

GETTING READY
for the
SILICA LAW

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The opinions expressed in this presentation and on the following slides are solely the opinions of the presenter and may not reflect the opinions of any other person or organization.

Getting Ready.....

- History track with the Silica issue
- Elements of the Standard
- What should everyone should be working on
- Available resources

LAW

COMPLIANCE

REGULATIONS

LEGAL



History

- 1996 - OSHA creates Special Emphasis Program to Prevent Silica Exposures
- 1997 - First time Silica is listed on OSHA's Regulatory Agenda
- 2003 - OSHA submits draft to Small Business Regulatory Fairness Enforcement Act (SBREFA) panel for review.
- 2011 - OSHA submits draft proposed silica standard to the Office of Management and Budget (OMB) for review.

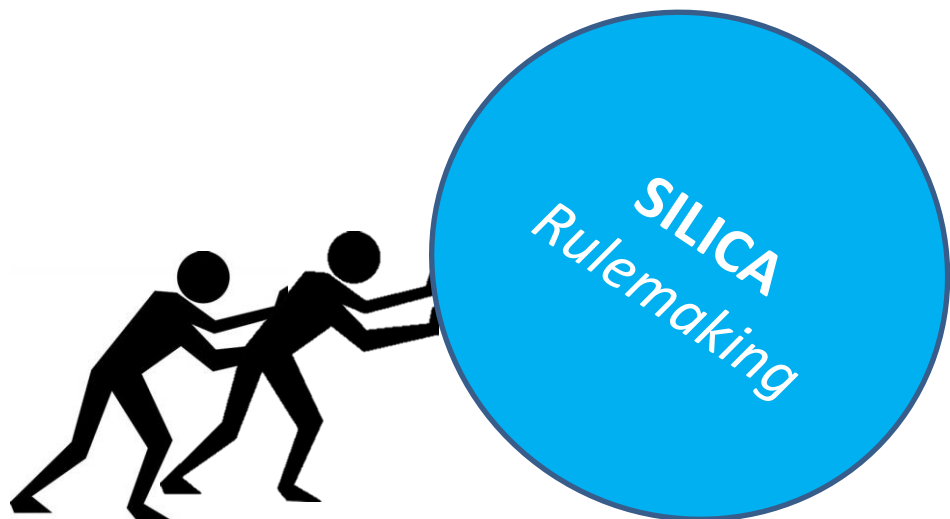


History

2013 - OSHA publishes a Notice of Proposed Rulemaking for RCS.

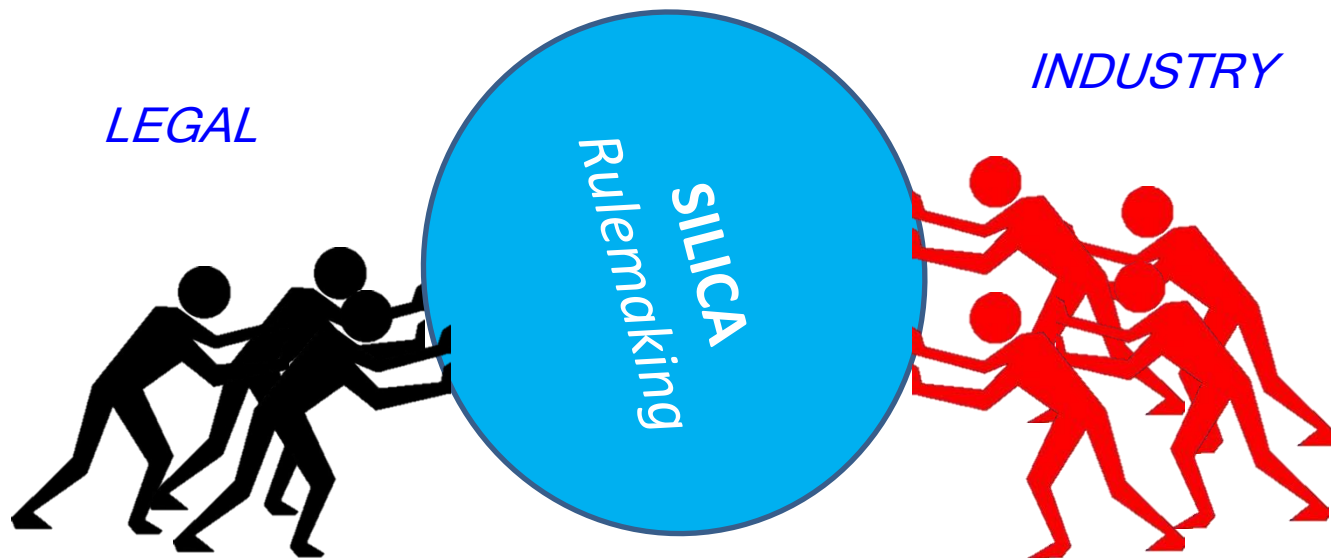
2014 - OSHA holds public hearings for groups to comment on proposed rule.

2014-15 - OSHA reviews testimony and comments submitted by the public.
Prepares for final standard and analysis.



History

2016 - OSHA announces “final rule” to protect workers from exposure to respirable crystalline silica



What do I do FIRST?

Where do I get HELP?

Who do I CALL?

OPPOSITION

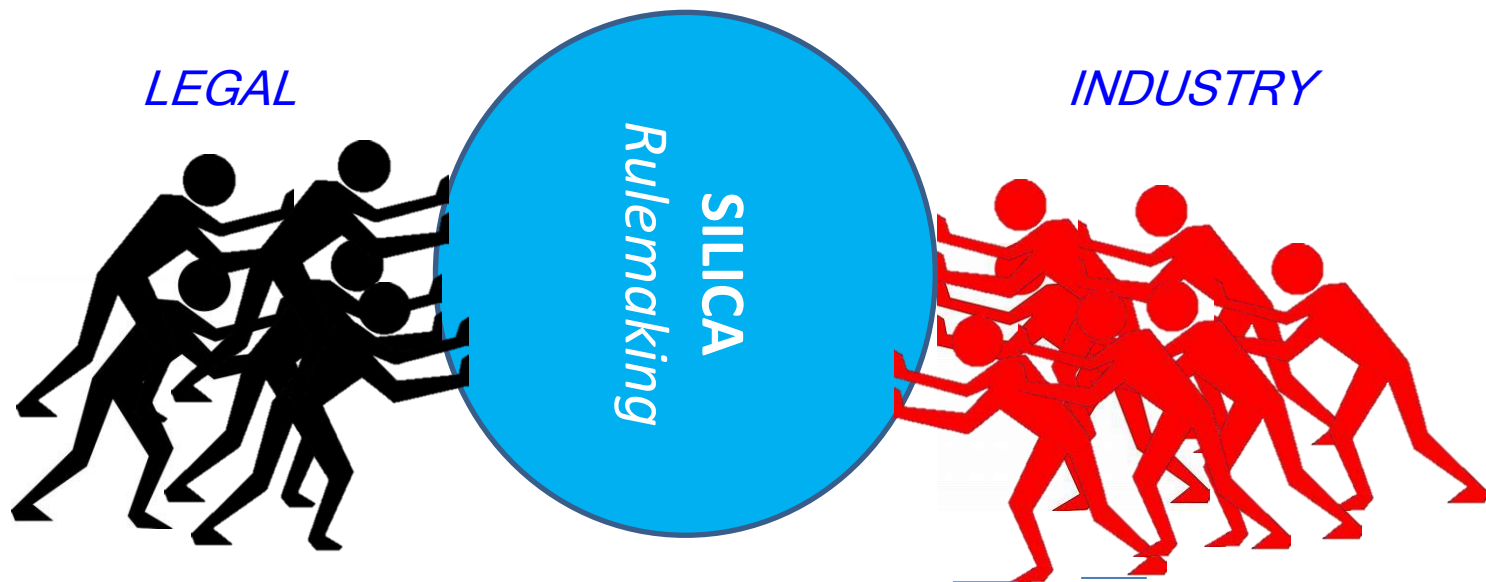
2016

AFS/NAM and coalition of industry groups sue OSHA to stop the silica rule

2017

D.C. Circuit Court hears arguments in industry challenges to OSHA's silica rule

D.C. Circuit Court upholds OSHA's silica rule (12/17)





DRAMA HILL

Elements of the Standard



Q. What foundry operations cause the most problems?

A. Every foundry is unique and has a specific pattern of air movement and process arrangement.

That said, some of the greatest challenges (*highest exposures*) occur in cleaning and finishing, shakeout, sorting, abrasive blasting, refractory repair, and areas associated with sand handling systems. ...

Assessments

Areas of Concern :

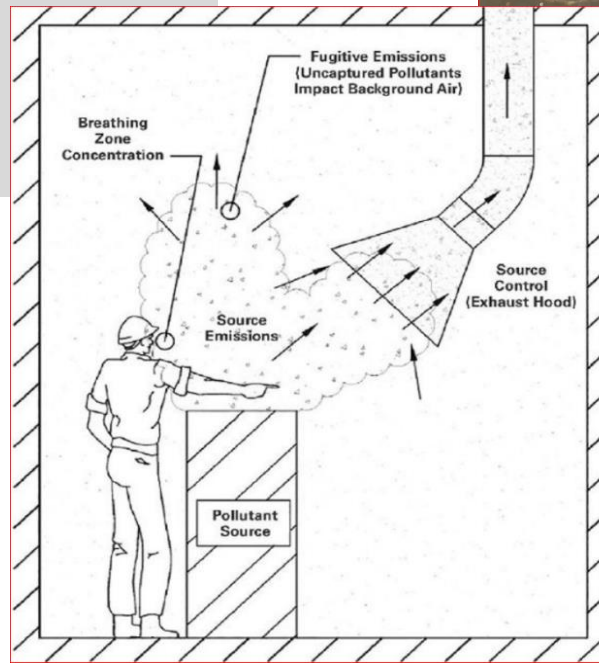
- Molding
- Shakeout
- Coremaking
- Cupola / Furnace
- Abrasive Grinding
- Refractory repair



Assessments

Equipment & Activities

- Conveyors
- Mold / Coremaking machines
- Dust Collection equipment
- Handling and Transport of castings
- Vehicle traffic
- Vibration of buildings
- Open doorways
- Air Circulators





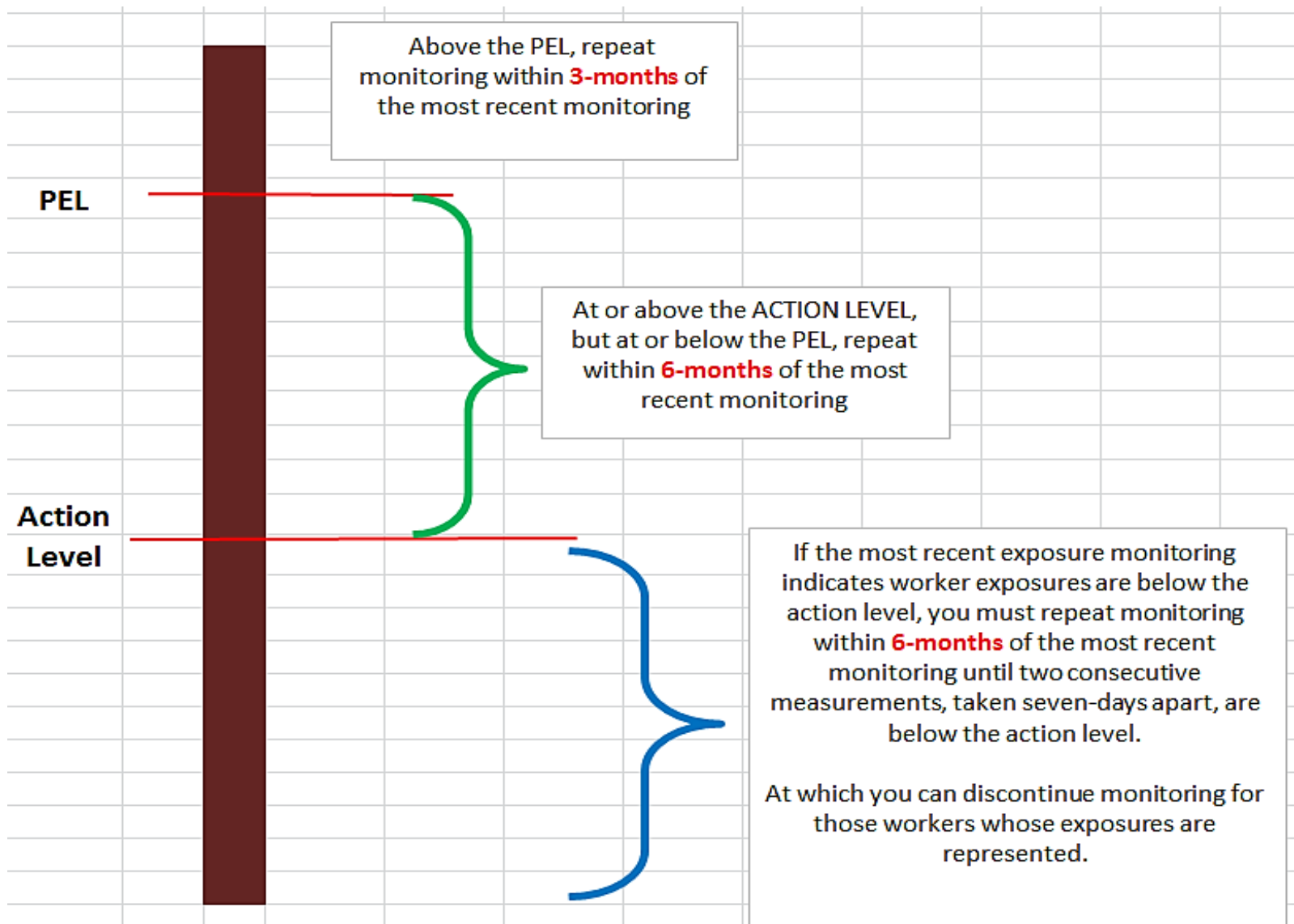
- **Permissible Exposure Level (PEL)**
 - **50 $\mu\text{g}/\text{m}^3$** (8 hour TWA)
(one half of the previous PEL equivalent)
- **Action Level**
 - **25 $\mu\text{g}/\text{m}^3$** (8 hour TWA)



**Document information
during that
point in time:**

AIR MONITORING DATA - <i>Respirable Crystalline Silica</i>	
Sample Date:	<input type="text"/>
Sampling and Analytical methods used:	<input type="text"/>
Laboratory used to perform analysis:	<input type="text"/> <input type="text"/>
Area / Task Monitored:	<input type="text"/>
Number of Samples Taken:	<input type="text"/>
Duration of Samples:	<input type="text"/>
Results of Samples Taken:	<input type="text"/> $\mu\text{g} / \text{m}^3$ (PEL = $50\mu\text{g} / \text{m}^3$ AL = $25\mu\text{g} / \text{m}^3$)
Type of Personal Protective Equipment (Mark "x" that apply)	
<input type="checkbox"/>	Filtering Facepiece (Dust Mask)
<input type="checkbox"/>	Half Mask w/ HEPA filters
<input type="checkbox"/>	Air Supplied Respirator (Helmet)
<input type="checkbox"/>	Powered Air Purifying Respirator (Full Mask)
<input type="checkbox"/>	No protection worn
Associate Monitored:	<input type="text"/>
SAP Number:	<input type="text"/>
Job Classification:	<input type="text"/>
NOTES (What tasks were performed, or unusual circumstances occurred during the testing cycle: <input type="text"/>	
Reference: 1910.1053(k)	

MONITORING



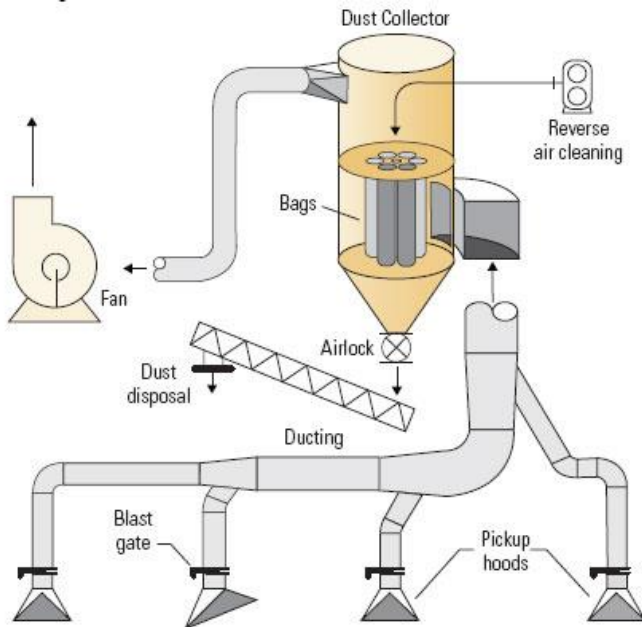
CONTROLS

Process Improvement

- Materials used
- Equipment repairs / adjustments
- Work Practices

Objectives - *to control emission at the source*

- Isolation
- Ventilation
- Material handling



CONTROLS

Previous

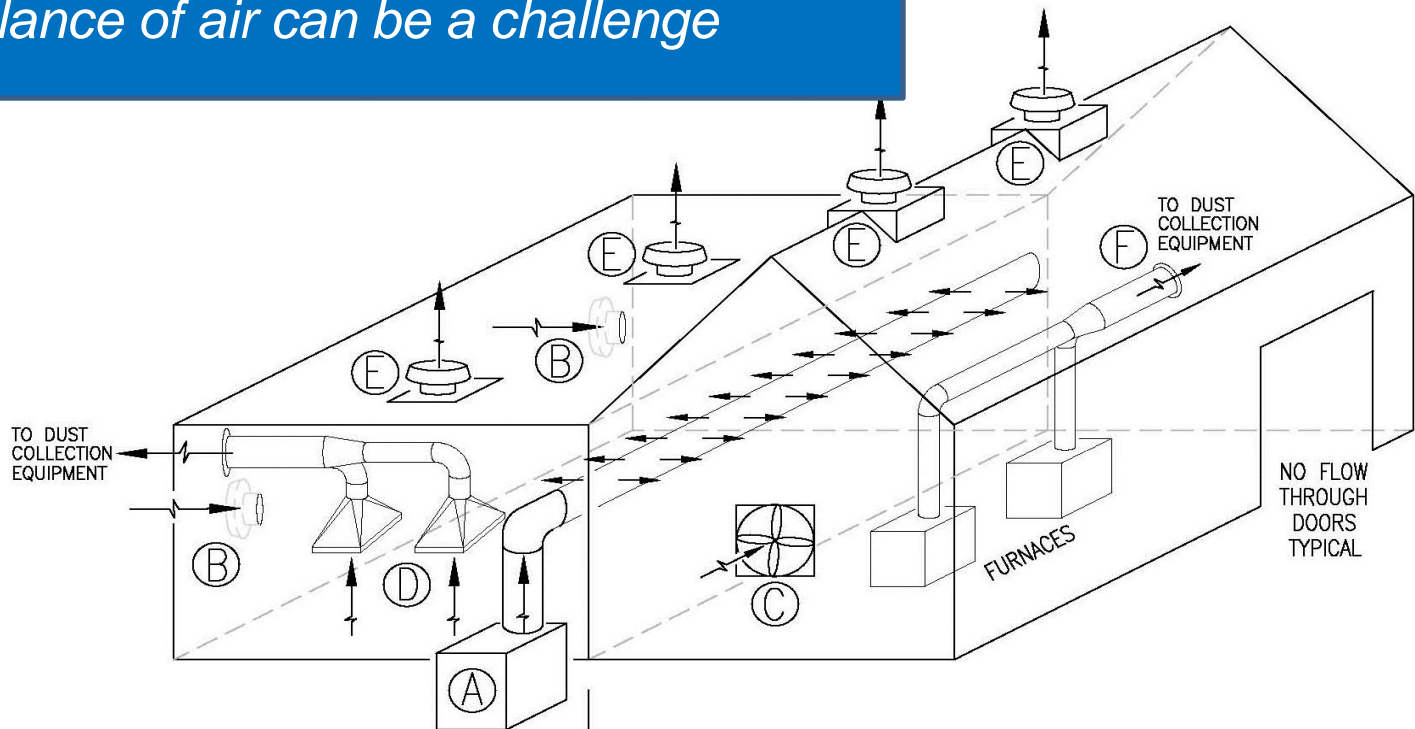
Current



CONTROLS

Understand the source - *address the real problem.*

Supply Air is as important as Exhaust - *balance of air can be a challenge*

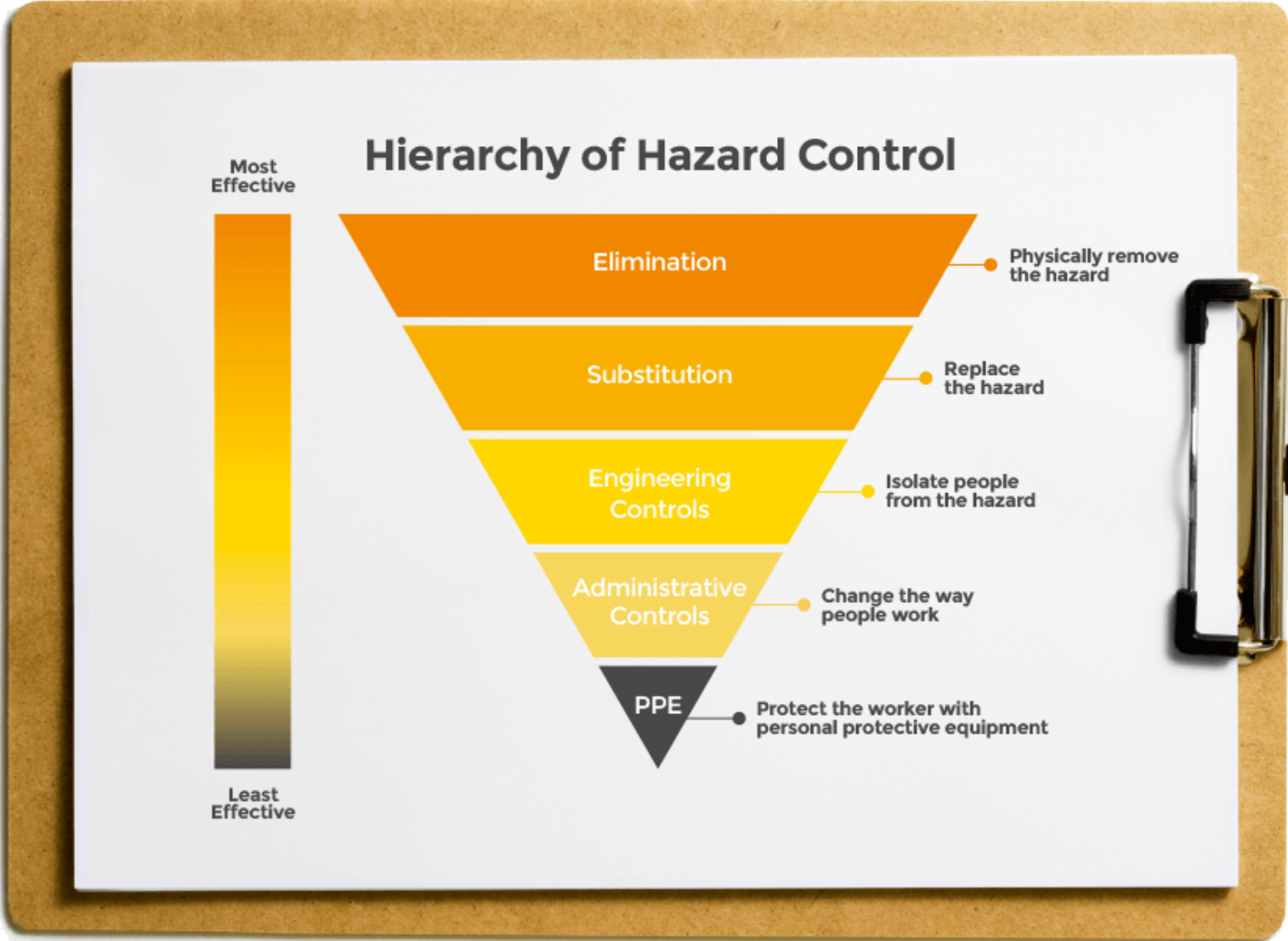


CONTROLS

- Develop new methods for specific tasks performed.



CONTROLS



CONTROLS

Use engineering and work practice controls to reduce and keep worker's exposure to or below the PEL “unless the employer can demonstrate that such controls are not feasible”.

Where feasible controls are not sufficient, use them to reduce exposures to lowest feasible level and supplement with respirators.

HOUSEKEEPING



- No dry sweeping or dry brushing
 - Where activity could contribute exposure
unless wet sweeping HEPA filtered vacuuming
 - **OR** other methods will minimize the likelihood
- **No compressed air to be used**
 - for cleaning clothing or surfaces,
unless used with a ventilation system effectively captures the dust cloud
 - **OR** no alternative method is feasible.



HOUSEKEEPING

Real Cost vs Assumptions



MEDICAL SURVEILLANCE

- Physical Exam
- X-ray
- Spirometry
- Questionnaire



- Initial examination (*within 30 days of assignment*)

Written CONTROL PLAN

- Description of tasks in workplace that involves exposure to silica.
- Description of engineering controls, work practices, & respiratory protection used to limit employee exposure to silica for each task.
- Description of housekeeping measures used to limit employee exposure to silica.
- Review annually

Process Improvements to Control Silica:

- ✓ **Materials used**
- ✓ **Equipment Performance**
- ✓ **Work Practices**
- ✓ **Material Handling**
- ✓ **Housekeeping routines**

Get ready for the Compliance Date

1. Identify your sources
2. Know your numbers
3. Document engineering control efforts,
including failures.
4. Have a PLAN



RESOURCES



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2018 SILICA COMPLIANCE INFORMATION

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Resource Tools

News Upcoming Events Membership AFS Store Casting Job Board

AFS 03.15.18: **Meet Authors Ted Schorn and David Neff at Metalcasting Congress**
Authors Ted Schorn and David Neff will be featured during a pair of presentations at Metalcasting Congress, April 3-5 in Fort Worth, Texas.

AFS 03.12.18: **AFS publishes book from quality inspection expert Ted J. Schorn**
One of the foremost experts in quality inspection has released a new book through the American Foundry Society.

Featured Casting Job Board Post

Chief Technical Services Officer - American Foundry Society - Schaumburg, IL

Oversee the AFS Technical Services Department and direct its activities to ensure that they are aligned with the goals of the AFS strategic plan. Administer the AFS research portfolio of internally and externally funded projects, managing the technology...

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- Health & Safety +
- [OSHA's Silica Rule](#)
- Policy Issues in D.C.
- Federal Agencies & North American Associations
- AFS-FIRST (Recycling) +
- Plant Tours



AFS is the leading advocate for the metalcasting industry in government and regulatory issues, whether it's through helping members navigate regulations or meeting with elected officials on important topics, such as the [new silica standard](#).

The experts on staff at AFS stay abreast of environmental topics, such as [air](#), [water](#), [climate change](#), and [waste and recycling](#) regulations and legislation and [advocate for policies](#) that are beneficial to metalcasting businesses and their employees. We offer corporate members [Government Affairs](#) and [EHS Solutions](#) programs to stay on top of the legislative and regulatory climate.

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RESOURCES

Crystalline Silica Resource Page



OSHA's new crystalline silica rule was finalized March 24. It reduced the permissible exposure limit (PEL) to silica in half, from 100 µg (micrograms)/cu.m to 50 µg/cu.m. Here is what you need to know about the rule. AFS is committed to assisting foundries in coming into, and maintaining compliance with these new regulations, in the most effective and economical manner.

Crystalline Silica Compliance Webinar Series for AFS Members

1. Silica Substitutes - What Will Work for Your Foundry?

Sand and Non-Silica Media Vendor List

Silica Compliance Timeline (AFS Members Only)

Update on Respirable Silica - What you Should be Doing Now? (AFS Members Only Webinar)

Watch the AFS Webinar on OSHA's Final Rule and its Impact on Metalcasters (Download the PDF of the webinar here.)

Detailed Information on the Rule

- Final OSHA Silica Rule (March 2016)
- OSHA's health effects & risk assessment background documents
- OSHA's preliminary economic analysis and employment analysis

For further information, contact Stephanie Salmon, AFS Washington Office, 202-452-7135, ssalmon@afsinc.org.

OSHA Silica Resource Pages

- [Crystalline Silica Overview](#)

Silica Control Resources

- [Silica PEL Calculator \(Excel Spreadsheet\)](#)
- [Control of Silica Exposure in Foundries](#)
- [PPE Guide for Metalcasting Operations](#)
- [The C.A. Lawton Co. CASE STUDY: Reducing Silica Exposures Through Engineering Controls and Work Practices](#)
- [Clearing the Air at Acme Foundry: Integrated Engineering Design of a New Casting Cleaning and Finishing Facility](#)
- [Silica Dust Control Improvement: Grinding of Iron Castings with Portable Tools at Kennedy Valve Foundry in Elmira, New York](#)

Crystalline Silica Compliance Webinar Series for AFS Members

- Wednesday, Feb. 28, 1 p.m. CST – “Silica Substitutes: Will They Work for Your Foundry?”
- Thursday, March 29, 1 p.m. CST – “How to Select an Industrial Hygienist and What to Expect”
- Thursday, April 26, 1 p.m. CST – “Respiratory Protection and Silica Medical Surveillance Programs”
- Wednesday, May 30, 1 p.m. CST – “Control of Silica Exposures – Part 1: Identification and Evaluation of Silica Exposure Control Options”
- Thursday, June 28, 1 p.m. CST – “Control of Silica Exposures – Part 2: Conducting the OSHA Required Silica Exposure Control Planning”

July - TBA

OSHA's Crystalline Silica Rule: What Should Your Foundry Be Doing Now?

28 important questions about the crystalline silica rule are answered.

AFS SAFETY AND HEALTH COMMITTEE, CHAIRED BY TOM SLAVIN, SLAVIN OSH GROUP LLC (CHICAGO)

With the June 23, 2018 compliance date just eight months away, metalcasters should be working now on putting controls and equipment in place to try to meet the new one-size-fits-all standard. A three-judge panel at the U.S. Court of Appeals for the District of Columbia Circuit heard over two hours of arguments Sept. 26 on the legal challenges to the Occupational Safety and Health Administration's crystalline silica rule. AFS is party to the lawsuit. It will likely be several months before the court issues a decision.

What does this mean for U.S. metalcasters? This article answers some key questions in the following pages.

1 Isn't the silica standard going away?

The standard is not going away. It is a final rule and was enacted following regulatory notice and comment procedures and it cannot be undone without going through a similar process. Requests by industry and the construction sector to reopen the rule have not been accepted to date. There is an ongoing legal challenge

to the rule. However, the success of that challenge is uncertain. Even if successful, the standard would likely be remanded to OSHA to fix some of the most problematic aspects, but many of the requirements, such as exposure monitoring, communication and medical surveillance likely would be unchanged.

2 Could the rule be delayed?

While possible, OSHA has already started to enforce the rule for construction. This suggests that OSHA will be reluctant to extend other future enforcement dates. AFS will continue to press for additional time for general industry to come into compliance.

3 What should I be doing now?

You should be taking steps toward compliance with the standard, measuring employee exposures and investigating dust sources. Many of the initial steps in the compliance timeline will be required regardless of the outcome of the legal challenge.

4 What is the bottom line?

There is a lot of uncertainty, but foundries need to be prepared for implementation of the standard on June 23, 2018.

Dates

5 Do all engineering controls have to be in place by June 23, 2018?

The standard requires full compliance by June 23, 2018. It is possible that some engineering controls may not be implemented by then due to permitting requirements, or the fact that it sometimes takes several attempts to find the right combination of controls. Finding and installing effective engineering controls is a complicated process that may take several years, or may not even be possible after earnest efforts. OSHA should understand this, but if engineering controls are not in place on June 23, 2018 the following should be:

- Worker respiratory protection.
- A control plan that describes the actions and timing for investigating and installing controls.
- Documentation of good faith efforts to determine and control dust sources.

6 What about construction activities? How does that affect foundries?

The construction standard went

into full force on September 23, 2017, and applies to construction and demolition activities. For example, if you are using your own employees to do concrete road work on your work site, those activities may be covered by the construction standard.

Exposure Assessment

7 Can I use old sampling data?

The standard permits the use of objective data if it is relevant. If it provides answers to the exposure questions it can be used for decision-making. The old Permissible Exposure Limit (PEL) used a formula to determine a dust limit, but there is often sufficient information in laboratory reports to determine the silica exposure for comparison to the new PEL. If trying to use old data to demonstrate that exposures are below the action level (AL), be aware that the limit of detection on old data may sometimes be too high to determine whether exposures are below the AL.

8 Do I need to sample every employee for eight hours?

There are two parts to this question. First, you need representative exposure data for every job category. You can sample one employee in a job category and use that exposure number to represent the exposures of other employees in that same category. Note that you need to record that exposure in the records of those other employees and inform those employees of that exposure result, even if they were not personally sampled.

Second, you may choose to use objective data as an alternative to eight-hour sampling. Exposure mapping is an example of a technique that can be used to determine employee exposures. You can also use representative shorter personal samples to determine the eight-hour exposure.

9 What if an employee refuses to wear a sampler?

Samplers are often heavy and bulky and might get in the way of job performance. Sometimes, employees are reluctant to wear the samplers, especially if they are asked

every three months as the OSHA rule may require. Different approaches have been used by different employers to handle the issue. Some employers choose to make wearing a sampler a condition of employment. In some cases, it is possible to find another employee is the same job category who is willing to wear the sampler. In some cases, employers have documented the refusal. However, it is not clear how OSHA would view this last approach.

10 If I use mapping, do I need to do sampling too?

Mapping is a powerful and useful tool; it should be supplemented by personal exposure sampling to validate the mapping data. However, the number and frequency of personal sampling can be reduced through the use of mapping.

11 How often do I need to do mapping? Quarterly?

The requirement to determine exposures depends on the exposure level. Where eight-hour time-weighted average (TWA) exposures exceed the PEL, the requirement to measure exposures is a quarterly one. Where exposures are below the PEL, but above the AL, the requirement is semi-annually. Where exposures are below the action level, monitoring is not required unless changes occur.

Mapping can help detect changes in dust movement and concentration.

12 Do I have to report sampling results to OSHA?

No. OSHA may ask to see the results if they visit, but there is no requirement to routinely send them to OSHA.

Methods of Compliance

13 Why do I have to do engineering controls if employees are already wearing respirators?

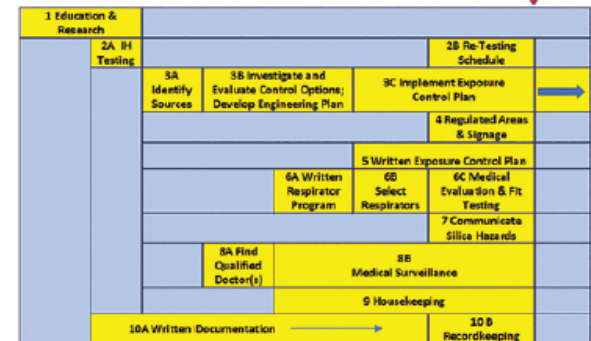
OSHA has established a hierarchy of controls that allows use of respirators as the primary method of control only after other methods of control have proven infeasible. Even if engineering controls cannot reduce exposure levels to below the PEL, they must be used to the extent they can lower exposures.

14 What operations cause the most problems?

Every foundry is unique and has a specific pattern of air movement and process arrangement. That said, some of the greatest challenges (highest exposures) occur in cleaning and finishing, shakeout, sorting, abrasive blasting, refractory repair, and areas associated with sand

Silica Compliance Timeline

(farther left means longer lead time)



Compliance Date:

JUNE 23, 2018



Thank You !

Glenn Huneycutt
CHARLOTTE
PIPE AND FOUNDRY COMPANY

