Okay. Thank you.

JUDGE PURCELL: Thank you, Mr. Wright. Next questioner? Please state your name for the record. Spell your last name and your affiliation.

MS. SEMINARIO: I'm Peg Seminario, S-e-m-i-n-a-r-i-o, from the AFL-CIO. And I just have a -- just a few questions. Many of them have been asked already.

One area that Mr. Wright didn't explore with you was the area of exposure monitoring. And this is for Mr. Norch and Mr. Mark. Mr. Mark, I believe you said that your exposure monitoring is conducted approximately once every 18 months; was that correct?

MR. MARK: Peter Mark, yes.

MS. SEMINARIO: Okay. And, Mr. Norch, what is the exposure assessment environmental monitoring program at your facility?

MR. NORCH: Chris Norch. We do ours quarterly, throughout all sectors of the foundry.

MS. SEMINARIO: Okay. And in conducting that monitoring, what's the typical protocol as far as how many samples you would be taking in a particular job or operation to get a sense of what the exposures are?

MR. NORCH: Chris Norch. I would -- I don't have the exact data, but my recollection, from looking at the summary, is that we do multiple checks. It's rotating around all the different sectors throughout the day. So it's not a one-time -- I mean, might go to an area where they're having a break. You know, there's going to be nothing there. There's no activity.

So we try to do it activity-based in the heaviest activity periods as well as the lightest. Some medium -- and it's an all day thing. Plus, our facilities aren't that big. We have less -- you know, roughly 100,000 square feet of manufacturing space, so it's easy to do the checks for us.

MS. SEMINARIO: Okay.

MR. NORCH: Not a large facility.

MS. SEMINARIO: But would you be conducting multiple samples on a particular operation?

MR. NORCH: Absolutely.

MS. SEMINARIO: Okay, fine. That's -- just another question. You said you have a small facility. How many employees are employed in your --

MR. NORCH: Chris Norch, 168.

MS. SEMINARIO: Okay. And at the Grady operations, is there more than one facility, or is it just one facility at Grady?

MR. MARK: Peter Mark again. We have -- what did I say? Twelve foundries in the U.S.

MS. SEMINARIO: Twelve foundries, okay.

MR. MARK: And two in Mexico.

MS. SEMINARIO: Okay. And how many employees would be employed, in the U.S., approximately?

MR. MARK: Approximately, in the foundries, 3500, we'll say.

MS. SEMINARIO: Okay. Thank you. Going back to the exposure monitoring questions, was -- did you participate in the survey that the AFS sent out for collecting exposure information? Are you represented in their -- the survey of results that have been presented?

MR. NORCH: Chris Norch. Yes, as a matter -- are you -- for the record, I need to ask one of my colleagues, was that the survey that we just sent out for --

UNIDENTIFIED SPEAKER: Yes.

MR. CALL: Yes. We did send our comments in, but for some reason I can't find them in the -- but they were sent in. And we had some issues with delay in some of the respondents showing up, so I don’t know if they've made their way through yet.

MS. SEMINARIO: Okay.

JUDGE PURCELL: And that was Mr. Call confirming that?

MR. CALL: Yes, sir.

JUDGE PURCELL: Thank you.

MS. SEMINARIO: And, Mr. Mark, did you participate in the survey that's been presented by the AFS?

MR. MARK: I can't give you a positive answer yes or no on that.

MS. SEMINARIO: Okay. Just going back to your own exposure monitoring data, could you provide to the record, for the exposure monitoring results for the last -- in your case, of Mr. -- Grady, perhaps, for the last two cycles, you know, 36 months. And for Mr. Norch, you know, for the last two years? Is that possible?

MR. NORCH: Chris Norch. Are you asking for the actual levels?

MS. SEMINARIO: Yes.

MR. NORCH: Okay. I don't have that data at my fingertips, but I can tell you that overall, for a plant summary, we were within the current 100 $\mu g/m^3$ PEL.

MS. SEMINARIO: Okay.

MR. NORCH: We were conforming.

MS. SEMINARIO: You were conforming with -- and, all right. That's all my questions. Thank you very much.

JUDGE PURCELL: Thank you, Ms. Seminario. Next questioner? All right, here. Please state your name, spell your last name and your affiliation.

DR. SIVIN: Dr. Darius Sivin, UAW Health and Safety Department, S-i-v-i-n. For Mr. Scholz, you chose to present your data as medians, and you said 84 percent confidence level, but if I'm not mistaken, they were 84th percentile; is that correct?

MR. SCHOLZ: Yes, the -- it's -- 84th

percentile is the official statistical name for it, but basically where they -- the designation of confidence comes when you start to look at a target. If you say you're looking at a target, then you can call it a confidence because it tells you how much is below and how much is above.

DR. SIVIN: But a more standard practice would be to calculate a 95 percent confidence interval using a mean and a standard error of the mean, wouldn't it?

MR. SCHOLZ: This was done solely graphically with the NIOSH method. It was not calculated. It was -- it came strictly off of the distribution plot.

DR. SIVIN: Can you explain why you chose to do that?

MR. SCHOLZ: It was a simple method. I mean, NIOSH put that one out early on. It's something a foundry can do readily, where you get your -- you line up your data, you prove lognormality, and then you can establish the confidence of the data being above or below any point, directly.

So it's not a computerized method. It's solely -- it's a graphical method, essentially. It's a simple -- I mean, now there's a lot methods out there that predict, but it was a simple one for -- see, the point was to demonstrate that the data is quite variable. And it's -- we're able to do that with that method. We don't have to go any more complex then, to do that, that the data is variable.

DR. SIVIN: Okay. So the only point of that presentation was that the data is variable. Because I would think that if you wanted confidence that mean exposures were within compliance, you would use a more standard statistical technique, wouldn't you?

MR. SCHOLZ: Yes. And there's a number of them used, yes. So that's a good point. And in some of the techniques, also, you know, you have that --

JUDGE PURCELL: Can you hold the microphone a little closer, Mr. Scholz?

MR. SCHOLZ: Oh, I'm sorry. You have that factor that OSHA would like to see, to make certain that you've covered the most exposed people in it. So the statistic could move over into that realm, and also assure that you've -- in the particular data set that you did, that you were including people that were the most exposed.

So there's different levels. I wanted to keep it simple. And NIOSH did, too. I think their goal in -- this is back in '77 when they published it, they wanted foundries to get into the notion that, you know, first of all that it's not such a terrible mystery, that you could establish that.

You know, they -- and they said -- OSHA has its own reasons for doing the modeling of confidence level, because of site -- you know, of compliance, but the foundries had a definite concern that the people are protected over the long term. And they wanted to see more broad usage of a model that would predict compliance. And that's why they --

DR. SIVIN: So you think it's a good statistical technique to use to measure feasibility of compliance, as compared to more standard statistical methods?

MR. SCHOLZ: I think it's a good preliminary indicator. See, the point of it was that --

JUDGE PURCELL: Hold the microphone up a little closer, Mr. Scholz.

MR. SCHOLZ: The impression that I got, from looking at OSHA's data, they had all the data in two groups. You know, you have people that have produced numbers under 50, those people have -- and

OSHA made the comment, those people have achieved -- they have achieved the PEL.

And that's a strange term, because basically it's a variable data thing. And those people like -- have a variable display of data in the distribution. And so the whole point of the paper was to show that we really need to use a predictive model if the goal is that we want to be assured that if you have a 50 standard, that it protects people for the majority of the time.

Here's the fear that I had, is that -- and I know a lot of times a foundry gets cited on one sample, but the citation will ultimately be removed in just a couple of samples too. The foundry will do something, and then a couple -- and then a number of samples will be taken. They'll show below the standard, and then the citation will be removed.

But all the while, the statistics evaded the complete process, that what we'd really like to know -- is it's much harder to achieve a 50 µg standard on a 95 percent confidence level than on the way OSHA was talking about it, that we can find that half the population already produces numbers under 50.

It gives you a false sense that half the foundry industry is there already, we got to work on the other half. And it's not true. None of the -- there's only one job category that's really there. The others all need work.

So the whole point was very simple. It wasn't meant to be highly statistical, but just to make the point that this 50, to get it, it should be gotten with confidence. If we get it, it should be with confidence. It shouldn't be that we make a statement.

See OSHA's interpretation led to the statement that you only have to improve the engineering controls of half the foundry population, you know. And it made it sound like, so why should the foundry industry buck that? If half the people are already there, then the feasibility question is pushed along a far ways.

But when you look at the data that we analyzed, with -- statistically, we're not a long ways at all. And we think that the concentration should be on the 100 standard, on a confident basis, that we should, before we even talk about going to a 50 standard, we should make sure that we're confidently meeting 100.

DR. SIVIN: Okay, just one more question.

Do you think demonstrating that you're not in compliance with a standard that you're not currently quite required to meet is adequate to demonstrate that it's not feasible to meet it?

MR. SCHOLZ: Well, first of all, the paper didn't tackle that -- one thing I noted. I thought these few statements kind of went hand in hand; the one statement that we're halfway there already, and second statement that there's a whole list of things foundry could do more consistently.

I noted that the long list that OSHA cited, of things you could do in every foundry department is all stuff they've been doing since I started, in 1970. In other words, it's the same list.

But I swear, if you thought -- if you look at the true statistic, and the distance we have to go to get to compliance, you couldn't throw out the old list and say that that basically is the crux of it. Like, this will give you 69 percent protection, this will give you that. It's a much tougher problem.

MR. SLAVIN: This is Tom Slavin. If I could respond to that as well.

JUDGE PURCELL: Continue, Mr. Slavin.

MR. SLAVIN: Our point was not to prove that -- we don't have the data to show whether it's feasible or not feasible. You could point to the data, and say, if you can't meet 100, with all that effort that we've put into it, that it's probably not feasible to meet 50.

But that's -- you know, the burden is really on OSHA to show that it's feasible to meet the 50. And our -- the purpose of our data was to show that's a difficult test. And it's more difficult even, than the way OSHA has tried to define it. They've defined it inappropriately. It's a very difficult test.

And yes, we're -- I mean, our goal at this point, is, you know, to -- we've still got a ways to go to meet the 100 with confidence. I think we -- by and large, we're in good shape. We've still got a lot of work to do to meet the 100. But that’s -- 50 is a real big step.

DR. SIVIN: Thanks, Mr. Slavin. Just one more question for you. Last week, Dr. William Bunn testified that he was unaware of any cases of silica-related disease in any workplace for which he had been responsible for, among workers hired since the 1960s, which included the Navistar Indianapolis foundry. Would you agree with Dr. Bunn's assessment, that you're unaware of any cases of silica-related disease in the Navistar foundry?

MR. SLAVIN: Yes, that's correct.

DR. SIVIN: Okay. Are you aware that two days ago the president of the UAW local of that foundry read a list of names of folks who had died of cancer who worked in that foundry, many of whom had died of lung cancer?

MR. SLAVIN: I thought you were talking -- I'm sorry. I thought you were talking about silicosis. You're talking about lung cancer?

DR. SIVIN: Silica-related disease, not limited to silicosis.

MR. SLAVIN: But -- I wouldn't -- you know, lung cancer occurs with or without silicosis, so I mean, I -- with or without silica exposure. I couldn't -- I can say for sure that we're not aware, and we've looked at that issue, of any silicosis cases.

When you get lung cancer, and if you throw kidney disease in there and whatever else you want to throw in there, I can't address that question. It's not as -- but, you know, silicosis is pretty clearly related to silica so, you know, that's -- I can be definitive. On these other cases, it's a little hard to separate out causation.

DR. SIVIN: Okay. Thank you much.

JUDGE PURCELL: Thank you, Dr. Sivin. Next questioner? Yes, ma'am. Please state your name, your affiliation. Spell your last name.

DR. MONFORTON: Dr. Celeste Monforton, M-o-n-f-o-r-t-o-n, with George Washington University School of Public Health, testifying as an individual.

And I can't recall who -- all of your names and who responded, so I'll just refer to you as the panel, so I apologize for being so impersonal.

MR. SARVADI: Your Honor. This is David Sarvadi. I think Dr. Monforton has just said she was testifying.

JUDGE PURCELL: Well, she's not testifying. She's asking questions.

MR. SARVADI: Okay. I hope the questions will come and not a testimony.

DR. MONFORTON: No. I apologize. They are questions.

JUDGE PURCELL: Well, I hope the same thing, and I'll make sure that that happens.

DR. MONFORTON: I apologize. There was a reference to about 30 studies that OSHA did not include in its risk assessment. And I'm wondering if those 30 studies have been submitted to the record.

MR. SLAVIN: This is Tom Slavin. What we submitted to the record was the link to those studies, so they're in our written testimony. We put the link to the report that referenced the 30 studies that has those as 30 references in the study. So we didn't itemize each of those 30 references that I recall --

DR. MONFORTON: Okay.

MR. SLAVIN: -- but we did --

DR. MONFORTON: But you -- but there is a list of them, that --

MR. SLAVIN: Right, right.

DR. MONFORTON: -- we could look at? Okay.

MR. SLAVIN: Yes, easily obtainable. It's an online -- the report's online, so you can get that.

DR. MONFORTON: Okay. Terrific, thank you. I've also reviewed the study by Vacek that's looking at the association between exposure to silica and lung cancer among the Vermont granite workers.

And the authors report, and I'll quote, "Lung cancer mortality was significantly elevated in the study cohort, compared to the general population, but there was no evidence of association with silica exposure." So to what do you attribute this excess lung cancer?

MR. SLAVIN: Tom Slavin. The -- I haven't reviewed the Vacek report, so I can't answer. All I can do is say, the people that have reviewed it, the people that have looked at this -- and there's a letter, I think in the docket, from Dr. Vacek herself, so in looking at that information, our observation is, OSHA hasn't done its job of picking the right study.

I can't -- I mean, the answer is probably somewhere in the study. Somebody besides me is going to have to figure that out. But all our point is, it looks like you're not including the best available information.

DR. MONFORTON: Okay. And earlier in this hearing we heard about an excellent medical surveillance program that's adopted by the members of the National Industrial Sand Association, and the best practices manual that you developed with OSHA as part of your alliance talks about medical surveillance. I think it's called a health screening.

So you have any data on how many of your members have a medical surveillance program that's comparable to what NISA presented?

MR. SLAVIN: Tom Slavin. No, I don't believe we have ever determined that.

DR. MONFORTON: Okay. Thank you so much.

JUDGE PURCELL: Thank you, Dr. Monforton. Any further questions? Please state your name, spell your last name and identify your affiliation.

MR. DOOLEY: Yes, my name is Peter Dooley, D-o-o-l-e-y, and I'm here representing National COSH, which is the National Committee on Occupational Safety and Health.

JUDGE PURCELL: Go ahead, Mr. Dooley.

MR. DOOLEY: Thank you. So this is a question for the panel, and that is, yesterday afternoon we heard testimony from a former foundry worker from Racine, Wisconsin, Racine Steel Casting Foundry, where he worked for 14 years from 1988 to 2002, describing some very, very harsh conditions that were present in that foundry.

And he related hearing conditions presently in foundries at least in several areas near where he lives in Milwaukee, including Racine as well as Beloit. And my question is, if that currently exists, you know, very sort of challenging situations at foundries -- so my question is, are all foundries in the U.S. part of the -- of your organization?

And is there ways that you go around and inspect for health and safety purposes, the foundries that are partners of your -- members of your society.

MR. CALL: This is Jerry Call. No, not all members -- not all of our industries are members of AFS. There are 1978 foundries in the U.S., and we have about 450 of the foundries that are members of ours.

MR. DOOLEY: Okay.

MR. SLAVIN: This is Tom Slavin. Peter, the second part of your question, as a society, we can do outreach, and we can present -- we can publish documents and we can present material, and we can partner with OSHA on -- to the extent that we can, and as we've done. And I think you heard how we actually have presented foundry training to OSHA inspectors.

So we're -- we do outreach, but in terms of inspection of members or requiring that in order to be a member you have to pass an inspection, something like that, we don't do that. So we can't, you know, we can't vouch for every foundry that's out there.

We do believe that our members, by and large, are conscientious and, you know, have been -- are on board, if you will. But we can't -- you know, we can't account for every foundry that's out there.

MR. DOOLEY: Thank you. My second question is, you made a lot of -- you raise a lot of issues about what it would take in terms of industrial hygiene monitoring to meet the requirements of a new PEL, given the whole issues of variability in sampling, right?

And, but -- so is the -- in the proposed standard that OSHA has, do you believe that the sort of issues around variability are different than any of the existing standards, in terms of industrial hygiene monitoring?

For instance, the current OSHA standard for silica, and the variability questions in terms of monitoring, would the current proposal be any different than the existing ones?

MR. SLAVIN: This is Tom Slavin. I'm going to turn this to see if Bob has a comment first, and then I'll answer.

MR. SCHOLZ: Yes, I definitely have a comment on this.

UNIDENTIFIED SPEAKER: State --

JUDGE PURCELL: And this is, for the record, Robert Scholz.

MR. SCHOLZ: Oh, Robert Scholz, yes. First of all, there's an emphasis in OSHA on getting data. Once you show that you have someone above the allowable limit, you sample them at some frequency.

Now, one of the drawbacks of that is that until you do something to alter it, you're just repeating that type of information. We think that the strategy that's used in the foundries should be a broader based strategy intended to focus the light on root causes of exposure and to set priorities.

And it's something -- I said before as a personal opinion, I think it's something that between OSHA and the foundry industry, an alliance, such guidelines could be there, that the foundries should really establish the strategy for sampling in the foundry. It shouldn't be mandated.

And it should be -- but it should be, have objectives, not just the fact that you have to keep tracking things now that you've, you know, you've triggered this limit, so you're on the radar screen and now you're required to sample at some level.

So, I mean, it's something -- it's an area that needs development, this whole process of establishing a proper sampling protocol. I don't know if that answers what you're getting at.

MR. DOOLEY: Yes, I don't think so.

MR. SLAVIN: Tom Slavin. Let me -- so, other standards have the same issue. It's a frustration that we have, and I'm -- I think some of my old friends share in the frustration, that we're kind of -- we're prisoners of a single data point, and we don't understand sources, we don't understand real exposures.

We just -- we need more data. We need useful data. So to answer your question, other standards have the same thing. And I don't think OSHA has figured out how yet to incorporate the aspects of variability into a sampling strategy.

They have, to some extent, figured in, in sampling and analytical error, they figured in some of that aspect of variability, but they haven't figured in exposure variability yet.

You know, from a practical standpoint, we look at -- you know, to maintain the current PEL, you really need to maintain a mean exposure that's somewhere below the proposed PEL, actually. You need to -- that's kind of where you have to be if you want to, with some confidence, be assured that you're in compliance with even the current PEL.

So we recognize that, but we just -- we also, I guess, another frustration that we have, and this is -- I'm not sure if there's a piece of your question or not, but I'm going to take the opportunity to slip this in here, is that the requirements to do the sort of repetitive eight-hour time-weighted average sampling, quarter after quarter, if there's something to be learned there -- and there is some statistical value in sampling, but the way that's done, it doesn't look like we're using the data.

And OSHA's not using the data. OSHA doesn't look at the data that an employer collects, you know, 200 samples, and look at that and say, okay, I understand your distribution, I understand where your problems are. That's not the case.

OSHA comes in and takes one sample somewhere, and pow, well you're either over the PEL or you're under the PEL. You know, good luck, have a good day. And that's not really the way the world should work. We should be -- use -- the data that we take, it's expensive to get.

Employees -- if you sample employees on a repetitive basis, they start resenting wearing that sample, or that pump for all day long. So, you know, it's -- we need to make sure we're doing it for the right reason, getting good information out of it.

And I think employees would accept that a lot more easily, to wear the sampling pumps as well. But I think just to mindlessly sample and then not use the data, I think is unfortunate.

MR. DOOLEY: One last question, and that is -- and I heard several times, this notion that you wish that we had more source data on exposure monitoring.

And I'm kind of surprised by that, in the sense that, you know, I'm actually -- I was a foundry worker for several years, and later as a certified industrial hygienist, went into many, many foundries to do health and safety evaluations.

And I'm surprised to hear from a group of foundry, you know, sort of professionals, that you haven't done more source evaluation of exposures. Is that -- I mean --

MR. SLAVIN: This is --

MR. DOOLEY: -- that would seem to be very logical, especially with the given technology of video -- of exposure monitoring and such. Why don't you have -- I was kind of expecting to see more of that in your presentation as to where the highest exposures are.

MR. SLAVIN: Peter, that's a great

question, and I'm going to give Bob the first chance to answer that.

JUDGE PURCELL: Mr. Scholz?

MR. SCHOLZ: And we are doing that. In fact, a document was referred to in the presentations that was done on the OSHA alliance, actually. There's a case history at Kennedy Valve, a foundry in Elmira, New York, that was in the silica control manual that's published by AFS under the OSHA alliance.

And we used real-time methods there to identify the sources of the exposure. This is chipping and grinding with portable tools. And we were trying to assess the sources. We were also trying to establish ventilation parameters for a back draft hood and supply air combination that the foundry was considering, trying to get the proper -- and we used it there.

And, basically, there isn't any monitor for respirable silica, you know, that reads it directly, but there is a respirable dust monitor, and the standard is respirable dust. But you need to know the silica content to calculate the target.

I would say -- we've been using these methods now in the foundry industry for the last 20 years. But I would say, in the last 10 years, they're being more used. There's a number of OSHA offices that have seen reports that have been done after a citation as part of a compliance program, where OSHA requires that the foundry do an engineering study.

A number of foundries have turned in those studies, which have used real-time instruments to define root causes. For example, there's an issue in chipping-grinding with portable tools in ferrous foundries that you don't often get complete feasibility of compliance, mostly because if you're grinding inside the casting, the dust has to come out of the casting before it goes into the ventilation, but it passes by the breathing zone first.

It's an inherent limitation of the ventilation method. And that's of much interest to OSHA because the standard says that they have to control the exposure to the extent feasible.

So in that case we have a double purpose. In other words, we do real-time monitoring to find out what is the root cause, and also to establish, how much protection would ventilation offer, two very useful things.

But that's all new. This is all in the

last 10 years that this has been going on, and in a very limited sense. I think OSHA, even, would like -- they should comment on that, but they'd like to see more.

And Tom Slavin has -- Tom, you should tell him the idea that you've had recently, that -- you know, that the one thing about real-time monitoring, is it's not eight hours long. Most times it's a half hour. All you have to do is go through a normal cycle of that worker's job, and you can establish these things.

Tom made the comment one time that --

JUDGE PURCELL: Hold the mic up, if you would, Mr. Scholz.

MR. SCHOLZ: I'm sorry -- that that data could be useful as this data that OSHA's expecting to see on a continuous basis. Because if you knew the kind of response a real-time monitor would have during a typical job cycle, and if you could get that in a half an hour or an hour, imagine the leverage that you'd have in creating a database.

This is -- so what was done under the OSHA alliance should continue under the OSHA alliance. We should keep going on that point. That would -- the amount of money to do real-time monitoring is a lot less than taking a whole series of eight-hour time-weighted average samples.

See, there's a whole series of issues -- and that's what Mr. Slavin was saying, a whole series of issues with regard to monitoring, where we need to make progress in our approach to it -- not the fact that we need to do more of it or anything, but just the basic approach.

The fact that we need a lot of data to establish variability, the foundry has more data than OSHA, yet that data doesn't really count -- that question, the whole series of questions. I've been told to stop here.

(Laughter.)

JUDGE PURCELL: Did that answer your question, Mr. Dooley?

MR. DOOLEY: Thank you.

JUDGE PURCELL: Okay.

MR. SLAVIN: Tom Slavin, if I could add one more thing. There's a lot of flying blind that we do. You know, we assume we know what the answer is. We assume we know what the problem is.

And as -- you know, it was kind of demonstrated by Frank's question earlier, we look at that exposure and we assume, well wait a minute, that job category, there's nothing there. You know, that's a -- that must be coming from somewhere else.

And we make a lot of assumptions that because, you know, we know so much, we've been around so much. But really, we need to do the investigation to sort of prove our point, to prove where the sources are.

And a lot of what we do is, we fix a problem. And then we find out -- OSHA comes back after -- you know, they cite us once. We fix it. They come back. We've still got a problem. And now we got to fix something else or we -- and I've -- there was a case study presented at the last environmental health conference. We have one each year, a foundry environmental health conference.

And the case study there of a foundry that had spent -- rebuilt their whole sand room. They spent about, I don't know, $5 million or something to rebuild this, and found out they were worse off than when they started.

And then they brought in Bob to do the more source studies and find out what their real sources were. And he did some mapping and, you know, found out where the dust or where the silica is really coming from.

Because it's pretty illusive, and it's -- you're dealing with such fine particles that follow air currents, and you get some strange things happening, so you really have to understand all of that. So yes, it's -- the real-time monitoring is very helpful in understanding the sources, so that you can then go on to fix what's really the problem.

MR. DOOLEY: Thank you.

JUDGE PURCELL: Thank you, Mr. Dooley. There was a young woman who had some questions.

MR. MARK: Your Honor, this is Peter Mark. Chris and I have a plane to catch, and we'd like to be released from the panel up here, if that's possible.

JUDGE PURCELL: I think probably OSHA had some questions, but --

MS. KRAMER: Hold on one second, Your Honor. Thank you.

MR. SARVADI: Your Honor, this is David Sarvadi. If the OSHA panel has specific questions for Mr. Mark, they can certainly submit them, and we'll try to get the answers back to them.

MS. KRAMER: If we may, Your Honor, would it be all right if we asked him just a few questions right now? How much time do you have? You have maybe 10 minutes before you need to leave?

MR. MARK: That's fine.

MS. KRAMER: Is it okay if we kind of cut in front of you?

UNIDENTIFIED SPEAKER: That's great. Yes.

MS. KRAMER: All right.

JUDGE PURCELL: All right, go ahead.

MS. KRAMER: Thank you, sir.

MR. O'CONNOR: This is Dave O'Connor. I have just one question. Mr. Mark, you had indicated in your testimony that you do exposure monitoring every 18 months or when there's a process change, and that there's no need for more frequent monitoring. I was just wondering how you selected 18 months. What was the basis for that? Why was it not 12 or 24? Was there any particular reason for 18?

MR. MARK: The main -- oh, this is Peter Mark. The main reason that we picked 18 is we then change seasons that the testing is done, because you have a dramatic difference in, if you're testing every summer versus if you have one test in the summer and then you're going to have one test in the winter, so that you have a variability in the seasons and your variability in your exposure rates.

MR. O'CONNOR: Thank you.

JUDGE PURCELL: Other questions from the OSHA panel for Mr. Mark?

DR. COBLE: Yes, hello. Good afternoon. My name is Joe Coble. And in reference to your monitoring, the current PEL respirable silica is actually based on respirable dust levels. So do you measure the respirable dust levels and then have that analyzed for percent silica content? And what is the average percent silica content of the dust?

MR. MARK: Peter Mark. Yes, we have it analyzed for percent silica, and we use the OSHA formula. And then we also use the 100 µg as a secondary parameter. And that's kind of a target rate also. And that's internal standards that we're using. The second half of your question?

DR. COBLE: What's the average and maybe range of the percent silica in the dust?

MR. MARK: Just going off the top of my head, the low is 3 percent or so, and the high is higher teens, so that 18 percent area.

DR. COBLE: Okay, thank you.

JUDGE PURCELL: Any other questions for Mr. Mark?

MS. IANNUCCI: Good afternoon, this is Annette Iannucci. Real quick, Mr. Mark, you said your medical surveillance does not include x-rays, chest x-rays?

MR. MARK: Peter Mark again. The medical surveillance does include chest x-rays for some of the locations, yes.

MS. IANNUCCI: Okay. Why is it only some of the locations?

MR. MARK: Peter Mark again. It's based on the medical providers' recommendations. And so it's allowed at all of the locations that we have a surveillance program in place, based on what the medical provider is recommending and requesting.

MS. IANNUCCI: Okay. And do you have any idea of the percentage of your employees who participate in medical surveillance?

MR. MARK: Peter Mark again. That would be a total shot in the dark. I really couldn't give you an accurate percentage.

MS. IANNUCCI: Okay. And is there any follow-up of the employees after they retire?

MR. MARK: Peter Mark again. To my knowledge, there is no follow-up.

MS. IANNUCCI: Okay. And can you give me a range and average of tenure at your companies, employee tenure?

MR. MARK: Peter Mark again. Years of employment, it does vary based on location. If I had to throw a dart at the wall, I would say that eight to 10 year average.

MS. IANNUCCI: Do you have a range or?

MR. MARK: Oh, a range? Well, we're always hiring. We do have -- and in fact, we just had an employee that retired, and he was 43 years working in the foundry.

MS. IANNUCCI: Okay. And then just to verify, you say you receive no information from your medical exams from your employees; is that correct? They're confidential?

MR. MARK: This is Peter again. We receive information from a medical provider if he feels that it warrants follow-up with the company.

MS. IANNUCCI: Do they give you actual diagnoses or?

MR. MARK: I don't believe that they're going to actually give diagnosis.

MS. IANNUCCI: Okay, thank you.

MS. SCHIFANO: This is Jessica Schifano, just one quick question for both Mr. Norch and Mr. Mark. Do you currently have training programs that train workers on silica hazards?

MR. NORCH: This is Chris Norch. Yes, we do.

MS. SCHIFANO: Can you describe what you include in that training?

MR. NORCH: We start out with a basic orientation overview of the foundry. It's a series of instructional videos of the type of environment that they're going to be subjected to, from every type of operation on the shop floor.

It segues in, goes through the personal protective equipment, what the exposure levels are, and not just for respirable crystalline silica but also molten metal, for, you know, potential of cuts and abrasions. If they're in the cleaning operation, we try to run, you know, every -- the gamut from one end to the other to make them as aware as possible before we even take them on the shop floor.

MS. SCHIFANO: Great. Thank you. Mr. Mark?

MR. MARK: We give silica training as part of the hazard communication training, and then with new employee orientation we go specifically over what exposures are and why we have the different engineering controls in place and the different respiratory programs in place.

MS. SCHIFANO: Great. Thank you.

MS. KRAMER: This is Allison Kramer with the officer of the Solicitor. I just wanted to thank those of you that have to pop out for coming in today. We very much appreciate it.

And also, as you know, questions may come up, as other people ask questions. We would like to preserve our opportunity to send you any questions that do come up during the rest of the hearing today.

MR. MARK: This is Peter. I do not have a problem with that.

MR. CALL: This is Jerry Call. Yes, we would agree to that.

MS. KRAMER: Thank you.

JUDGE PURCELL: All right, thank you, gentlemen. Those --

MS. REINDEL: Can I ask one quick question, and then after one of my questions --

JUDGE PURCELL: Okay, identify yourself, spell your last name, and your affiliation.

MS. REINDEL: Sure. My name is Rebecca Reindel, R-e-i-n-d-e-l, with AFL-CIO. Thank you very much for being here today.

Just to the two gentlemen, Mr. Mark and Mr. Norch, you had mentioned some elements of your medical surveillance program, and I was just wondering, following up on this, the 2007 AFS' best practices document, it does recommend some elements such as chest x-rays that were to distribute them so many years.

So I'm wondering why some of your facilities require chest x-rays and some don't, and what relationship, or what kind of communication you've received about the best practices document, and how closely you may or may not follow those practices.

MR. NORCH: This is Chris Norch. I'll answer that for our foundry. What we do is, like I said, we do a general encompassing thing on a wellness program, blood pressure, hypertension, all those things.

And it gives the employees a chance to go in and talk to a medical examiner. They do a full battery of questions, you know, are you experiencing shortness of breath? Have you had any of these issues?

Then it's more a checklist, so that if they feel they want to continue that, we will, you know, support that and cover that for the employees to get further evaluated. And it's done at the discretion of the employee and the medical examiner.

MS. REINDEL: And is that in line with the Best Practices document?

MR. NORCH: I would have to go back and reference it, but I would have to say that it at least meets and probably exceeds.

MS. REINDEL: Okay. And Mr. Mark?

MR. MARK: For Grady, it depends. There's variations in the answers for the different facilities. Some of it has to do with how long that the facility has been with the Grady organization. And we cover all the basics that are in that recommendation from AFS.

MS. REINDEL: Well, it -- okay. Chest x-rays were included in there. That's why I was wondering. And there was a certain frequency that was established in the document, and so I was --

MR. MARK: And the chest x-rays are based on the medical provider --

MS. REINDEL: Okay.

MR. MARK: -- and their decision, their discretion.

MS. REINDEL: Okay. Thank you.

JUDGE PURCELL: All right.

MS. REINDEL: I have other questions, but for the panel.

JUDGE PURCELL: Certainly. Thank you, Mr. Mark, Mr. Norch. If you all have -- is that the two that had a plane to catch?

MR. NORCH: Thank you, Your Honor.

JUDGE PURCELL: Appreciate your coming today.

MR. MARK: Thank you. We appreciate your --

JUDGE PURCELL: Safe travels.

MR. O'CONNOR: And, again, on behalf of OSHA, I'd like to thank Mr. Mark and Mr. Norch for testifying here today.

UNIDENTIFIED SPEAKER: Thank you.

JUDGE PURCELL: All right, Ms. Reindel, you had other questions?

MS. REINDEL: Yes, thank you. I think I heard the panel report that the AFS has about 3000 members. Was that correct, or did I get that?

MR. CALL: We represent about 3000 people in U.S. metalcasting industry foundries and related.

MS. REINDEL: Okay.

JUDGE PURCELL: That was Mr. Call responding?

MR. CALL: Yes, I'm sorry. Jerry Call.

MS. REINDEL: Okay, thank you. Do you have data, or do you know how many of those foundries fully adopted that best practices document I was just referring to, to reduce -- it's titled, *Control of Silica Exposure in Foundries*?

MR. CALL: Jerry Call. No I do not.

MS. REINDEL: And do you -- sorry. Some of the panelists were just talking about their medical surveillance programs, so specifically, do you have data on how many of those 3000 members are -- have adopted the medical surveillance components of the best practices?

MR. CALL: This is Jerry Call. I'm going to clarify. The 3000 people we represent aren't all foundry --

MS. REINDEL: Okay.

MR. CALL: -- members. We had -- there are about 400 actual foundries --

MS. REINDEL: Okay.

MR. CALL: -- that are members of us, and no, I do not know what percentage of those.

MS. REINDEL: Great. It was my understanding from your testimony that AFS recognizes that health effects -- there are health effects associated with silica exposure. Is that correct?

MR. CALL: Jerry Call. Yes.
MS. REINDEL: And so are there -- I was trying to kind of make a list of what you were -- you know, some of the issues that you were raising today. And so are there any provisions of the proposed silica standard that AFS supports?
MR. SLAVIN: Tom Slavin. I don't know. I have to look at specific provisions. I mean, there are a lot of aspects of -- a lot of that standard is consistent with good industrial hygiene health and safety practice, as long as it's consistent.
But, you know, the devil's in the details, and so we would have to look at each specific provision. There were a couple, I think, in our response on the 87 questions, there were a couple of areas that we didn't have an issue with. I don't recall what those were at this point.
But most of those, most of the sections we had -- some were minor, some were serious heartburn. But, you know, we had some comment. And so I think we'd have to refer back to that.
MS. REINDEL: Okay, thank you. And then the panel displayed a number of photos inside foundries, they were displayed on the screen behind you. And to complete the record, I was wondering if

you would share the names of the foundries where those photos were taken.

MR. SLAVIN: This is Tom Slavin. The ones that were part of -- Chris Norch, those were his foundries.

MS. REINDEL: Okay.

MR. SLAVIN: Peter Mark, I believe those -- the pictures he had in his presentation were his foundries. The other foundries, I'm not sure.

MR. SPADA: I'll clarify one point.

JUDGE PURCELL: Mr. Spada.

MR. SPADA: Al Spada, AFS. Chris Norch presented the wet explosion photo, and that was not from Denison Industries.

JUDGE PURCELL: That's correct.

MR. SPADA: I do not know where that was from at this point, but that was not from Denison Industries.

MS. REINDEL: I wasn't referring to that photo.

(Laughter.)

MR. SPADA: No, but I just wanted to clarify that, yes.

MS. REINDEL: Thank you. I guess I was wondering if they were taken in active foundries that are currently in operation.

MR. CALL: This is Jerry Call. Yes.

MS. REINDEL: Okay. We had some photos that were taken, or displayed earlier in the hearing proceedings that were very different, and so these were crystal clean photos. And I was just wondering if those were in working foundries, because we haven't seen working foundry photos that are that clean.

MR. SLAVIN: This is Tom Slavin. That was one of the reasons we included those pictures. Originally our testimony wasn't -- didn't have as many pictures in it, or we weren't planning to include as many pictures, until we sort of realized that there's a misimpression that's going on with all these terrible things out there.

Not that those -- that there aren't foundries, situations that are in existence like that, but from the standpoint of what's a typical foundry look like, we thought it was more important to include more pictures of really active foundries and yes, none of these are staged or --

MS. REINDEL: Okay. But some of the equipment later -- maybe some of the later slides they were maybe an exhibit hall or something. Maybe that's what I -- I mean, that's what I was looking at specifically, maybe not these photos but the ones maybe further down the presentation. They were kind of showing a -- some control measures, so maybe that's what I had in my memory.

MR. CALL: Jerry Call. No. These were all from foundries. They weren't exhibit hall pictures.

MS. REINDEL: Okay. Thank you.

JUDGE PURCELL: Thank you, Ms. Reindel. I don't see any other hands for questioners. At this point, I'd like to express my appreciation for the panel from the American Foundry Society. Gentlemen --

MS. KRAMER: Your Honor --

UNIDENTIFIED SPEAKER: OSHA has some --

JUDGE PURCELL: Oh, OSHA did have some questions.

(Laughter.)

JUDGE PURCELL: I thought they'd asked all theirs.

UNIDENTIFIED SPEAKER: We'd be happy to leave now, Your Honor.

MS. KRAMER: Thank you.

JUDGE PURCELL: So, in light of that, does OSHA have any more questions?

MR. O'CONNOR: Yes, we do. Tiffany DeFoe will begin OSHA's questioning.

JUDGE PURCELL: Certainly.

MS. DeFOE: Thanks for coming today. At various points in your written comments, and in your testimony today, you made statements that OSHA's scientific review was incomplete.

To be sure that we have as clear an understanding as possible of the studies and information that you want OSHA to review, would you please submit those studies to the record?

MR. SARVADI: Let me see if I can take that. This is David Sarvadi, counsel for the AFS. We've already submitted, in the written comments, a reference to the document that has the references. And OSHA is fully capable of getting those references from those sources, so I don't see any reason for the Foundry Society to spend its money on the copyrights to provide OSHA with the copies.

JUDGE PURCELL: Mr. Sarvadi, I understood there were links to the documents in the --

MR. SARVADI: Correct. There's a link to the document, the one document that's referenced in Tom's slide where he says seven out of the 30 studies were used and the others were not. That's a U.K.

document. There's a link in this testimony to that. And in the back of that document is a complete bibliography.

MS. DeFOE: And you've reviewed all of the 30 studies?

MR. SLAVIN: This is Tom Slavin. We have not reviewed the studies. What we -- our point is that this is a fairly recent review of lung cancer in foundries. It cites -- and it's comprehensive, at the time, 2011 -- was comprehensive, specific to foundries, cites 30 studies.

And OSHA only -- in their reference, only includes seven of them. We're not saying what those studies say. We haven't read those studies. We're just saying OSHA hasn't looked at them either. And as far as I understand, as far as we understand, OSHA has the obligation to use best available scientific data. And it's incomplete if those studies aren't in there.

Maybe there's reasons for not using the studies, but they -- it would seem they at least have to be looked at and dismissed if there's reasons to dismiss them, or used if there's reasons to use them. But we haven't done that review ourselves.

Now, in addition to those studies, you

talk -- there are other studies that have been referred to. I think Peter Morfeld referred to at least three more recent epidemiological studies in his testimony two days ago. And so I think those also should be included in a -- in the review, before the risk assessment is finalized.

MS. DeFOE: Apart from the 30 studies in the review paper that you just mentioned, and the three studies that Dr. Morfeld mentioned, are there any other studies that you think OSHA needs to review?

MR. SLAVIN: There were two other U.K. documents that we referenced in our written testimony, that -- two other studies that -- where I went through and looked at the references and crossed them to the references in OSHA's review.

And I noticed that 40 percent of those -- in both documents, 40 percent of the references -- and I don't remember how many there are, but there's several dozen, were not included in OSHA's review. So I would recommend that OSHA look at those as well.

Again, I don't know what the quality of those are. Our point is that we would expect that a fair review of the question would include all of the research that's relevant.

And those three studies that we mentioned plus Dr. Morfeld's stuff -- and there's probably additional items in the comments. Those are just the ones that I'm aware of. But I would think those would need to be included to, you know, to pass the test of a fair scientific review.

MS. DeFOE: If, after looking at those links, there's any confusion about which studies you feel are important, would you be open to follow up?

MR. SLAVIN: Yes, certainly. Tom Slavin again.

MS. DeFOE: And then, in the slide just before -- see, I think we have different numbers of slides in our pages, but I think it would be your Page 9, you state that OSHA ignores empirical evidence in favor of models in its risk analysis.

Would you specify which empirical evidence you're referring to, that OSHA should have relied on in its risk assessment?

MR. SLAVIN: Well, the -- this is Tom Slavin again. The one piece of empirical evidence is the chart that was on Page 8, which shows the declining rates. That's one.

And I think there is -- so anyway, that -- there may be others, but the point is that there's data about incidence of silicosis that's available and relevant, that may take -- may be more reliable than -- you know, when you're actually counting people, may be more reliable than constructing artificial theoretical models, especially with the criticism that we've seen of some of the model selection and the various biases that go into the models.

So, again, we're not epidemiologists to say, you should use this model or that model, but we listen to epidemiologists that question that you're -- the models that OSHA uses. And so, you know, it seems compelling to us.

MS. DeFOE: Are you aware of any data -- and so with the chart, with the incidence rates that you're talking about, are you aware of any data that would specify the exposure levels of the cases in that chart?

MR. SLAVIN: This is Tom Slavin again. No, I'm not aware of what exposure levels are associated with each of these. I think people that have looked at this, have determined that exposure levels have come down, that when you back-calculate a 30 year latency period or, you know, a 10 to 30 year latency period, that you're looking at some exposures that were much higher in the past, and that the exposure levels that were -- seen today are much less, although there are still some high exposure levels today.

And that when you -- between the latency period and the overexposures that we occur today, there -- some of the experts that have looked at this -- and again, I point that Dr. Morfeld, because I happened to be here when I heard his testimony the other day, indicates that there's probably a threshold, and that if you're below that threshold, you're not in danger of silicosis.

On the other hand, he's not surprised that there's continuing cases when you look at the current exposures, as high as they are, some being above 250 µg.

MS. DeFOE: Thank you.

MS. SCHIFANO: This is Jessica Schifano. Just a couple of quick questions. A number of people today have mentioned the best practice guide, *The Control of Silica Exposures in Foundries*. Would you be able to submit that to the record?

MR. SLAVIN: This is Tom Slavin. I think it's already been submitted.

MR. CALL: Yes, it has. This is

Jerry Call. I don't know if it has or not. If it hasn't, we can.

MS. SCHIFANO: Great. Thank you so much. And then I just wanted to follow up with Mr. Scholz, regarding the real-time monitoring that you mentioned.

MR. SCHOLZ: Yes.

MS. SCHIFANO: You described one of the case examples from the best practice guide. In that guide or otherwise, do you have specific protocols that were used for the real-time monitoring?

MR. SCHOLZ: Okay, first of all, you refer the Kennedy Valve example?

MS. SCHIFANO: The one that you just mentioned in a response to another question, yes.

MR. SCHOLZ: Now, that was written up in its entirety in that case. He -- Kennedy Valve wrote the case history. We contributed to it in defining the technology that was used to get the data. If there's anything else you need to know about the technology, though, I will be happy to -- it's not a secret thing.

And like I say, it's been divulged to several OSHA offices by way of engineering studies that foundries have done in compliance programs to identify root causes. So if you have any -- we'll clarify that method for you as far as you want it clarified.

MS. SCHIFANO: Okay, great. Thank you. And does the method in the case example relate those real-time monitoring exposures that you quantified to personal exposures in any way? Or is it just generally levels for the operation as a whole?

MR. SCHOLZ: No. The real-time monitor is calibrated in respirable dust, so that it's accurate on. And the standard is on respirable dust. We'll typically use background area samples, or we'll use the recent personal samples of that foundry to give us an idea of percent silica, and then we'll -- so we'll actually present our findings.

The findings are like a strip chart of real time, showing the spikes. By the way, the data's taken with someone observing what's going on, and taken -- no, we don't use video methods or anything. They're too -- it's very practical to take very good notes. You're taking data every few seconds, and you're data-logging it.

So that that's -- it's a very powerful method that we -- NIOSH had a conference on this a year or two ago, where they brought in a number of people. They were trying to get this -- get some interest going in these types of things.

I don't think it went anywhere, though. Everybody expressed their opinions on this, but it's a valuable method. Definitely valuable once you've found an overexposure and you need to get the root causes. That's the way to do it.

MS. SCHIFANO: Okay. Great. Thank you very much.

JUDGE PURCELL: For the record, that was Robert Scholz responding.

MR. SCHOLZ: Yes, I'm sorry.

JUDGE PURCELL: That's okay.

DR. COBLE: Yes, Joe Coble. And I wanted to just follow up to see whether you're planning on submitting some of the exposure monitoring data that you've presented today, you know, specific foundry -- not necessarily the names of the foundries but some of the database. You said that we need to coordinate more on that?

JUDGE PURCELL: Is that directed to --

MR. SCHOLZ: So now you're talking about the seven foundries? You stated we --

DR. COBLE: Yes. Yes, the -- you had --

MR. SCHOLZ: Yes, the data's at --

DR. COBLE: -- ranges of operators, and it's a fairly impressive dataset, where you looked at the 50 -- the medians, and the 84th percentiles, based on some comprehensive monitoring.

MR. SCHOLZ: No. The data was requested from the foundry industry. It was gotten through a -- I don't know who the seven foundries were.

DR. COBLE: Yes. No, we wouldn't need to know them, just to just -- some of the individual measurements.

MR. SCHOLZ: You need the raw data?

MR. SLAVIN: This is Tom Slavin. I think we'd like to do that. I think we need to take that under consideration and make sure that we're not violating some promise that was made to the people. But yes, I mean, I think it would be very useful for you to have that data. We very much support that.

MR. SCHOLZ: Yes.

MR. SLAVIN: And so if there's any that we can, we will provide that.

DR. COBLE: That would be great. Thank you.

MR. BURT: Hi. I'm Bob Burt. I've got a few questions. I wanted to start with, do -- you mentioned there were 400 -- approximately 400 foundries that that were members. Are any of those captive foundries?

MR. CALL: To my knowledge, only -- excuse me, Jerry Call. To my knowledge, only one of them is.

MR. BURT: So you're basically representing independent foundries today?

MR. CALL: Yes, sir.

MR. BURT: And you mentioned that you saw a data problem with captive foundries. Could you tell us a little more what you had in mind there?

MR. SLAVIN: This is Tom Slavin. So the foundries -- the -- captives are defined a couple of different ways, so I want to make sure we're talking about the same thing.

Some people would refer to a GM foundry as a captive foundry, but from a NAICS standpoint, from the standpoint of the NAICS code, their foundry -- I think their foundries are standalone facilities that would have a foundry NAICS code. So they wouldn't be captive under that sense.

So the captive foundries were -- when you start looking at the numbers, when the *Economist* started looking at the numbers and trying to tease out those numbers, there were so -- you know, you --

when you start looking at percent of revenue or percent profit for an industry, a captive foundry that may represent 0.0006, you know, part of that business kind of gets lost.

And I think that way -- those were some of the examples, some of the issues that we had with the captive foundries in the analysis that OSHA did, the economic analysis. In some cases, they lumped captive foundries together, and we couldn't figure out quite the basis for that.

And in other cases they had some of the data mixed in with whatever industry they were captive of. And so it was just too difficult to deal with that, so.

But in terms of the numbers of foundries, when we looked at those four industries, they represented -- you know, of the 1900 foundries, they represented somewhere in the neighborhood of 1400 to 1500. So it was really the bulk of the industry, anyway.

MR. BURT: Thank you. I want to -- probably almost all of my remaining questions are going to be about specific kinds of data you provided. And I want to start by thanking you and saying, there is probably more data in your written comments than many, many others put together. And we very much appreciate that.

And I just -- I'm asking questions to be sure we can make maximum best use of the effort you've put together here to provide all of this information.

I'm going to start with one that I know has been mentioned several times, and that's the -- in your written comments, the -- Page 27, Table 6, the AFS survey. I just want to reiterate that the more information you can provide us about the exact questions asked, how many people you sent it to, how you decided what, who to send it to.

All of that information will make this more useful. It's obviously a very extensive dataset. And to the extent you could divide it even further in terms of the distribution, how many above 200, how many below 25, all of those would make it more and more helpful to use. So that just the request, that if you could provide that, it would be very, very helpful.

MR. SARVADI: This is David Sarvadi. You've just gone through a kind of a laundry list of questions. It would be really helpful if you could -- even just an e-mail with some bullet points telling us what data you're looking for, we can certainly try to answer those questions and be specific.

MR. BURT: That would be great.

MR. SARVADI: Okay.

MR. BURT: I'd appreciate that. I'd appreciate the opportunity to do that.

MR. SARVADI: We'd be happy to do it.

MR. BURT: You also had some -- a lot of very helpful material. In Page 37 on, in your written comment, a section called Metalcasting Industry Overview, you say, for example, "The U.S. foundry industry is comprised of 1987 operating casting foundries." Do you know if that included captive foundries, or that was only --

MR. SPADA: Al Spada. It does include captive operations, yes.

MR. BURT: Okay. And a major source you give here was the *Metalcasting Forecast and Trends Report.* Is that something that could be entered into the record or that we could obtain from you?

MR. SPADA: Yes, it is.

JUDGE PURCELL: Mr. Spada.

MR. BURT: Appreciate it, if you could enter it, then. I had no idea. You know, some of these reports are $50,000 reports, and I didn't want to say, oh, just throw that into our record. But we'd very much appreciate it.

MR. SLAVIN: No. He was going to send the invoice, too.

MR. CALL: Jerry Call. We'll give you the member rate on it, though.

MR. BURT: And there are a number of others -- many numerical statements throughout. To the extent that you could provide sources for some of those, or if they're all coming off that report, I mean, things like your detailed discussion of end use markets. And you do cite the import stuff. Just anything you can provide in addition would be very helpful.

(Off microphone discussion.)

MR. BURT: Yes. I could do that.

MR. SPADA: This is Al Spada. If you want to provide those questions with the other questions --

MR. BURT: Yes, that'd be great.

MR. SPADA: -- they're more than happy. The majority of the information comes from two or three different reports.

MR. BURT: Yes. Okay, great. Yes, I can

list specific things that I was curious where they came from. Because this is a very helpful, very well put together report.

You provide many examples of cost to specific foundries of specific activities. I would like to suggest that those can be most useful if we have data on the size of the firm in question, the type of foundry if that's appropriate, and what they were trying to accomplish with this effort.

Were they at 400 and trying to get to 100, at 100 trying to get lower? Something that puts it in context would again make these many, many helpful quotes much more useful.

Size is just critical, just because of the fact that when we don't know whether we're talking about 20 or 200 people in a foundry really affects what you want to do with those cost estimates. And that one's relatively simple, size of firm, type of foundry if you have it, what they were trying to do with that effort.

MR. SLAVIN: It's just that it -- Tom Slavin. That was the -- one of our appendices had -- I think it is what you're referring to, that --

MR. BURT: Yes, Appendix 2 had many, many examples, and --

MR. SLAVIN: Okay. So we'll try to -- we'll go back through that and try to provide as much detail as we can on --

MR. BURT: And this -- I think this is really important evidence because it's practical examples for real people trying to do this, but we need a little more to make full use of it.

MR. SLAVIN: Okay.

MR. BURT: Just one or two questions concerning Mr. Scholz' study. For the individuals, where you had data on a single individual -- I think it was your Table 2 series, do you have any idea over what time frame those exposure monitoring results took place?

MR. SCHOLZ: I know for the seven sets, they -- a lot of these foundries had data even before the year 2000, but we took the data from 2000 to the present.

MR. BURT: So these could be over several years?

MR. SCHOLZ: Yes. You know, when you're doing -- that's -- when you're doing this type of --

MR. BURT: I'm astonished how many you found, in some cases.

MR. SCHOLZ: Yes. Some foundry

organizations had strong databases, so we were very pleased with that. There were seven foundries. But it was 14-year data.

We were careful, though, that these foundries had not made changes to those lines that -- if it was a particular job category, we didn't want one where they had instituted controls halfway through or something.

We would have answered our own question. We would have produced our own variability, you know. So it definitely has to be of a situation that is constant.

MR. BURT: Sure. On the 3-series tables, do those represent jobs, multiple people in a single foundry, or might they sometimes represent different foundries?

MR. SCHOLZ: Some of those foundries, the seven foundry, a couple of them were from the same organization and had the same job in various plants. But, you know, it seems -- I don't want to get too statistical here, but the data was lognormal.

And that's talked about a little bit in our report, but the reason it's lognormal is that the basic process of doing something, you know, like say you're grinding with a tool or something, that's what causes the uniformity of the distribution so that it follows a model, is that.

It's the fact that -- the essentials to it. Now, when you start adding things to it, there's an aisle sweeper that's driving by, and there's all these other things going on, that's all distractive, in the -- to getting that lognormal distribution.

So that's why I made the comment, we only got 84 percent, because NIOSH said to be careful about that. I mean, the guidance did, that you could do better, you could get 95 percent if you controlled the entire job, which is a philosophy of mine.

I don't believe any data should be taken unless you have baseline conditions. Now, I know when OSHA samples, you're doing a reality check. You're studying reality as it exists. But for the data that you need to do this proper analysis, you do need the dust collectors running, the makeup air unit is turned on. The workers know the work practices they're supposed to be using and it's legitimate baseline.

You get -- that's the data that gives you the real value, because the data is lognormal, and it is repeatable. So, now the data from these seven foundries, I didn't have any checks on that, except that I could ask questions, feed the questions back about the fact, what changed over that period, and the like.

So these were -- these are job categories -- even if the foundry had two core rooms and we're studying core rooms, we did them one by one, to eliminate the fact that if I do things in this room, I might be exposed differently than if I do it in that room, for who knows what reason.

MR. BURT: So you would have treated those as two different datasets --

MR. SCHOLZ: Yes.

MR. BURT: -- if that had been the case?

MR. SCHOLZ: Right. And going forward, the same rules we followed, we would propose going forward, that -- see, I know OSHA's always accepted the fact that you can utilize job categories, because otherwise sampling would be prohibitive if you had to document every worker's exposure.

So job categories, but this data proved that job category is a legitimate way of doing things. Because some of these had a whole series of people's exposure was in there, yet it was still lognormal.

We learned a lot statistically. I know the comment was made. This was one of the simplest statistical tests. And NIOSH made the comment in their literature that this, it was intended to be as non statistical as possible, so that it had a chance of being utilized by people.

MR. BURT: So you would suggest that the good lognormal fits are themselves further evidence that this is a relatively homogenous sample --

MR. SCHOLZ: That's right. That's the beauty of the method. And just on a graph, you can -- on a graph, you get your answer right on that. And if it's not -- the tails are the part. The 84 percent and higher, they call that the tail.

And NIOSH says, if you look up that guidance document, the tails can go all over the place. And I think they're very indicative of the fact that things maybe aren't that baseline for conditions if you can't create data that goes beyond 84 percent where you know the confidence.

Because I think that 95 percent confidence goal is a legitimate one, and therefore we should create data that can give you 95 percent confidence.

MR. BURT: Thank you. That covers all I have, and I appreciate your offer to let me send you an e-mail listing some of the information. Thank you very much.

MR. STONE: Robert Stone. I have just a couple of questions, mainly on the economics as well for the entire panel.

First of all, I'm trying to grasp the ventilation costs that you've prevented in various places. And I'm trying to compare them to what we estimated, and what URS estimated.

And, for example, URS estimated a cost of $22 for the equipment costs. Do you have an estimate of what you think that is? I saw something for $27, but I wasn't sure if that's what you were referring to.

MR. SLAVIN: Tom Slavin. You know, the cost estimate in the OSHA methodology gets annualized. And so you go through a couple of assumptions to get to that. And so, you know, it's difficult to do that.

What -- where we got our $20 per cfm and then $7 for makeup, was the Foundry Committee, engineering -- has a bunch of engineers that get together occasionally, and we were able to provide a -- to get those engineers -- and there's -- included in there are a number of consultants who do ventilation work, and who go to foundries and, you know, build the ventilation, build the baghouses, build the duct work.

And so they were giving us the numbers that they use when they decide how much is it going to cost to put in this project. And so that's where that number -- it kind of came out as a consensus number.

There were -- there was a -- I don't know what the range was, but it -- I mean, it wasn't -- they didn't all come out with the same number. But that was kind of the consensus of -- that when you force them to, well what's, you know, what's the most likely?

So that's where we got that number, but I did want to point out that it's also -- you know, EPA has some guidance on what it costs for a baghouse. And they put it in annualized cost as well.

So, anyway, that's kind of the world they work on. And their range is wider. I think it's like -- I don't know, it's, you know, 6 to 36 or something. And, of course, the bigger the facility, the lower the cost per cfm.

And when you get into, you know, smaller baghouses, then your -- you kind of go up through the roof. But, anyway, that's where that came from.

MR. STONE: Okay. Just to confirm, then, you're suggesting the cost is about $20 per cfm for the installed capacity, and then $7 for the operating cost?

MR. SLAVIN: No. The -- it's so -- that's the installation -- it's the annual cost. And so that annualized cost includes a certain number -- and I think, actually the number for installation wasn't far from that. So it was about, say, $20 per installation.

And then you annualize that, so it comes out to, I don't know, $7 or $8. But then you've got energy costs. You've got operating costs, maintenance costs, replacing bags in the baghouse. You've got ductwork.

And a lot of the operations are not -- a lot of foundries are not configured optimally, so where you put your baghouse is a couple hundred feet away from where your exhaust has to go, so you've got that ductwork issue.

And so when they add up all those things, this was what these, kind of, experts, if you will, decided, that that was the average figure that they use when they do their engineering.

MR. SARVADI: This is David Sarvadi. This sounds like a sufficiently complex situation that it might be better if we try to answer the question in the post-hearing comments.

And if you have, again, a list of bullet points that you'd like us to address, maybe that would be the best way to do that.

MR. STONE: Well, let me just say, if you're telling me that the installation cost is annualized at $20, and then the remaining amount, which comes to -- the residual of -- to total the $25?

MR. SLAVIN: No, no. I'm sorry. I'm sorry, Tom Slavin again. So the -- factored in to this $20 per cfm annualized cost, factored in to that, is -- I don't know what the number works out to be, maybe $5 for the installation.

Annual -- you know, you take -- say the installation is $20 per cfm, and when you annualize that over 10 years with whatever the interest rate and the -- you know, those factors that you, you probably come out to maybe -- I'm pulling a number out of the hat, $5 or $7.

And that $5 or $7 is then just a component of the annualized cost. So that's just the installation component.

MR. STONE: What about the actual purchase of the capital equipment? That's what I'm missing, frankly.

MR. SLAVIN: Oh. Well, that's -- it's the purchase. So the purchase would be the $20 per cfm, and then you annualize it, and you add the other costs in it, and you get an annual cost of $20 per cfm. So you --

MR. STONE: Okay. Okay, that -- I got it. Now --

(Off microphone discussion.)

MR. SLAVIN: Well, okay. And then there's always -- Bob also makes a point about the supply air, then. You have to add that. Because every -- see, to do ventilation properly, every cfm of exhaust, you really need a cfm of makeup air. And so that's why we added the -- the $7 was the cost of the -- annualized cost for that equivalent makeup air.

MR. STONE: Now is that -- is the makeup air the capital installation, or is this -- what is this?

MR. SLAVIN: Again, it's the annualized, which includes a factor for the capitalized -- for the initial cost, plus operating, maintenance, energy, all those numbers built up.

MR. STONE: Okay. Okay, you're right. This is too complicated.

MR. SLAVIN: Yes.

MR. STONE: What I would request, if you could possibly do it, if you could provide us, in your later response, what the components of this cost that would be capital cost, installation cost, and then any other operating costs you have. Okay. Because otherwise I can't disentangle it. Thank you so much for that.

MR. SLAVIN: Okay. Excuse me -- Tom Slavin again. So the -- but the most useful number for you -- you're sort of -- you know, there's a lot of numbers that float around, but the most useful number for you, is it the annualized cost? Or you want to get all these sort of itemized things so that you can build your own annualized cost?

MR. STONE: Right. That would be good. But the -- you know, the annualized cost for URS, for example, was about $7, maybe $8, in that range. So you're about triple their cost, which is about double ours.

MR. SLAVIN: Okay. Tom Slavin again. I think they got to $12.

MR. STONE: No. Ours was $12 for the capital cost. Theirs was $22 for the capital cost. Our annualized cost was $5 and change, and theirs was not quite double that. They used the same operating cost that we did, same operating percentage.

So their cost is under $10, and -- okay. So anyway --

MR. BURT: Could I ask a follow-up question to that? Could you tell us the source for your statement that EPA estimates $6 to $36, if it isn't already in here?

MR. SLAVIN: It's already in our written comments. There's a reference to it, yes.

MR. BURT: Okay. Thank you.

MR. STONE: Okay. Anyway, if you could provide us with a further breakout, that would help us to understand what your costs are coming from. Thank you. And we'd like to compare to URS, for example, and to our own.

Okay. I had one other data question. This comes from Table 6 in the -- in your written submission, and it's the one with the percentage of workers exposed above 50 from your 2013 percentages.

Were those single data points? Were those the highest point that was sampled for those workers?

MR. SLAVIN: We -- Tom Slavin again. What we did was, this was, came out of our survey. And what we asked foundries to do was to give us the number of people in ranges, number of people below 25, between 25 and 50, and so we had them put the numbers in that range. And we actually did it by shift as well.

And then we -- and so that's where those -- so we didn't have the actual number to -- you know, we didn't have whether it was 35 µg per cubic -- we didn't have those exposure numbers. We just had percentage of people in the range.

MR. STONE: All right. But was the percentage of the people in the range reflective of their -- a single exposure for them, their average exposure or their peak exposure?

MR. SLAVIN: We didn't specify. So we -- what we -- I think we implied that it was an -- their -- we asked them for their average exposure, you know, how many people are exposed to this, you know, to characterize, if you had to say, this person X here, what's the exposure level? So it wasn't a single data point.

MR. STONE: All right. Thank you. And I understand that you're recommending that OSHA propose a PEL of 100 for general industry and for foundries.

MR. SLAVIN: Tom Slavin again. Yes. That -- we would propose that on kind of a reading of the health information and the threshold, but also because it -- properly interpreted, a PEL of 100 requires that you maintain exposures below 50. I mean, that's our interpretation. That's our assumption, and that's what we're building on.

MR. STONE: All right. That's good. And are you aware that NISA and others have recommended a PEL of 100 as well, with an action level of 50? And do you support that element of a proposal?

MR. SLAVIN: We support the aspect of the 100. We haven't really taken a position on the action level and where it goes. And I think we disagree with them on some of the ancillary provisions.

MR. STONE: Okay.

MR. SLAVIN: But in terms of the PEL, we definitely are on the same page there.

MR. STONE: Okay.

JUDGE PURCELL: And that was Mr. Slavin responding.

MR. SLAVIN: Oh yes. I'm sorry.

MR. STONE: Okay. That's all for me.

Again, I want to thank you all for your excellent submissions of data and material.

MR. O'CONNOR: This is Dave O'Connor. I have just a couple of questions, hopefully quick questions here.

In your testimony and comments, you mentioned the real-time monitoring and area mapping. And I was just wondering if those are used to characterize exposures to the extent that decisions are made with regard to use of respiratory protection based on real-time monitoring and area mapping, or whether you rely on personal air sampling data to make those determinations.

MR. SLAVIN: I know -- this is Tom Slavin. I know Bob is itching to answer that question, but I'd like to take a stab at it first, and say that sometimes the area mapping is more useful -- and you're probably familiar with noise mapping as well. A lot of companies do that.

But area mapping is very useful to characterize kind of the average exposures, and identify what areas respirators are required. And we find it more -- at least I find it more useful, better information than individual eight-hour samples where you don't understand what went on in that eight hours.

MR. SCHOLZ: Yes. First of all, the area mapping can --

JUDGE PURCELL: Robert Scholz.

MR. SCHOLZ: Oh yes, Bob Scholz. Contour mapping and real-time monitoring for root cause analysis, then they're often done concurrently, are not used for industrial hygiene decision making. They're done solely to put direction into the program to improve engineering controls and work practices, and to -- by identifying the root causes of exposure.

So they're an engineering technique, fully, but they're a necessary one. The -- and they -- related a little bit to what Frank had said earlier on, because he was concerned about the way these departments interact, and why a department that shouldn't really have a lot of silica does.

The contour mapping can show the spread of the -- and it -- so that, for instance, if an area is high in silica, it doesn't matter what's -- it doesn't matter if you go and sit down on a chair in that department, you can get overexposed, perhaps.

So it's a necessary component, and the next one being the process itself. You know, that a lot of the engineering studies, when they study -- when we study root causes, we'll often times do it on a Sunday when nothing else is going on, if there is such a break, and where you can assign an exposure to that process.

Because see, there's so many potential silica sources that you're going to have to divide and conquer at some point. But do you see, the engineering -- but to answer the question, without getting too far afield, is that it's directed at specific engineering goals, that you have to get to root causes.

I always use the example, you know, the quality field didn't make any progress till they did that. You know, and I know what it was like in the 60s, with the inspector at the end of the line that would tell you if the part was okay or not.

JUDGE PURCELL: Hold the mic up, please, Mr. Scholz.

MR. SCHOLZ: And they got away from that, you know, that you need a predictive means. And the quality field's done wonderfully with that. And we need to adopt that more. In other words, if you knew root causes, you could make a lot more progress.

We are highly dedicated to driving down silica exposures. We have been for years. And our publications and the work we've done in the training has been aimed at it, strongly. And it's by taking the methods and raising them to a level where they're really powerful.

There's no question in our minds that eight-hour samples is not going to get you where you need to go. You got to go beyond that. But your standards have always said that. You said, when people had to come up with their plan, they're supposed to come up with their plan for engineering studies. And that's the part we'd like to work together on, actually.

MR. O'CONNOR: Okay. But I gather, from your response, then, that in terms of determining whether respiratory protection is needed, and what level of respiratory protection would be needed, you're looking at personal air monitoring data?

MR. SLAVIN: This is Tom Slavin. Well, that was kind of Bob's response. My response is, I think if you take a contour map, and the whole room is above 100, you kind of know where you are. So I think there is use in that contour map to determine where controls are needed.

MR. SCHOLZ: Oh, yes. That I said. But he --

JUDGE PURCELL: Mr. Scholz.

MR. SCHOLZ: Oh, sorry. But his kind of question was to respiratory air protection, to that.

MR. O'CONNOR: Yes. And that sort of leads to my next question, which was getting at something you presented in your written comments. And this is on Page 30 of your written comments, where with regard to regulated areas, AFS says that, "If the standard allowed real-time monitoring and exposure mapping as an alternative to eight-hour TWA sampling, one might be able to construct a basis for defining regulated areas."

And I was just wondering if you could describe how real-time monitoring and exposure mapping could be used in that regard.

MR. SLAVIN: Well, this is Tom Slavin, and I think this is again where Bob is saying something a little bit different. My issue with the regulated area is that if you do it on a time-weighted average basis -- and I used the example earlier of the maintenance person that spends part of his time in the office, and you really don't know where the exposure comes from, and so every place he spent time has to be part of the regulated area, which doesn't provide useful information, whereas more area-specific exposure information might be.

So you could have someone whose time-weighted averages exceeds the PEL, who doesn't have to wear a respirator every place he goes. He just has to wear it when he's in certain high-exposure areas that you know are high-exposure areas. And so that's -- that was the point of that comment there.

MR. O'CONNOR: Okay, thanks. So if I understand correctly, you would be looking at this real-time monitoring and exposure mapping to define areas where the exposure would be above the PEL, and then defining them as the regulated area?

MR. SLAVIN: This is Tom Slavin. Yes, I think that that's probably fair. It's similar to the approach taken in the noise standard, where you identify geographic areas as opposed to personal areas where hearing protection is required.

MR. O'CONNOR: Okay, thank you. And that concludes OSHA's questioning. I'd like to, again, thank the panel for coming in for your testimony, and for your detailed written comments. They were very helpful.

JUDGE PURCELL: I'd like to thank the panel as well. We appreciate your time and preparation for all this. And you're excused.

UNIDENTIFIED SPEAKER: Thank you, Your Honor.

JUDGE PURCELL: Next on the agenda is James Mallory, with the Non-Ferrous Founders' Society. It'll take a minute. Go ahead and take your time and set up. Let me know when you're ready.

MS. KRAMER: Your Honor? The OSHA panel would appreciate, maybe if we went off the record briefly for a break.

JUDGE PURCELL: How long a break would you like?

MS. KRAMER: Maybe 10 minutes.

JUDGE PURCELL: All right. The time is 20 minutes to 5:00. We'll reconvene at 10 till 5:00. Mr. Mallory, go ahead and make yourself comfortable.

(Off the record.)

(On the record.)

JUDGE PURCELL: I'd like to reconvene. During the break, Ms. Kramer asked Mr. Mallory and Mr. Smith, who are the next two presenters, if they would mind making their presentation together and responding to questions.

Mr. Mallory has a 7 o'clock flight to Chicago, and I'd like to make sure he gets out of here on time, so I'd ask you to keep that in mind when we get to the point of questions. But with that said, let me go ahead and ask Mr. Mallory to introduce himself and make his presentation.

MR. MALLORY: Thank you, Your Honor. Jim Mallory, Executive Director and CEO of the Non-Ferrous Founder' Society from Park Ridge, Illinois. I've had the privilege of serving in that capacity since 1985.

First of all, I'd like to express that the Society is grateful for the opportunity to testify at this hearing, on behalf of the more than 2000 foundries in our industry that will be severely impacted if the proposed rule is allowed to take effect, particularly in the form in which it was originally proposed.

My comments today are intended to reiterate and support those that have just been presented by the American Foundry Society, just as I know that the AFS testimony echoes similar arguments and concerns that have already been offered by the National Industrial Sand Association, the American Chemistry Council's Crystalline Silica Panel, the National Association of Manufacturers, the U.S. Chamber of Commerce, the Small Business Administration Office of Advocacy, and other organizations that have yet to testify.

NFFS -- and we do pronounce the acronym, NFFS, we support the consensus conclusions that have been put forth, and the comments and testimony offered by these groups, that because OSHA has inadequately demonstrated a valid need for this rule, that because the Agency has erred in assessing the technological feasibility of achieving compliance on a continuous basis, and because the economic impact analysis presented in support of the proposed rule improperly estimates the costs that would be imposed on the regulated industries, the proposed rule should be withdrawn.

At the same time, however, we're pragmatic. We recognize that the length of time, the amount of the effort and the cumulative budgetary investment that the Department of Labor has spent in developing the proposed rule make it highly unlikely that it will ever be withdrawn.

With that recognition in mind, and presuming that OSHA is committed to proceeding with a new silica rule in one form or another, our organization feels obligated to point out several other problems and deficiencies with the rule that we feel should be addressed before the final rule is presented.

Number one, a new Small Business Regulatory Enforcement Fairness Act, or SBREFA, panel should be convened for this rulemaking. Our organization is aware that OSHA would prefer not to have to convene a second SBREFA panel for this rulemaking, but the simple fact is that the initial panel was formed and submitted its reports more than a decade ago.

Other respondents to the docket have pointed out that since then, economic conditions have changed, then changed again, then changed again. They also note substantive flaws with the economic impact assessment model that OSHA employs to support the presupposed premise that achieving compliance is economically feasible.

OSHA's economic assessment methodology not only underestimates cost, but fails to understand the disproportionate impact on small and very small businesses. Without belaboring the facts that AFS presented, we wish to note that we strongly endorse their economic assessment that projects that the true cost of the proposed revision would represent 13 percent of revenue and 372 percent of profit for non-ferrous sand casting foundries.

We don't understand how any rational person could possibly consider that as demonstrating economic feasibility. The initial SBREFA panel submitted its report in 2003, and questioned whether a revision to the PEL was necessary. They also suggested that the costs imposed by the rule, in 2003, would far outweigh its benefit.

Five of the small enterprise representatives to the SBREFA panel were foundry owners. Four were current or former Non-Ferrous Founders' Society members, and two others came from companies that supplied silica-based materials to foundries.

We believe that the staggering and overarching impact of the proposed new rule demands that a second SBREFA panel be created, and that at least 20 percent of the panelists be representatives drawn from the foundry industry and their suppliers.

Number two, OSHA should include a de minimis exposure level, below which exposures are not believed to be harmful, and therefore are not of concern within the final rule.

It's impossible to generalize about workplace exposures occurring in foundries because of the diversity in foundry operations. Exposures in large foundries are much different from those that occur in smaller ones. Iron foundry exposures are much different than those that occur in aluminum casting facilities.

In the apparel industry, there's a joke that suggests one-size-fits-all rarely does, at least not fashionably. In workplace practices and engineering controls in the foundry industry, one-size-fits-all never does. Yet OSHA insists on stocking its regulatory compliance closet with one-size-fits-all recommendations.

Silica is a natural occurring element, but science has not been able to specify a level at which natural occurring exposures to silica are always harmful, nor any level below which they might not be. Now, anyone who's ever driven an ATV in the desert, or ridden in a jeep across the sand platt, has probably been exposed to respirable silica particles.

Clothing worn during those activities -- if I can borrow a term from the OSHA proposed silica rule, quickly becomes grossly contaminated. OSHA would probably scoff at the idea that exposures in recreational -- recreational exposures should be controlled.

But at the same time, they presume that any workplace exposure -- every workplace exposure, even those that might occur at levels below which occur during recreational exposures, is harmful and therefore must be controlled.

Current silica research suggests that high exposures for short periods of time carry greater risks than higher accumulated lifetime exposures at low levels, and that any exposure measure should be weighted to reflect higher risk of higher exposures.

This would seemingly suggest that there may be a de minimis or threshold level, below which exposure presents less risk, even if it persists over time. A final silica rule cannot ignore this possibility. And if such de minimis or threshold is above either the proposed PEL or the action level, then the proposed rule becomes impractical, unnecessary, and should be withdrawn or amended accordingly.

Number three, the health benefit assessments in the final rule should based only on the reduction of health effects for which a direct causative link to respirable silica exposures has been established. OSHA goes to great lengths to establish theoretical estimates of silica-related disease effects, despite clear evidence that such disease is declining and particularly in foundries.

Moreover, many of the major health effects that occurred -- or that the proposed rule associates with crystalline silica exposures, seem from our perspective to speculative and based on a selective reading of scientific literature.

AFS and the other commenters have cited references to other studies that suggest that the adverse health effects that OSHA associates with respirable crystalline silica exposures can be effectively reduced if silicosis is prevented.

Number four, the final rule must allow employers to use exposure control methods that are already working, without imposing additional cost and control burdens, for which the added or presumed benefits are speculative at best. In this rulemaking, OSHA has made a preliminary determination that compliance with the proposed PEL can be achieved "in most operations most of the time" through the use of engineering and work practice controls.

That would seem to establish a defense argument against citations, fines, and penalties when a facility could claim that it shouldn't be cited, since it meets the PEL most of the time. I doubt very much that the Agency would ever accept that argument.

OSHA's insistence that engineering controls be used as the primary means of reducing employee exposures in the workplace shows its lack of familiarity with day to day foundry operations. Dust control in any industrial facility, especially at the low levels that OSHA is recommending, is both challenging and complex, and has been previously noted, one size never fits all.

OSHA describes engineering controls as if they've never been tried before, but as has already been pointed out, foundries have decades of experience with dust and silica control technologies. The benefit of that experience and the efforts that have been made to reduce employee exposure to silica hazards over the past 30 years are clearly demonstrated by the reduction of the number of cases of silicosis or lung disease that can be directly attributed to working in a foundry today.

OSHA's bias against employee rotation as a means of controlling silica exposure seems arbitrary and unreasonable. Rotation is an acceptable and effective administrative control that must be allowed, not prohibited. If reducing employee exposures to silica is the true goal of this rulemaking, then OSHA must allow facility operators to determine for themselves and to use whatever controls work best.

Foundries have spent great effort and cost on controls that in operation have proven incapable of achieving the current PEL with 100 percent reliability, yet OSHA's rule would mandate that additional thousands -- millions of dollars be spent to meet a proposed PEL reduction, with little or no guarantee of success.

The rule describes the use of respirators, a proven and established means of controlling employee exposures to silica, as presenting the least satisfactory form of exposure control. Meanwhile, the Agency admits that respirator use would still be required if engineering controls can be proven to be ineffective in reducing exposure below the proposed PEL.

So, in fact, what OSHA seems to be suggesting is, "Well, we think requiring employers to spend thousands of dollars on new controls is a good idea, but if they can prove that that simply doesn't work, then they'll have to go back to doing what they've been doing all along." And the quote is mine, not OSHA's.

That is, foundries have been using controls to effectively reduce workplace exposure to silica hazards for more than 30 years.

Number five, the effective date for the final rule must allow sufficient time for regulated entities to purchase and install any additional engineering controls that may be required. The rule would become effective 60 days following its publication in final form in the *Federal Register*.

Provisions outlined in the standard would become enforceable 180 days after the effective date, with the exception of engineering controls and laboratory requirements. Engineering controls would be required no later than one year after the effective date.

And the accredited laboratories on which foundries would have to depend to perform the analysis of respirable crystalline silica samples -- say that twice, would have an additional year in which to achieve the certification and accreditation. That schedule seems incongruous.

It requires employers to meet a preordained goal, without knowing how well they're doing or even if their current efforts have been effective.

OSHA requested comments on allowing a longer term or more complex phase-in of the standard, possibly delaying implementation dates for small businesses, and even presupposed a phase-in period might be useful in certain industries, such as foundries, allowing employers to coordinate their environmental and occupational safety and health control strategies to minimize potential costs.

The Non-Ferrous Founders' Society agrees with this presumption, but it still questions whether spending the cost of installing new technologies that may or may not prove effective in reducing or controlling silica exposures is reason enough to justify massive expenditures with little hope of significant benefit or gain.

However, if OSHA is adamant in insisting that engineering controls be used as the primary means of complying with this rule, then foundries, most of which -- 90 percent of which are small businesses, must be given a minimum of five years in which to make any required capital investments in new control technologies.

That's not unpredicated. The OSHA lead standard provided a five-year phase-in for foundries to achieve engineering control compliance. Moreover, however, the lead rule identified certain operations within non-ferrous foundries for which achieving compliance by means of the engineering controls alone might never be achieved.

That type of assessment needs to be offered -- that type of option needs to be offered in a respirable silica rulemaking as well.

With that, Your Honor, I am happy to respond to any questions on anything that I have said here today, or anything contained in our written comments to the docket. And, again, I thank you and OSHA for allowing me the opportunity to testify on our industry's behalf.

JUDGE PURCELL: Thank you, Mr. Mallory. Before the testimony, you gave me a copy of your written remarks. I've marked that as Hearing Exhibit Number 90, and I'll admit that into evidence.

(Whereupon, the document referred to as Hearing Exhibit 90 was marked received in evidence.)

JUDGE PURCELL: Before opening it up to questions, let me go ahead and have Mr. Smith present his comments. It's Brett Smith of the American Iron and Steel Institute. And also, do you have a copy of your testimony, Mr. Smith?

MR. SMITH: You'll have this copy right

here, Your Honor. I'm happy to give it to you after I'm -- at 3:00.

JUDGE PURCELL: That's fine, and then I'll mark it as an exhibit and we'll enter it.

MR. B. SMITH: Thank you very much. Good afternoon. I am Brett Smith, Senior Director of Government Relations for the American Iron and Steel Institute, or AISI.

AISI serves as the voice of the North American steel industry in the public policy arena and advances the cause for steel in the marketplace as the preferred material of choice.

AISI is comprised of 22 member companies, including integrated and electric arc furnace steelmakers, and approximately 125 associate members who are suppliers to or customers of the steel industry.

Our member companies represent over 3/4 of both the North American and U.S. steel capacity, and our members directly employ over 150 individuals in North America, and are committed to continuous improvement in safety and health, and to achieving an industry -- injury-free workplace.

While AISI appreciates that OSHA has attempted to develop a regulation that would protect workers' health in general industry from the dangers of exposure to elevated levels of respirable crystalline silica, AISI members believe lowering the current PEL is necessary to -- unnecessary to achieve this end.

Before moving to a lower PEL, OSHA should consider the alternative of improved enforcement of, and expanded outreach for the existing PEL of 100 µg per -- 100 -- for general industry.

OSHA's own numbers show that some 30 percent of general industry is not in compliance with the PEL. By simply cutting the existing PEL for general industry in half, the Agency will not ensure greater compliance, but will make it even more likely that the 70 percent of the general industry that was in good standing will now find themselves in noncompliance.

AISI therefore recommends that OSHA carefully study the effects of full compliance with the existing PEL on reducing the health risks of exposed workers, and continue employer outreach programs coupled with better enforcement of the existing standard.

Beyond this broader concern about the proposed lower PEL, AISI also has a number of steel industry specific concerns about the proposal. In particular, we believe that the prohibition on dry sweeping and compressed air presents a significant safety hazard for steelmaking facilities.

In areas where steelmaking facilities -- where molten metal is present, the use of dry sweeping has been the industry practice for controlling crystalline silica and other dust accumulation. Wetting methods for dust control in these areas present the potential for steam explosions, a significant and immediate safety hazard for any workers in these areas of the facility.

Further, the alternative of vacuuming for such large areas is both cost prohibitive and logistically difficult. AISI therefore requests that OSHA allow greater flexibility in the choice of cleaning methods for work areas where wet controls present a greater danger to worker safety than established dry sweeping methods, and where vacuuming is not practical.

Additionally, the proposed rule is duplicative of existing steel industry standards, and potentially conflicts with the coal dust PEL. First, OSHA's existing coke oven emission standard, COE standard, protects employees working in the regulated area around metallurgical coke ovens and metallurgical coke oven batteries, where exposure to emissions are of greatest concern.

AISI believes that workers covered by OSHA's coke oven emission standard are therefore already protected adequately from the dangers of crystalline silica exposure, and such operations should be exempt from the proposed rule.

Secondly, AISI requests that OSHA specifically -- provide specific guidance to coal handling facilities that operate under an existing coal dust PEL. Guidance is needed on how OSHA proposes to apply the existing coal dust PEL when crystalline silica is also present, and how the Agency would apply the proposed crystalline silica standard in coal handling and processing areas.

In anticipation of the amended standard and its lower PEL and action level, AISI members have begun assessing the potential exposure values for crystalline silica. In conducting these initial assessments, some steel shops have experienced difficulty in accurately measuring crystalline silica exposure down to the proposed action level due to graphite interference.

AISI therefore requests that OSHA provide guidance in situations where equipment sensitivity challenges a regulated employer's ability to accurately measure crystalline silica exposure down to the low exposure action level anticipated in the proposed rule.

The proposed employee training requirements in the rule use the terms, "each employee" and "each affected employee" interchangeably. Clarification is needed on whether OSHA intends all employees at a facility to receive training required under the proposed rule, or if only "affected employees" must go through the proper training.

Specifically, AISI requests that OSHA amend the definition of affected employee to only those foreseeably exposed at the PEL, and use this term throughout to provide certainty that only affected employees need to receive the required training on potential crystalline silica exposure in their specific work areas.

Beyond that, many of AISI's members own and operate mining facilities, and are therefore regulated by MSHA, with some members regulated by both OSHA and MSHA. Recently MSHA has indicated that it also intends to revisit its own regulation on occupational exposure to respirable crystalline silica, which will likely harmonize its own PEL with that of OSHA. This will add another layer of compliance costs for OSHA -- AISI member companies that were not accounted for in OSHA's proposed rule.

So, in conclusion, AISI strongly urges OSHA to fully implement and enforce the existing general industry crystalline silica PEL of 100 before adopting and implementing a new standard that will be more complex and require more technical control than the existing standard.

Additionally, AISI requests that the Agency address the steel industry specific concerns that we have raised concerning hazards inherent with wet cleaning methods, duplication of existing standards around metallurgical coke oven operations, guidance of the existing coal dust PEL, issues that arise with monitoring due to graphite interference, the ambiguous employee training requirements and the precedential effect on other agencies.

We appreciate the opportunity to offer our comments here today, and our written comments as well, which are in the docket, and look forward to answering any questions that others may have.

JUDGE PURCELL: Thank you, Mr. Smith. If you'll hand me your written testimony, I'll mark that as Hearing Exhibit Number 91 and admit it into evidence.

(Whereupon, the document referred to as Hearing Exhibit 91 was marked and received in evidence.)

JUDGE PURCELL: With that, I'll open it up to questioning. As a courtesy to Mr. Mallory, I'd ask the questioners to keep in mind that he does have a flight at 7 o'clock, so --

MR. MALLORY: Thank you, Your Honor.

JUDGE PURCELL: -- please direct your questions first to him. Anybody that has any questions, can I see a show of hands, as far as -- I don't see any, so I'll turn it over to the OSHA panel.

MS. KRAMER: We do have some questions, Your Honor.

JUDGE PURCELL: I assumed you did. And, again, if you would, direct those to Mr. Mallory. Any that you have for Mr. Smith, I'd ask you to hold until you've completed questioning Mr. Mallory.

MR. O'CONNOR: This is Dave O'Connor. I have one question for Mr. Mallory. You indicate in your written comments that the creation of a regulated area where overexposures exist is unmanageable in an operating foundry. And I was wondering if you could describe why you believe that's the case.

MR. MALLORY: Partly because of the diversity -- and Your Honor, if it's all right, I -- since I'm the only one getting questions, I won't identify myself for each response.

JUDGE PURCELL: Certainly, Mr. Mallory. I'll correct the record if there's any questions directed to Mr. Smith.

MR. MALLORY: Again, because of the diversity in foundry operations, some foundries are very large, some foundries are very small. Smaller foundries would have a harder time creating a demarked or controlled area wherein silica exposures are easily identifiable, because of the way that the foundry is laid out and the way that it is structured.

I don't believe that a person walking through the foundry would be able to find an area that would not be considered a regulated area in a small foundry operation.

MR. O'CONNOR: Do I understand, then, that in these small foundries, the entire foundry would be exposed above our potential permissible exposure limit?

MR. MALLORY: I can't say that categorically. What I'm saying is that I think it would be hard to identify an area in the foundry and to present an assessment of silica exposures that are unique to that area.

MR. O'CONNOR: Okay. If I could follow that up a bit, how are foundries approaching this now, in determining where the overexposures are, given our current PEL of approximately 100 $\mu g/m^3$? How do they determine who's overexposed in working --

MR. MALLORY: In my experience with the foundries that I've been in, I see that done most often on a job-specific basis. Those employees who work in areas that are directly involved with or come in contact with silica or silica exposures are identified as the people for whom people respiratory protection must be provided.

But a general maintenance worker, for example, might not be required to wear a respirator if they perform their activities in more than one area of the foundry during the course of a normal workday.

MR. O'CONNOR: Okay. And it wouldn't be

possible to mark off that area where the job is taking place, where the overexposure occurs, or what --

MR. MALLORY: Well, I don't see the benefit that that would provide, because even a secretary, then, who would be walking through that area would be subject to having to wear a respirator to walk through the area to get to, for example, the employee lunch room.

MR. O'CONNOR: Okay. Thank you.

DR. COBLE: Yes, I want -- this is Joe Coble.

MR. MALLORY: Yes, Joe.

DR. COBLE: I wanted to ask you about your statement regarding the variability across foundries, and something to the effect it's -- you can't generalize, that they're so different that there's no way you could say something that worked here will work there, no guarantee.

MR. MALLORY: Not with a high enough degree of reliability.

DR. COBLE: Right.

MR. MALLORY: Yes. I think that's true.

DR. COBLE: How much variability have you seen in the types of controls that are employed?

MR. MALLORY: They vary with the size of the company, with the number of employees involved in the operation, the number in the production department, with the -- frankly, with the market value of the castings that are produced, and the general profit levels of the company.

DR. COBLE: To your knowledge, is there any difference between ferrous versus non-ferrous?

MR. MALLORY: Oh, absolutely.

DR. COBLE: So what would be -- with regard to exposure potential to silica, would there be a distinction between the ferrous versus the non-ferrous?

MR. MALLORY: Again, I think it's very hard to generalize on foundry specific operations, because they are different. A ferrous foundry tends to pour metal at a much higher temperature than a non-ferrous foundry, certainly than an aluminum foundry.

DR. COBLE: Right.

MR. MALLORY: And so some of the burn off of silica within the mold cavity would occur at a higher rate in a ferrous foundry operation than it would in an aluminum shop.

DR. COBLE: Sure.

MR. MALLORY: I think there are some

facilities that -- smaller facilities might find it easier to reduce or use alternative materials than larger facilities would, again, based on the size of castings, the number of castings --

DR. COBLE: Yes, there are -- my impression is that the very large castings --

JUDGE PURCELL: Mr. Coble.

DR. COBLE: I'm sorry.

JUDGE PURCELL: Let him finish before you start.

MR. MALLORY: That's quite all right, Your Honor.

JUDGE PURCELL: We want to make sure the record is clear.

MR. MALLORY: Thank you. Again, these operations vary dramatically. I have personally been within the foundry at the Newport News shipbuilding facility, that we heard testimony earlier today from a represent of United Steelworkers. The expanse within that foundry and the size the castings produced in that foundry, some of those castings wouldn't fit in this auditorium.

I have also been in foundries, small facilities that have fewer than 10 employees, that have basically, you know, floor molding capabilities, and they don't have automated sand-handling technologies, and yet they do so on a productive basis and they are able to control silica exposures to a reasonable degree. I don't have specific data I can cite.

But, again, depending on the operation of the individual facility and the type of material that they produce, the type of processes that they employ, it's very, very difficult to make any kind of a general statement that says engineering controls will be effective with a 95 percent degree of reliability in all foundry operations all the time.

DR. COBLE: And how important is maintenance on these? Is some of the possible variability we're seeing in these exposures, would that be related to the level of maintenance of the engineering controls?

MR. MALLORY: I'm not an engineer. And I'm not an expert in foundry engineering.

DR. COBLE: Right.

MR. MALLORY: So I really can't address that with a fair degree of certainty, but I would suspect that maintenance is an important factor in all foundry operations, that you have to maintain a working facility capable of producing the parts that you need on a regular and continuous basis.

DR. COBLE: Yes. Just pursuing the idea of how much of the variability would be due to the absence of controls in some facilities versus others, as opposed to all these facilities have controls but some work better than others due to the maintenance.

MR. MALLORY: I can't answer that.

DR. COBLE: You wouldn't be able to provide any --

MR. MALLORY: I have no data that would allow me to give you that answer.

DR. COBLE: Okay. And then I have a question on the -- I guess we'll have another round of questions, is that -- for?

JUDGE PURCELL: Not for Mr. Mallory.

DR. COBLE: Yes. Okay, I'll wait, then.

JUDGE PURCELL: Oh, okay.

DR. COBLE: Thank you.

MS. SCHIFANO: I just have one quick question for Mr. Mallory. This is Jessica Schifano. In your written statement, you identify that there are several industrial studies that have suggested there is no appreciable exposure from dirty clothing. Are you referring only to the study identified in the AFS testimony or other studies that you're aware of?

MR. MALLORY: I'm not quite certain. I think the primary reference that I made was to the study in the AFS materials. We have a good working relationship with the AFS. I trust that there have been other studies performed for other industries that might yield some similar results.

MS. SCHIFANO: Great, thank you.

MS. KRAMER: Hi. This is Allison Kramer with the Office of the Solicitor. I just have a couple of follow-ups for you.

MR. MALLORY: That's fine, Allison. Thank you.

MS. KRAMER: First, related to what David O'Connor was asking a second ago, you mentioned that determinations regarding exposure levels and who would wear a respirator is done on a job specific basis, based on things like, you know, what they're working with, what they're doing, what kind of content of the material would be.

Do you do any sort of, like, area monitoring or personal monitoring or real-time monitoring? And when I say you, of course I mean your members, that you're aware of.

MR. MALLORY: To answer this part with regard to my organization first, we do not get involved in doing any monitoring of the member facilities.

MS. KRAMER: Of course.

MR. MALLORY: I'm not aware of any of our members who do any real-time monitoring. I'm sure there are some, but I couldn't identify who they are.

MS. KRAMER: Are you aware of any members that do medical surveillance or that offer exams to their employees or anything like that?

MR. MALLORY: Again, I have no specific knowledge of member practices as far as medical surveillance or their medical removal or any of the other processes that they use to control employee exposures.

I would not be at all surprised to find that there are some facilities who are members of our organization who do do a regular medical surveillance programs.

I would tend to think those would tend to be the larger facilities who are members of our organization and not the smaller ones. And just as an aside, within the structure of our organization, we categorize our members by the number of employees that they have.

And roughly 50 percent of our members have fewer than 50 employees. So I suspect that that half of the industry may be less sophisticated in some of their approaches to medical surveillance than those with 50 and above.

MS. KRAMER: And one final question. Have you spoken at all or had any communications with your members regarding this proposal? And if so, would you mind submitting anything that they would be okay with, of course, their opinions on this rule?

MR. MALLORY: We have not done a survey or had any formal dialogue with our members. And we did that for a pointed reason. Many of our members are also members of the American Foundry Society, and since they were doing quite an extensive survey of the entire foundry industry, we felt that trying to do any outreach would only generate a, let's say a disparity of information presented to the docket.

So we deferred all of those communications with the industry to AFS, who has frankly, a larger staff and a larger budget for those purposes than we do.

MS. KRAMER: Thank you very much.

JUDGE PURCELL: Thank you, Ms. Kramer. Thank you, Mr. Mallory for your presentation.

MR. MALLORY: I think Mr. O'Connor had a --

JUDGE PURCELL: Oh, I'm sorry.

MR. O'CONNOR: I was just going to thank Mr. Mallory for his testimony this afternoon.

JUDGE PURCELL: All right.

MR. MALLORY: Thank you very much.

JUDGE PURCELL: Any further? All right. Again, thank you, Mr. Mallory for your testimony, and have a safe trip back to Chicago.

MR. MALLORY: Thank you, Your Honor.

UNIDENTIFIED SPEAKER: Better hurry.

JUDGE PURCELL: Let me ask first, the audience, any questions for Mr. Smith? Seeing no hands, I'll hear --

UNIDENTIFIED SPEAKER: No, no. Over there, Your Honor.

JUDGE PURCELL: Oh, I'm sorry. I didn't see the one hand over there. Dr. Monforton?

DR. MONFORTON: Thank you so much. Dr. Celeste Monforton, George Washington University School of Public Health, and questioning here as an individual. And I have just two questions for Mr. Smith.

I just -- I wasn't sure if I heard your testimony clearly, and I apologize if you stated this, but is it your organization's position that

OSHA should not adopt a comprehensive rule on silica?

MR. B. SMITH: I'm not sure I understand the framework of the question in that lowering of the PEL beyond the current PEL?

DR. MONFORTON: No. Just the, you know, the whole -- are there things in the standard that you would support and would like to see adopted rather than -- I mean --

MR. B. SMITH: You know, we haven't gotten to that point.

DR. MONFORTON: -- set aside the PEL?

MR. B. SMITH: I'm sorry --

DR. MONFORTON: Okay.

MR. B. SMITH: -- for talking over your -- this is Mr. Smith. You know, I can't say to that point. We are dealing with the proposal that is at play, and the comments that we have submitted reflect that.

DR. MONFORTON: The proposed rule has a reduction in the PEL, but then --

MR. B. SMITH: Correct.

DR. MONFORTON: -- it also has many other provisions in it.

MR. B. SMITH: That's right.

DR. MONFORTON: But you haven't evaluated them --

MR. B. SMITH: Well, no, we have. And in the context of the reduced PEL as well as the other provisions, such as the ones on dry sweeping that we have laid out.

JUDGE PURCELL: Mr. Smith, let me just ask you both to make sure the other is finished speaking before you start.

MR. B. SMITH: Yes, of course.

JUDGE PURCELL: So we have a clear record. Did you have?

MR. B. SMITH: I don't believe so.

DR. MONFORTON: Okay, so like a provision for exposure monitoring?

MR. B. SMITH: Right, right.

DR. MONFORTON: You'd --

MR. B. SMITH: We have not taken a position on that.

DR. MONFORTON: Position, okay. Thank you. And then in your written testimony it seemed to indicate that OSHA should really focus on enforcing the existing PEL. The existing PEL -- is that correct? Is that what you're --

MR. B. SMITH: That is correct.

DR. MONFORTON: Okay. And as a way to be

consistent with that recommendation, would your members support a special emphasis program, to go into your workplaces and enforce that 100 µg standard?

MR. B. SMITH: As it pertains to the steel industry?

DR. MONFORTON: Yes, with your members.

MR. B. SMITH: The SEP on the industry, no I can't say that we would, at this point, but that's certainly something we could consider.

DR. MONFORTON: Okay. Thank you so much.

JUDGE PURCELL: Thank you, Dr. Monforton. Any further questions from the audience? I don't see any. OSHA panel?

DR. COBLE: Yes, Joe Coble. I just wanted to follow up on your -- you discussed training be limited to what, I think you referred to as affected employees, as employees exposed above the PEL?

MR. B. SMITH: Correct.

DR. COBLE: Was that your position?

MR. B. SMITH: Well, it was pointing out -- and again, the written statement goes into more detail, and cites those passages in the rule where the concern is. It's just from our reading; it appears to some ambiguity of those terms with each other. So our point would be to provide clarity, provide guidance in whatever happens in the final rule.

DR. COBLE: So would the -- specifically, then, on the training, was it your position that training would only be provided if you're exposed above the PEL?

MR. B. SMITH: Yes, I believe that's correct. Only the affected employee, as we say -- and I'm looking through, I'm sorry, my direct employee -- or written comment right here. Only those foreseeably exposed at the PEL was where our focus would be.

DR. COBLE: But what about employees who are trained on methods to prevent exposure above the PEL? So they're not exposed above the PEL.

MR. B. SMITH: That's right.

DR. COBLE: But they would -- but that's only because they've been trained on how to properly operate the controls to -- the awareness of the hazard and the precautions they need to be taking. Their exposure would then drop to below the PEL.

And so -- I mean, I'm trying to figure out why you would restrict it to people who are overexposed and not to people who, by receiving the training could then be below the PEL.

MR. B. SMITH: The distinction, if I may, that we're trying to draw here is between the term each employee, which theoretically could include anyone at a steelmaking facility, and each affected employee.

I think the distinction you're drawing there is a good one and a valid one, and not one that we've covered here but I appreciate the point.

DR. COBLE: Okay. So you would advocate training for employees --

MR. B. SMITH: I think that's right, yes.

DR. COBLE: -- at a lower threshold than the PEL?

MR. B. SMITH: Training -- if that is what the lower -- or what the PEL is set at, that would be the training, to get to that point, yes.

DR. COBLE: Okay. Thank you.

MR. STONE: This is Robert Stone. I have just a couple of questions for you. You had mentioned in your testimony that certain industries, you think, should be exempted from this rule because they already have current standards in place. Is that right, for -- I think it was coke and --

MR. B. SMITH: I would not say certain

industry -- certain aspects of the industry itself, which are already covered under the existing standards for coke ovens, in particular.

MR. STONE: Okay. And then coal dust, I think you mentioned.

MR. B. SMITH: And coal dust. Not -- it'd be more of a conflict on the coal dust side than anything else.

MR. STONE: Okay. Well, are these activities currently regulated under the current? So even if we didn't change the rule otherwise, you'd want them exempted now?

MR. B. SMITH: No, no. If what is proposed here from OSHA were to go into effect, that would create an ambiguity, and in the case of the coal dust, a conflict that would need to be -- or not, clarified, to be more accurate.

MR. STONE: Okay. And then my other question is, do you have any -- oh, I'm sorry.

MR. B. SMITH: Did that answer your question? I --

MR. STONE: It did. I think we need to do -- I'll have to do more research.

MR. B. SMITH: Okay. Happy to help.

MR. STONE: We have to do more research to evaluate the conflict, but that's good for now. Your answer was responsive, thank you. My only other question would be, do you have any information about to what extent your member firms are providing medical surveillance exposure monitoring or training, similar to what's proposed in this rule?

MR. B. SMITH: It's going to differ, company by company -- more accurately, facility by facility. I know, to the questions raised of the other panelist here, some of our companies do, yes, provide that. Not all do, though.

MR. STONE: Right. So you wouldn't have an idea about a percentage, so.

MR. B. SMITH: Oh, I couldn't -- I could not say that, certainly not today.

MR. STONE: All right. Thank you very much.

MR. O'CONNOR: And just one last request. In your written --

JUDGE PURCELL: That's Mr. O'Connor, for the record.

MR. O'CONNOR: Yes. In your written comments, you indicate that AISI members have begun assessing the potential exposure values for crystalline silica in various areas of their facilities. To the extent you're able to submit that information to the record in post-hearing comments, that would be very helpful for us.

MR. B. SMITH: Okay. I would just say that that was done on an individual companies basis, individual facility basis. So it was not something in the case of the foundries industry where we had a large survey, so it wouldn't -- that sort of data, information wouldn't be available.

MR. O'CONNOR: Okay. Thank you very much for testifying this afternoon.

JUDGE PURCELL: All right, Mr. Smith. Thank you very much.

MR. B. SMITH: Okay. Thank you.

JUDGE PURCELL: Appreciate your attendance here, and you're excused. The next two presenters are Lynn Bragg from the Glass Packaging Institute, and Steven Smith of -- and I'm going to leave it to Mr. Smith to pronounce the organization.

I know that Ms. Kramer was interested in trying to combine that. I don't know if you've spoken with the panelists.

MS. KRAMER: I didn't, Your Honor. And if we could go off the record for a moment just to double check --

JUDGE PURCELL: All right, let's --

MS. KRAMER: -- to see if that's something they're interested in.

JUDGE PURCELL: Off the record. Everybody just stay in place, though.

(Off the record.)

(On the record.)

JUDGE PURCELL: Ms. Bragg and Mr. Smith have spoken. They're willing to give their presentation simultaneously. I'll ask Ms. Bragg first to identify herself for the record, and her organization.

MS. BRAGG: Thank you, Your Honor. I'm Lynn Bragg. I'm President of the Glass Packaging Institute.

Good evening. We -- the Glass Packaging Institute, otherwise referred to as GPI, appreciates the opportunity to testify regarding the proposed rulemaking on crystalline silica.

GPI is the North American trade association for the glass container manufacturing industry, whose member companies employ 18,000 represented and salaried workers within the glass container industry. A substantial number of those employees at the glass plant level are involved in activities that are likely to be covered by the proposed standard.

As a fact, over 90 percent of our labor force are union members. GPI and its member companies share OSHA's goal of an updated national crystalline silica regulation based on sound science that not only protects workers from adverse health effects associated with inhaling excessive amounts of respirable crystalline silica, but is also both technologically and economically feasible.

The safety of workers at GPI member company plants and facilities is a top priority for our industry. That being said, we have several significant concerns with the proposed regulations, and have recommendations to improve the feasibility and effectiveness of the final rule.

As proposed, the regulation would limit the use of respirators during necessary maintenance and malfunction activities. These limited events will briefly and periodically breech the proposed permissible exposure limits. Under the proposed framework, no exception is granted for these activities, nor consideration granted.

The draft rule identifies the glass industry as overall feasible, meaning the proposed action level and permissible exposure limits are achievable with engineering controls and work practice controls.

It also appears that under the draft rule, the use of respirators would only be permitted where it is not feasible to install engineering and/or work practice controls. Both of these regulations would present significant issues for glass and other industries that have been labeled feasible under certain circumstances, particularly with respect to maintenance or malfunctions.

In the glass industry, maintenance is extremely difficult to predict, because glass manufacturing is extraordinarily complex. Glassmaking typically proceeds in three stages. Raw materials of various sizes, including silica sand, are mixed in the batch house. Batched raw material is then melted in the furnace, and finally, glass is formed and coated.

Because glass manufacturing involves the input of raw materials of diverse shapes and sizes, maintenance issues for glass manufacturing may vary even within a single company, depending on the end product, raw materials, equipment and location. Glass manufacturers must have the flexibility to use respirators to respond to unanticipated maintenance issues with little or no notice.

While some maintenance activities may be amenable to engineered solutions over time, others, especially those associated with malfunctions, are entirely unplanned. Accordingly, in cases that it cannot be planned, it would be impossible to provide adequate engineering controls, because the type and level of maintenance malfunction events are essentially endless.

The engineering control itself would require maintenance, and any malfunctions of the engineering control could require immediate, unplanned repairs. Some practical examples of when the need for respirator use would arise include but are not limited to equipment issues, such as failure of any conveyance system, elevators, conveyors or pipes, failure of dust collecting bag systems, or suction head failures.

To address these circumstances, we have several recommendations. Pertaining to respirators, limited maintenance and occasional malfunctions at glass plant facilities must be exempt from the draft rule. There are occasional conditions where maintenance on systems is required.

For example, maintenance activities in all of the sand batch handling systems must be performed, due to the abrasive and corrosive nature of the silica itself, and other materials in the process. Under such circumstances, it is simply not technically feasible to establish engineering controls for all possible maintenance or malfunction activities that could occur in our operations.

Today, and going forward, the best way to protect our employees during such activities remains the use of respirators.

With respect to air sampling, due to the unscheduled and sporadic nature of some of the maintenance and malfunction occurrences, it would not be possible to repeat air sampling within the proposed time frames. I'll note that personal sampling of exposures during routine daily operations is not expected to be problematic.

The draft proposal also prohibits the use of compressed air to clean surfaces and equipment. In the glass container industry, there is equipment that needs to be cleaned using compressed air because other cleaning methods are not effective, for example, the removal of abrasive dust on scales and weighing equipment.

While we agree that compressed air should not be permitted wholesale, there should be an exemption for its use to -- during such maintenance activities. Respirators would be mandatory with the use of compressed air during these activities.

Based on the foregoing, GPI recommends allowing the use of respirators during maintenance and malfunction activities and other circumstances related to necessary plant operations, while using compressed air, and that air sampling not be required during these unanticipated activities.

GPI further recommends that the draft rule allow for compressed air cleaning in specific activities, and for certain applications, including scale, weighting equipment, and equipment and surfaces in other limited areas.

We also believe that insufficient time is granted under the draft rule for safe implementation and necessary EPA and applicable state permitting requirements. The proposed rule would require engineering controls to be implemented no later than one year after the effective date.

In addition, the draft rule provides for accelerating testing at six and three months, depending on the exposure level identified. These timing requirements are wholly unrealistic, given the complex permitting, engineering, testing and practical purchasing obstacles.

Employers must be allowed sufficient time to ensure that operational, procedural, testing and other engineering requirements are fully satisfied, and proper equipment obtained with permits to comply with newly proposed air and other associated standards.

Here is a summary of major impediments that will make OSHA's proposed time frame practically unfeasible for compliance. First, environmental permitting: Our review of requirements in numerous states where a number of GPI member company facilities operate indicate to us that state environmental notification and EPA Title V permit modifications are required for such engineering controls in such states.

In these states, equipment cannot be purchased and facilities cannot be changed or modified to accommodate the equipment until state approval has been obtained. Such approvals alone can take up to one year.

Three or six months is simply not enough time for companies to ensure they are properly in compliance with the proposal. Compliance officers and other company officials need to ensure that sampling measurements, needed permits and sound procedures are in place at each impacted facility in such cases.

As a component of the glass manufacturing process, sand is used in all glass manufacturing facilities. Because of that, the initial engineering necessary to evaluate all existing facilities during the implementation phase would require additional time, one year, which is not identified in the proposed rule.

GPI recommends that the draft rule be implemented no later than three years after the effective date. This would provide one year for the initial evaluative engineering, one year for environmental permitting plus an additional 12 months to implement engineering controls after the effective date.

We are also concerned that the proposed air sampling measurements are technologically unfeasible and unjustified. Air samples more than 12 months old cannot be used under the current proposal.

This is a substantial change from past practice, i.e., the general rule that sampling and analysis data is valid for three years unless there is an equipment or process change that may alter the airborne concentration.

GPI believes this change is overly burdensome and unjustified, and would not lead to increased risk reduction for workers. Also, the feasibility of accurately measuring at 25 μg/m^3 of air, the proposed action level, is also of concern because at that level small changes or minor upsets in the workplace could cause large swings in the sampling results.

Usage of respirators would aid in the reduction of an overexposure risk. Moreover, the proposal specifies sampling and analytical methodologies; however, it does not refer to nationally recognized standards put in place by the National Institute for Occupational Safety and Health, NIOSH.

We believe that existing NIOSH sampling and testing methods would satisfy proposed OSHA standards. Rather than creating new and burdensome standards, we would like to see NIOSH protocols adopted as a standard, as they meet OSHA specification within the proposal.

GPI also recommends the following modification to this section of the proposed rule:

sampling results be valid for three years, unless equipment or process changes could alter airborne concentrations.

For any employee exposure sample above the proposed action level but below the permissible exposure limit, the employer must resample within six months. For any employee exposure sample above the permissible exposure limit, the employer must resample within three months.

Also within the proposed rule, it appears that HEPA filtered vacuums are required. This appears to disallow any other technology. Many glass batch houses are currently equipped with central vacuum systems that discharge external to the facility. This is a permitted discharge by the Environmental Protection Agency and is in accordance with other applicable laws and regulations.

These systems are equivalent, in terms of worker exposure control, to a HEPA vacuum, and should be allowed by any new standard. We request an exemption for vacuum systems that discharge external to the facility as airborne concentration of crystalline silica dust would not be generated in the workplace, and therefore, employee exposure in these instances would not be applicable.

We want to thank OSHA in advance for your thoughtful review of our comments and suggestions to improve upon the proposed rule. Thank you.

JUDGE PURCELL: Thank you, Ms. Bragg. You don't have to, but if you would like, I will mark your written testimony as an exhibit and admit it into the record.

MS. BRAGG: Can we provide a clean copy?

JUDGE PURCELL: Certainly.

MS. BRAGG: Mine is all marked up.

JUDGE PURCELL: That'll be marked when it's received as Hearing Exhibit 92, and it will be admitted.

MS. BRAGG: Thank you very much.

JUDGE PURCELL: All right, thank you. Mr. Smith, please enter your appearance and state your organization for the record.

MR. S. SMITH: Sure. Thank you, Lynn, for those comments. Your Honor, I'm Steve Smith. I'm Vice President of Environmental and Regulatory Affairs for Verallia. Verallia is a glass container manufacturer. We have 13 operations located in 11 states. Verallia supports the comments that the Glass Packaging Institute has made in this issue.

The safety and health of our workers is a top priority. We support the efforts that OSHA has taken to lower these limits. We have already undertaken efforts to meet the OSHA new proposed limits, and we continue to work on that.

However, we do have some specific concerns that need additional consideration to ensure the safety and health of our workers, particularly in maintenance and malfunction, as Lynn had discussed. The current proposed rule would only allow respirators if engineering controls are unfeasible.

There is a myriad of activities where such an approach wouldn't work or will not work, and put our employees at risk. And I've got some pictures at the end of this that should help clarify that.

Demonstrating unfeasibility for all maintenance and malfunction activities is not possible as a practical matter, due to the endless array of possibilities of maintenance repairs and/or malfunctions that can occur in one of our factories or any of our factories.

Given the nature of our manufacturing process equipment, we need to use compressed air for air cleaning. And I've got an example of that, that I can show you in a few minutes, too. Verallia recommends that respirators be allowed during all maintenance and malfunction activities, and that compressed air be allowed to be used for cleaning.

There is insufficient time to implement the proposal. Analysis and engineering of all our facilities will be a time consuming and expensive undertaking involving every facility, and we have limited engineering staff.

Environmental permitting is something that's required in every state that we have operations. All of our facilities hold Title V Part 70 air permits, and it can take as long as a year to modify a Title V permit.

We cannot modify or change the facility in any way, shape or form until the permitting agency gives its approval. And then we must implement those identified changes across the fleet of operations.

Verallia recommends that OSHA use a three-year deadline after approval, one year for analysis and engineering, one year for state permitting and one year for implementation.

The air sampling requirement is burdensome. Standard protocol in the industrial hygiene field is that air monitoring samples are valid for three years unless something changes in the industrial environment that could modify the concentration of the airborne material.

Sampling every year in every operation is redundant and would add cost burden to the industries and no additional benefit to the employees. Verallia recommends that the three-years protocol standard of practice be retained and adopted for crystalline silica.

In the OSHA file there is a document that was used to prepare information on the glass industry and also on our furnaces. It's called *OSHA's Preliminary Economic Analysis and Initial Regulatory Flexibility Analysis, 2003*, or the OSHA Silica PEA is what I'll call it, going forward.

The OSHA Silica PEA asks that our facilities -- or excuse me, our facilities have already incorporated many of the recommendations contained in the OSHA PEA for glass. Workers performing daily activities already meet the proposed standard.

The risk potential for exposure for us is with maintenance and malfunction activities. Cullet mentioned in the PEA is exempt from the crystalline silica standard because it's amorphous, but in today's world there's insufficient usable quantities that are currently available for us to replace that with sand.

And I'll talk a little bit about that when I go through the pictures as well. The PEA identifies cullet as amorphous, and I've got that reference for the picture.

Refractory. Refractory is the insulation that we build our furnaces out of. The OSHA Silica PEA recommends replacing high silica with low silica refractory. The refractory or insulating brick makes up most parts of the furnace, and today's low silica refractory is already used for most of our furnace. I've got a picture of that. I'll show you what that looks like, too.

We simply cannot replace the high silica crown refractory with low silica refractory in today's world. There is a low silica refractory crown material that is available, and it would add about 10 times the cost. It's about seven times the cost for the refractory itself, and the steel structure has to be changed, so you have to remove all of that and rebuild a new cap for it.

Or, using a low standard -- or a standard low silica refractory would shorten the furnace life dramatically, our engineers tell me, by 3/4 of the life of the furnace. And it would spall off periodically, causing considerable quality problems in our product. Verallia recommends that respirators be allowed in all refractory repairs.

In summary, Verallia recommends that respirators be allowed in all maintenance and malfunction activities, that compressed air be continued to be allowed, that OSHA adopt three years as a compliance date requirement after the rule becomes effective, that OSHA follow standard IH protocol on IH sampling, valid for three years unless equipment or process changes could alter that, and that respirators be allowed during all refractory work. And these are some of the pictures.

JUDGE PURCELL: Mr. Smith, what I'm going to ask you to do -- I assume you intend to offer a copy of your PowerPoint presentation.

MR. S. SMITH: There you go.

JUDGE PURCELL: As you're referring to photographs, would you identify them in the PowerPoint presentation, either by page number --

MR. S. SMITH: Most certainly. I actually have them addressed as a separate page identifier, so the picture that's up on the screen right now would be Appendix 2.

JUDGE PURCELL: Okay, and that's on Page 5.

But if you want to just refer to each picture as appendix and by number, that'll be fine.

MR. S. SMITH: Most certainly. The first picture is a batch diverter, so the batch goes up the lift elevator, which looking at the picture, is the long, cylindrical box going up, and then it comes down the pipes.

You notice that there's a red circle in this picture, and there's a repair on one of those pipes. Failure of that pipe with the material in it would mean the batch material, including the sand, would pour all over, and that would be a problem, because somebody has to go and repair that. As part of the repair, there's also cleanup, so that material would have to be cleaned up as well.

We also have air filter devices in our facilities, and they require maintenance. Maintenance on an air filter device that's designed to filter the air out means that the employee that's going to work on it is probably going to see some measurable levels of silica dust.

They have to be opened periodically. Sometimes motors burn out. There's different things that can occur to them. And there's no way to predict this. There is predictive maintenance, and we do do that, but these malfunctions that can occur at any time are the ones that cause us the most problems.

JUDGE PURCELL: And the air filter devices you were referring to are shown in Appendix 3.

MR. S. SMITH: Oh yes, this is Appendix 3. This page is Appendix 4, and this is a belt conveyor. A belt conveyor lifts the material to above the furnace from the batch house. A failure of the belt can cause a copious amount of material to be piled in disarray, or none, depending or none, depending on whether or not there was any on the belt when the belt failed.

So engineering out the silica dust for a event that may or may not occur in this particular case would be problematic for us.

Next page is Appendix 5. This shows a batch diverter. And it shows a batch diverter that's been repaired a number of times. And I put this in here because it shows that the material that we have is very aggressive, and it's also somewhat unpredictable.

And you might say, well, it's been repaired several times. You can predict that. I've got other pictures of diverters in here that don't have any repairs on them. So it's the wear and tear, and how the material slides through the system, that makes it hard for us to guess where we're going to have repairs to do.

Next picture is Appendix 6, and this shows a diverter that has not had those kinds of repairs. But you'll notice there's red circles in this picture that show pockmarks on the equipment. And those pockmarks are from where employees have had to hammer against this equipment to try to clear jams.

When they do that, they may or may not have the access door open. If the access door is open while they're pounding, they're probably generating dust.

The next picture is Appendix 7. This is a batch storage area. And I put this in there because it doesn't show those pockmarks and it doesn't show any repairs, but it does have access doors in case things plug up.

In this particular picture -- I took this picture, I asked the former plant manager how many times this plugged up, and he said while he worked there, they never plugged up. So, again, it's that unpredictable nature.

In one facility they may not plug up. In the next facility they may be fighting this for -- once a week for all winter long. Winter's when we typically have the plug up problems.

The next picture is Appendix 8. And this is a batch scale. It's kind of hard to tell from the picture, but that's what it is. It weighs our material for us. And it has to be cleaned. We have to keep the buildup off of it.

In today's world we use compressed air to get that off of there so that we can get in there and keep it operational. Without the ability of compressed air, this would be very difficult to manage.

We mentioned cullet in the PEA. Cullet is recycled glass. Unfortunately, we're not very good in the United States about recycling our beverage containers. About -- a little over 65 percent of all the glass recycled in the United States comes from 10 states.

The state of the art state, the one that does it the best is Michigan, and it's a bottle bill state, and the 65 percent that we get it from are also bottle bill states. Verallia is very active in obtaining cullet. We buy every ton we can get.

The next picture is Appendix 10, and it is a discussion of a process called single stream. If you're not a bottle bill state, most states employ the single stream process. And I know you do that here in Washington, D.C. I saw a number of places where that was available.

Single stream presents some real challenges for us in the recycling world, because number one, all the recyclables get mixed together. And that's easy to collect the tonnage at the street, but once you get it all collected, then you have to try to unscramble it. We call it unscrambling the egg.

And even after processing, we still run into contamination problems, and these are pictures of contamination that we've actually had come through in our furnace-ready cullet. And yes, the one picture is a picture of some syringes, which is a health and safety issue for us.

The state of the art, the state that does this the best, the single stream process, as far as all the data that we get and we collect, is Minnesota. They get about 38 percent of their glass containers recovered.

The next picture is Appendix 11, and this is a refractory furnace that was just rebuilt. It has not been put into use yet. I put this in there so that you could see the different types of refractory. The base is low silica AZS refractory. And then the midrange is a low silica bonded AZS refractory.

And the rounded part at the top is the high silica crown refractory, and that's the one we would have trouble replacing with low silica. In today's world, there's not a practical application for us.

JUDGE PURCELL: Thank you, Mr. Smith. I've marked your PowerPoint presentation as Hearing Exhibit Number 93. I'll admit that into the record.

(Whereupon, the document referred to as Hearing Exhibit 93 was marked and rein evidence.)

JUDGE PURCELL: And could I see a show of hands in the audience, questions for either Ms. Bragg or Mr. Smith? Two. Mr. Wright?

MR. WRIGHT: Maybe.

JUDGE PURCELL: Maybe. Okay, I have a maybe for Mr. Wright and Dr. Monforton. Please state your name and affiliation for the record.

DR. MONFORTON: Sure. Dr. Celeste Monforton, George Washington University School of Public Health. I am questioning as an individual.

I just want to get a sense -- the testimony was that really the overexposures come during the -- I'm sorry, let me say that again. The provisions for engineering controls would be difficult when there are malfunctions and just disturbances. And I'm just wondering, how often does that happen? Is it something, you know, that's once a month, or once a week?

MR. MANN: I can answer that.

JUDGE PURCELL: Please identify yourself for the record, and your affiliation.

MR. MANN: Is this on? My name is William Mann. I'm Vice President of Health and Safety for Verallia Glass Container.

JUDGE PURCELL: Can you spell your last name?

MR. MANN: M-a-n-n.

JUDGE PURCELL: Thank you, Mr. Mann.

MR. MANN: I'm also a previous Plant Manager in the facility where some of these pictures were taken, so.

You know, it varies. It really varies. I mean, that's the whole crux of this issue, that it varies so much. Some facilities may have 20 times in a year. Another facility may have zero. So I would say, on average, across our 13 facilities, probably around five times a year -- five to six times a year would be average.

DR. MONFORTON: Okay, thank you.

JUDGE PURCELL: All right, thank you Dr. Monforton. Mr. Wright, did you have any questions?

MR. WRIGHT: Yes, just two simple questions about occupational health controls, Your Honor.

JUDGE PURCELL: State your name for the record.

MR. WRIGHT: Michael Wright from the United Steelworkers. These are both for the last witness. The first is, you mentioned the problem of jams and clogs in some of your handling equipment, the piping equipment, and the necessity for workers to occasionally open that equipment, and thereby be exposed to silica as a result of trying to clear those clogs.

In other industries we use, at critical points, essentially vibrating equipment that keeps that pipe in a low state of vibration, which is pretty effective at preventing clogs. Have you considered using that kind of equipment in the glass industry?

MR. S. SMITH: Actually, we -- this is Steve Smith. Actually, yes, we do employ that technology where we know we have consistent problems. The problem with this is, we've got pipes and equipment all over the place, and it's anybody's guess where the next one's going to occur.

It's typically a moisture issue, or at least that's my understanding, that comes in with the cullet. And it's worse in the winter than any other time of year because of the moisture and the freezing.

MR. WRIGHT: So it's a cullet issue more than a sand issue?

MR. MANN: Bill Mann. Yes, I think that the moisture issue is a cullet issue. Cullet sits outside and gains moisture and then goes into the system. And then that's mixed with silica and other raw materials, and it clogs in various areas.

And to your point about the vibratory devices, we do use them all over the plant. And in general, they are effective in many areas. But some areas still require the use of our people to go, again, at no set frequency, but only when there's these malfunctions that are so hard to predict, in certain areas, and use sledgehammers and/or open up to unclog.

MR. WRIGHT: Okay. Second, the -- what is the difficulty -- the technical difficulty of using a low silica material for the crown refractory? What's special about the crown refractory that makes it necessary to use a high silica refractory there?

MR. S. SMITH: My understanding is, it's the quality of the crown itself. The high silica crown performs in a way that helps hold the heat in. Our furnaces run at about 2700 degrees, so they're very hot.

The low silica refractory, unless it's the special low silica refractory that's specifically designed for crowns, it simply wouldn't hold up. It would spall off, and pieces of the refractory would fall into the glass bed, and then break up and come through and cause seeds in our bottles. And so that would be a manufacturing process problem for us.

On the flip side, if you get the low silica refractory specifically designed for crowns, it's a cost issue. It costs about 10 times as much.

MR. WRIGHT: What's the difference between those two?

JUDGE PURCELL: For the record, that was Mr. Steven Smith responding.

MR. S. SMITH: Sorry.

JUDGE PURCELL: Go ahead, Mr. Wright.

MR. WRIGHT: What's the difference between those two refractories, and what -- how is the expensive, low silica crown refractory different from the less expensive, low silica refractory used on the walls and sides of the furnace?

MR. S. SMITH: I'm not a refractory engineer, but I could get you that question if you're interested.

MR. WRIGHT: It might be interesting for the record, if that's possible. Okay, thank you.

JUDGE PURCELL: Thank you, Mr. Wright. Thank you, Mr. Smith, for your response. Any further questions from anyone in the audience? I don't see any hands, so I'm going to ask OSHA if they might have any questions. I suspect they do.

MR. O'CONNOR: Yes, a few. This is Dave O'Connor. I just wanted to get a better understanding of the central vacuum system that was described as being present in many glass batch houses. Do I understand this to be a central vacuum system that is used to collect dust and other small debris throughout the facility, or does it have some other purpose?

MR. S. SMITH: This is Steve Smith. Are you referring to the picture that I showed, that showed the baghouses, the blue equipment?

MR. O'CONNOR: I was referring to the written comments from Ms. Bragg, where there is an indication that there should be a exemption from the requirement for HEPA filtered vacuums because many glass batch houses are currently equipped with central vacuum systems that discharge external to the facility.

MR. MANN: I could -- maybe I could answer that.

JUDGE PURCELL: Mr. Mann?

MS. BRAGG: Thank you, Mr. Mann.

MR. MANN: This is William Mann. I'm sorry, your question exactly about that was?

MR. O'CONNOR: Yes. I was just trying to get a better understanding of the purpose of those vacuum systems.

MR. MANN: General cleanup in the batch house for raw materials, including silica, may -- had that spilled, or from a maintenance activity, for example, some of the things that we saw in the pictures, from where, in certain areas, it might get -- so you have materials that escape and are on the floor, or otherwise in the area.

MR. O'CONNOR: Okay. Thank you.

DR. COBLE: Yes, Joe Coble. Regarding your statement for exemption for maintenance activities, would you make a distinction between the emergency type clean-up versus scheduled preventive maintenance? And is it your position that even for scheduled maintenance, that you anticipate in advance that engineering controls could not be brought in for that type of activity? Is that --

MR. S. SMITH: This is Steve Smith with Verallia. For some scheduled maintenance activities, the answer is yes, we can engineer that out. For some scheduled maintenance activities, no we cannot.

DR. COBLE: Okay.

MR. S. SMITH: And it kind of depends on the schedule. If it's something that we do every three days, that's not so hard for us to predict. If it's something that's scheduled once every nine months, it's going to be pretty difficult to put in a $500,000 piece of equipment on the top of a tower or something. So it depends on the activity and how frequent.

DR. COBLE: Yes. But, you know, engineering controls could be something like a HEPA vacuum, that would be used to -- for the maintenance. And if you have an exemption from engineering controls, you wouldn't forego that and just use a respirator?

MR. S. SMITH: Again, it would depend on the activity that we're trying to process here. There's so many different kinds of things, and the frequency of all of them is different. It depends on which one we're looking at, and also, where is it. If it's on the main floor, that's a real easy thing. If it's on the top of one of those towers, it's going to be kind of difficult to engineer that for something you go up there once every nine months for.

DR. COBLE: Yes. And just one last question, how often do your maintenance folks actually use respirators? Is it on a daily basis?

MR. S. SMITH: Bill?

MR. MANN: Again, it -- they primarily need them -- I would say no, not on a daily basis, absolutely not on a daily basis.

DR. COBLE: Right.

JUDGE PURCELL: And that's Mr. Mann responding.

MR. MANN: I'm sorry, yes. William Mann. Really, it again, speaks to the infrequent nature of these issues. Certainly when there is one of these unplanned breakdowns, that is when they wear the respirators.

DR. COBLE: Okay. Thank you.

MS. KRAMER: I just have a couple of questions, and then I believe I'll pass it back to Robert Stone. And my name is Allison Kramer.

This is for GPI. You mentioned, at the beginning of your testimony, that you all are the North American trade association, and that your member companies employ 18,000 represented and salaried workers. I was just wondering if you could drill that down a little bit for us. How many member companies do you have?

MS. BRAGG: We have seven member companies, and around 40 associates.

MS. KRAMER: Okay --

MS. BRAGG: Those would be full members. Those are manufacturing members.

MS. KRAMER: Okay. And how many of the 18,000 employees are United States employees, are here in the U.S.? Are they all here, or?

MS. BRAGG: I think that -- I believe that count is the U.S. count.

MS. KRAMER: Okay. And one final question on that. Do you know how many plants or facilities your member companies have?

MS. BRAGG: We have 48 plants in 22 states.

MS. KRAMER: Okay. Thank you.

MR. STONE: Robert Stone. I only had a couple of questions. First of all, other than for maintenance and upset conditions or malfunctions, do you have any other types of overexposures with silica in your operations?

MR. S. SMITH: Steve Smith. We've been working at this -- we felt this standard would be something that would be coming down the pike, so we've been working on this for a while. My understanding is, the answer to that question is no. Our day-to-day operations, we can meet this standard.

MR. STONE: Okay. And do you currently provide training of a type that might be similar to what's suggested in the proposed rule, or any training at all?

MR. MANN: William Mann. We currently discuss silica in terms of hazardous communication and in terms of our respiratory program, nothing specific to silica as a standalone program.

MR. STONE: Okay. That's it, thank you.

JUDGE PURCELL: Any further questions from

OSHA?

MR. O'CONNOR: No further questions from OSHA. We'd like to thank the panelists, and we appreciate your patience.

JUDGE PURCELL: Ms. Bragg --

MR. S. SMITH: Thank you.

JUDGE PURCELL: Mr. Smith, thank you very much. You're excused. That will conclude Day 9 of the Silica Hearing. Today's date is March 28. We'll resume Monday morning, March 31, at 9:30 a.m. See you all then.

(Whereupon, at 6:15 p.m., the hearing was continued, to resume on Monday, March 31, 2014, at 9:30 a.m.)

C E R T I F I C A T E

This is to certify that the attached proceedings in the matter of:

INFORMAL PUBLIC HEARINGS FOR THE PROPOSED RULE
ON OCCUPATIONAL EXPOSURE TO
RESPIRABLE CRYSTALLINE SILICA
March 28, 2014
Washington, D.C.

were held as herein appears, and that this is the original transcription thereof for the files of the United States Department of Labor, Occupational Safety & Health Administration.

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ED SCHWEITZER
Official Reporter