

# Silica

## Stay ahead of the game

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# Silica

- Crystalline silica is a common mineral found in the earth's crust. Materials like sand, stone, concrete, and mortar contain crystalline silica. It is also used to make products such as glass, pottery, ceramics, bricks, and artificial stone.
- Respirable crystalline silica are very small particles at least 100 times smaller than ordinary sand and is created when cutting, sawing, grinding, drilling, and crushing stone, rock, concrete, brick, block, and mortar.
- Workers who inhale these very small crystalline silica particles are at increased risk of developing serious silica-related diseases, including: Silicosis, an incurable lung disease that can lead to lung cancer; Chronic obstructive pulmonary disease (COPD); and Kidney disease.
- Silicosis is an untreatable, but preventable disease.

# History



## Sand mining



- The **1940's** declaration of silicosis being a “disease of the past,” whose current victims’ disease was the result of unhygienic and primitive conditions of work of a bygone era.
- **1950's**, silicosis was a forgotten disease by the media and declared “dead” by business and the industrial hygiene community.
- In the **1970's**, West Texas physician Steven Weisenfeld investigated Mexican-American workers with silicosis.
- From the **1990's to the present**, thousands of lawsuits have been filed across the country by lawyers on behalf of workers who labor in “dusty” industries. These lawsuits have reawakened national attention to the ongoing threat of silica exposure.

# Silica -continuation -

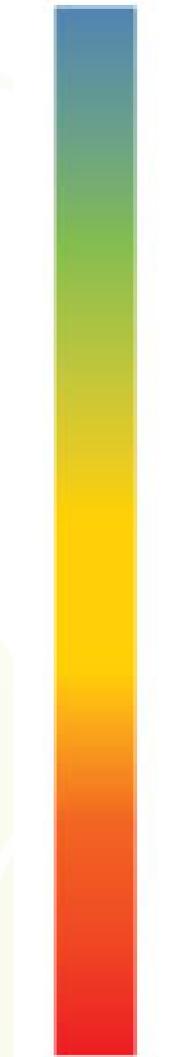
Permissible Exposure Limit & Action Level	
OSHA	MSHA Established by the ACGIH back in 1969
OSHA issued a new crystalline silica rule and reduces the PEL for respirable crystalline silica to 50 micrograms per cubic meter of air ( $\mu\text{g}/\text{m}^3$ ), averaged over an eight-hour shift with an action level of $25 \mu\text{g}/\text{m}^3$ .	MSHA PEL for respirable crystalline silica is $100 \mu\text{g}/\text{m}^3$ , averaged over an eight-hour shift with an action level of $50 \mu\text{g}/\text{m}^3$ .
The rule went into effect on June 23, 2018 for most employers but were imposed on Oct. 23, 2017, on the construction industry. Among those expected to adhere to the new rule is the Asphalt products manufacturing.	MSHA PEL calculation PEL for respirable free crystalline silica = $10 / (\% \text{ silica} + 2) \text{ mg}/\text{m}^3$

# IH Monitoring

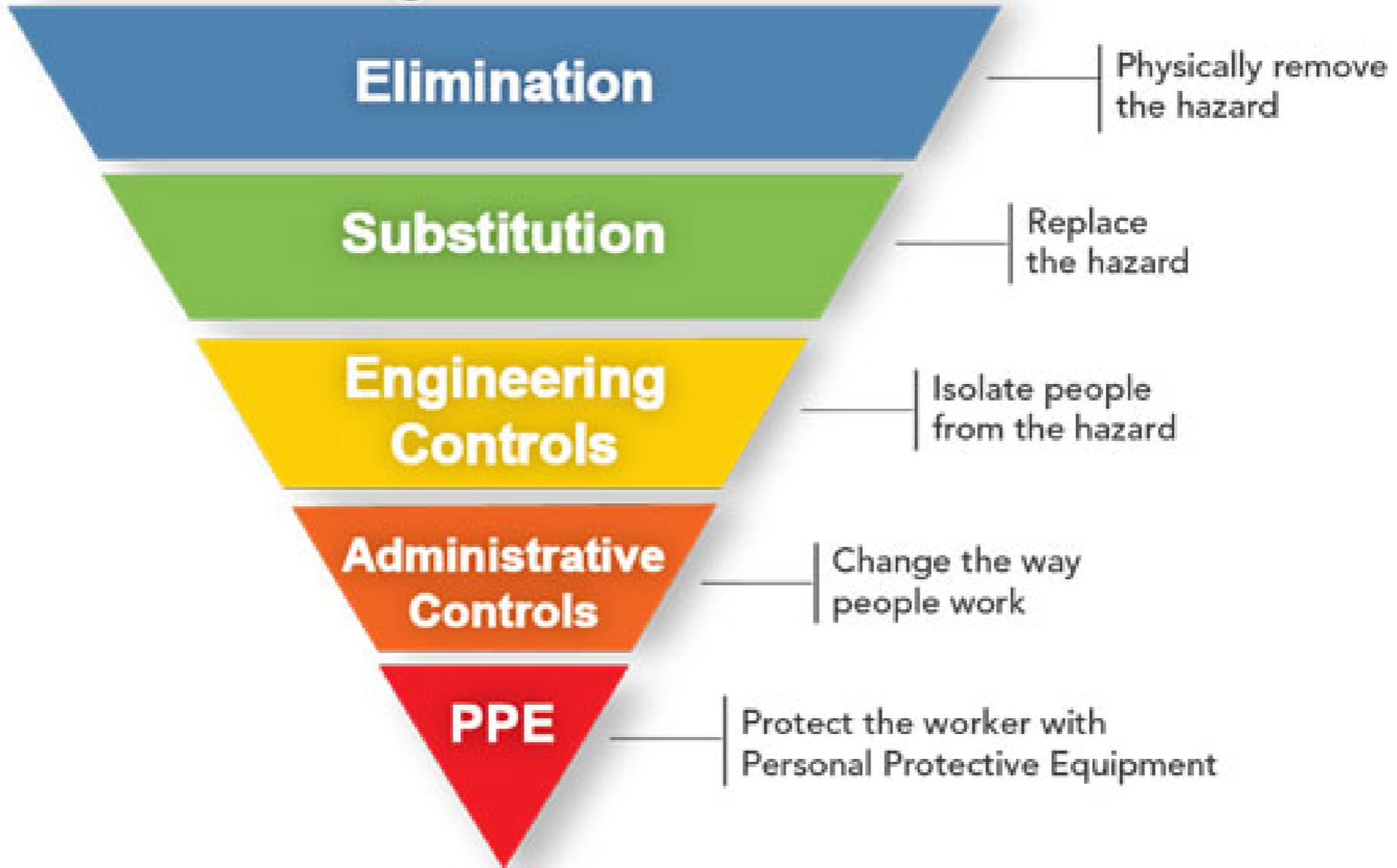


# Hierarchy of Controls

Most effective

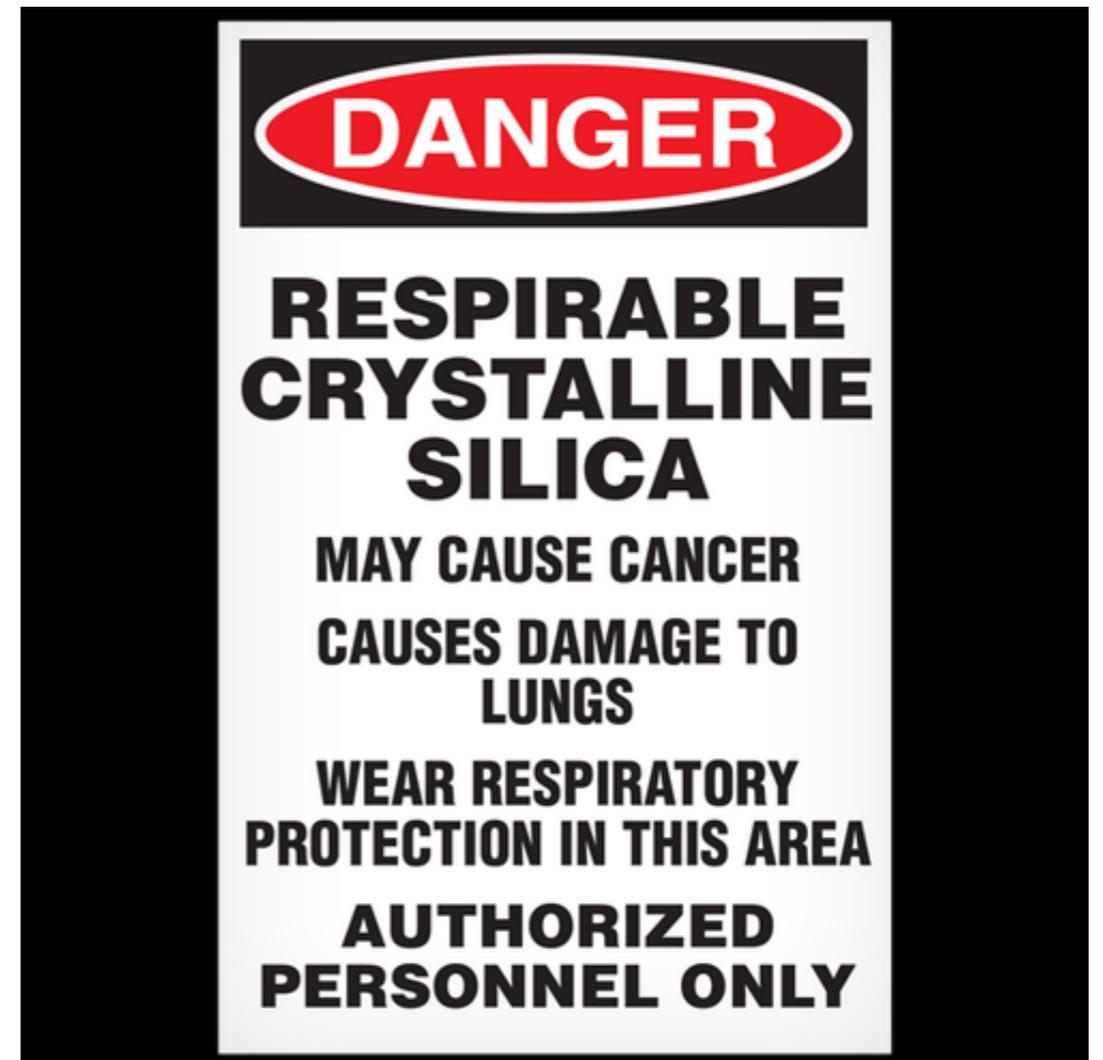


Least effective



# OSHA Summary

- The most commonly-cited violation for construction employers was failure to conduct an assessment of worker exposure to silica. The second largest category was failing to adhere to the list of equipment and tasks, along with OSHA’s required engineering and work control methods and respiratory protection.
- The rule provides two avenues to conduct the monitoring: the performance option and the scheduled monitoring option. “Objective data” vs “Personal breathing zone”.
  - ✓ Initial and repeated. Reassess. Keep detailed records.
- Employers are required to demarcate and limit access to areas where exposure to silica is expected to be above the PEL.



# Summary

## ➤ Stay ahead of the game

- Hazard recognition (Identify potential exposure)
- Implement engineering controls, and air sampling
- Create your own program
  - Medical surveillance (Regular medical examination)
  - Respiratory protection
  - Create Company internal warning level
- Training
- Documentation



# Summary

- “We have the same goal” – protecting workers
- Why you should adopt a robust silica program
  - Do you plan to be doing business in the next 10 yrs?
- EH&S professional help management fulfill their safety and health performance responsibilities

“Producing safe tons”



Graphic courtesy of OSHA

**Thank you for your attention**

**Any questions?**

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