



SILICA DUST
IS NOT JUST DUST

Objectives

- 1) Must be able to identify and predict silica hazards.
- 2) Be confident navigating Table 1 and understanding when Exposure Assessments are required.
- 3) Understand responsibilities for generating an Exposure Control Plan.

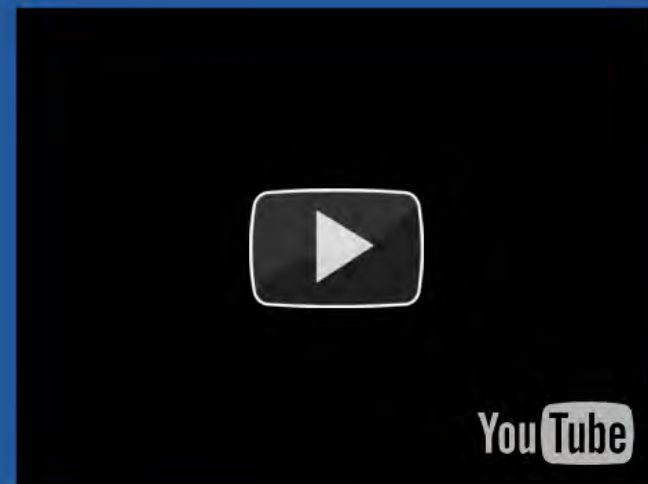
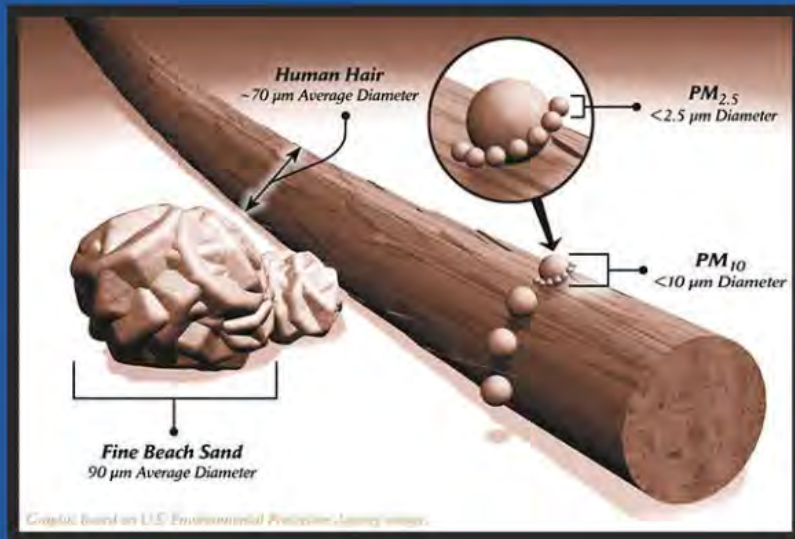


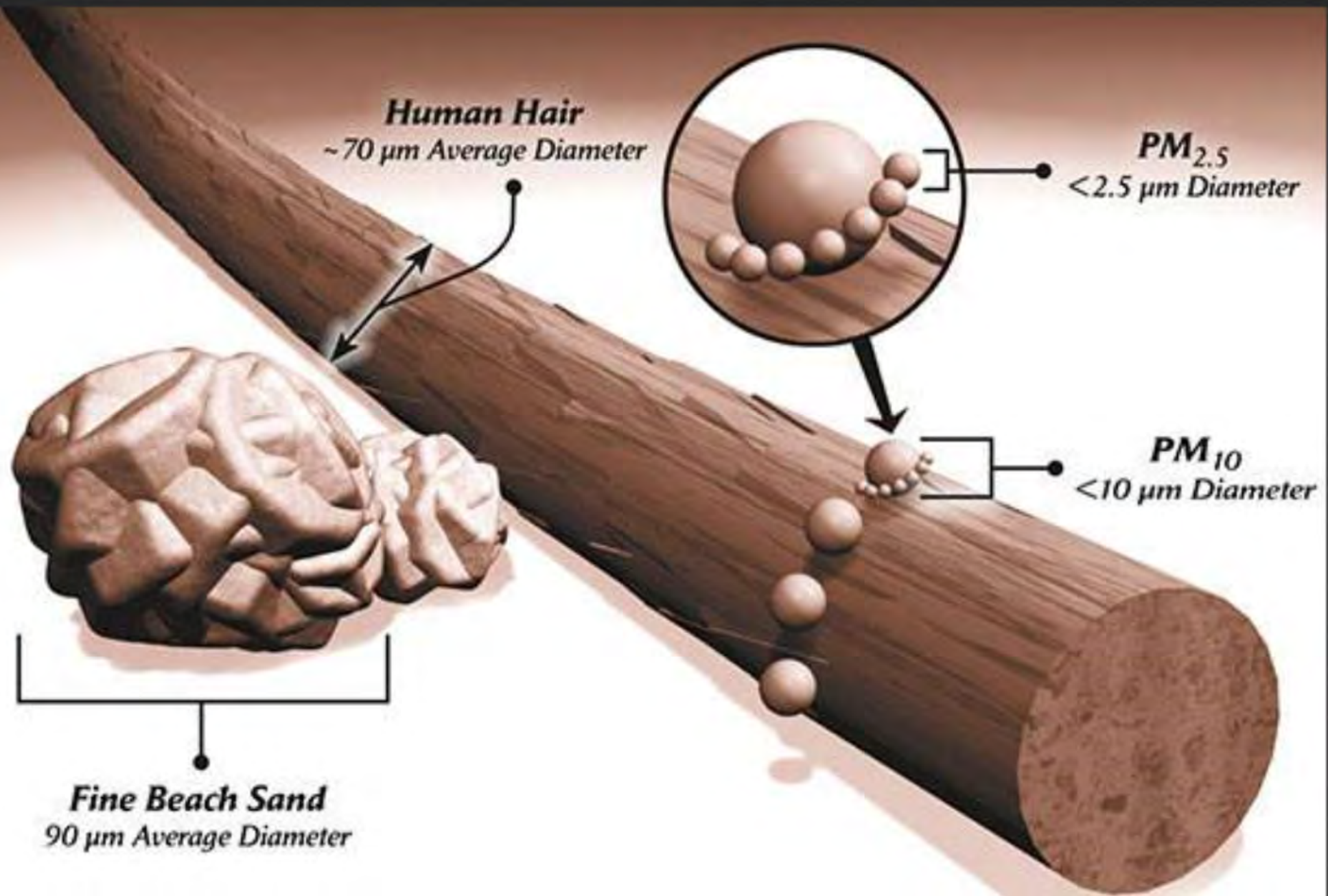
What is Silica?

Silica is a mineral found in the earth's crust which we find in brick, block, sand, stone, concrete, mortar, tile, glass.

Demo or any activity that causes abrasion to the materials above, will cause silica to become airborne and potentially respirable.

RESPIRABLE DUST!





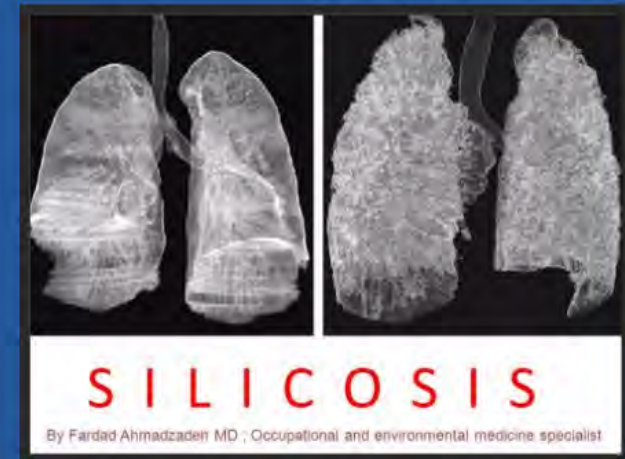
Graphic based on U.S. Environmental Protection Agency image.



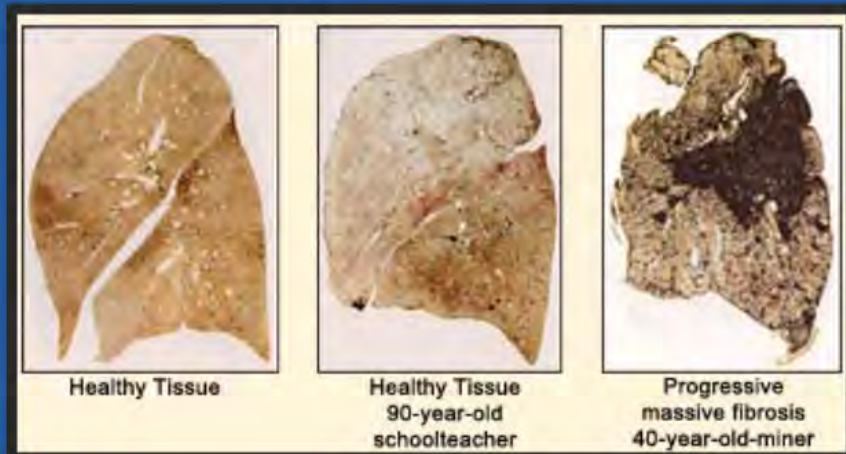
You **Tube**

What's The Problem?

- Former standard from 1971 and the PEL was from data in the 1930's.
- NIOSH recommended 50 $\mu\text{g}/\text{m}^3$ in 1974!
- Silica has been classified as a human lung carcinogen.
- Most common cases of Chronic Silicosis occur to low doses over 15-20 years exposure.



Hawk's Nest Disaster of 1930



Hawk's Nest Disaster of 1930



Frances Perkins, Secretary of Labor

The New Silica Standard

- New Permissible Exposure Limit (PEL) is reduced by 80% from 250 ug/m³ to 50 ug/m³ of respirable silica dust for an 8 hour Time Weighted Average (TWA).
- Action Level- Anyone above 25 ug/m³ for 8 hour TWA of silica, is covered by this standard.
- Oh, and what the heck is 50 ug/m³?



So, how do we know if we're under or over the PEL?

Are We Under the PEL?

There are 2 ways of verifying that we are under the PEL.

- 1) Table 1
- 2) Exposure Assessment (air sampling)






Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor
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Table 1

- Common construction tasks
- Explains what engineering, work practice, and respiratory protection is required per task.
- The longevity of the task may determine what kind of respiratory protection is required.
- Respiratory protection does not simply mean "wear a respirator and you're safe."

**TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS
WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA**

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(xi) Handheld grinders for mortar removal (i.e., tuckpointing)	<p>Use grinder equipped with commercially available shroud and dust collection system.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <p>Dust collector must provide 25 cubic feet per minute (cfm) or greater of airflow per inch of wheel diameter and have a filter with 99% or greater efficiency and a cyclonic pre-separator or filter-cleaning mechanism.</p>	<p>APF 10</p>  	<p>APF 25</p>  <p>Pictures not in Table 1</p>

[What do we do if our task isn't covered in Table 1?]

OR

[What if we can't meet the requirements set in Table 1?]

Exposure Assessment

- The employer must assess the exposure of each employee who could be exposed to silica above Action Level.
- An air sample *must be representative* of the conditions employees are being exposed to. If any changes to production, process, control equipment, personnel, or work practices that could contribute to exposures over Action Level, new Exposure Assessment is needed.
- Must reduce exposures below the PEL with engineering and work practice controls.
- Personnel and Area Samples



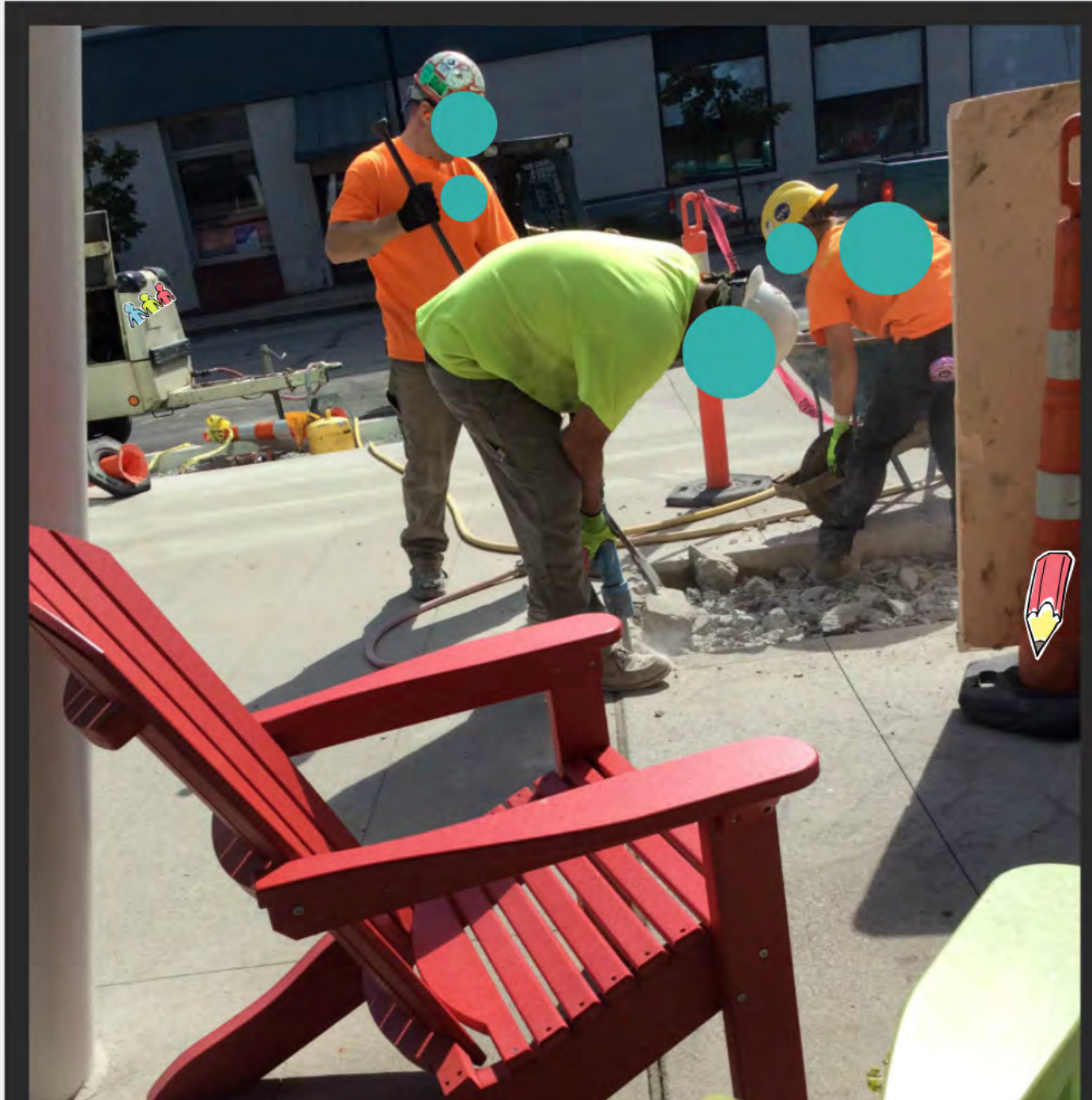


Table 1 or Exposure Assessment?

- Use the scenario given.
- Is the working crew adequately protected?
- Review Table 1 for compliance. Verify all engineering, work practice, and respiratory protection needs are met.
- If not on Table 1, Exposure Assessment.

Scenario #1

Jackhammering



**TABLE 1: SPECIFIED EXPOSURE CONTROL METHODS
WHEN WORKING WITH MATERIALS CONTAINING CRYSTALLINE SILICA**

Equipment / Task	Engineering and Work Practice Control Methods	Required Respiratory Protection and Minimum Assigned Protection Factor (APF)	
		≤ 4 hours /shift	> 4 hours /shift
(x) Jackhammers and handheld powered chipping tools	Use tool with water delivery system that supplies a continuous stream or spray of water at the point of impact.		
	– When used outdoors.	None	APF 10
	– When used indoors or in an enclosed area.	APF 10	APF 10
	OR		
	Use tool equipped with commercially available shroud and dust collection system.		
	Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.		
	Dust collector must provide the air flow recommended by the tool manufacturer, or greater, and have a filter with 99% or greater efficiency and a filter-cleaning mechanism.		
	– When used outdoors.	None	APF 10
	– When used indoors or in an enclosed area.	APF 10	APF 10

Scenario #2

Mixing mortar



Exposure Assessment

- How do we know that a dust mask respirator is sufficient protection?
- What about the trades near the mixing operations? Are they exposed?

Scenario #3

Saw cutting brick



Required Respiratory Protection and Minimum Assigned Protection Factor (APF)

≤ 4 hours /shift > 4 hours /shift

<p>(ii) Handheld power saws (any blade diameter)</p>	<p>Use saw equipped with <u>integrated</u> water delivery system that continuously feeds water to the blade.</p> <p>Operate and maintain tool in accordance with manufacturer's instructions to minimize dust emissions.</p> <ul style="list-style-type: none"> - When used outdoors. - When used indoors or in an enclosed area. 	<p>None</p> <p>APF 10</p>	<p>APF 10</p> <p>APF 10</p>
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Scenario #6

Shoveling Mortar Spoils



Housekeeping

- The employer shall not allow dry sweeping where such activity could contribute to employee exposure to silica unless wet sweeping, HEPA-filtered vacuuming, or other methods that minimize the likelihood of exposures are not feasible.

Respiratory/Medical Protection

Respiratory Protection

- Initial and Annual Fit Test
- Initial Medical Evaluation

- MARS Program

- Union hall participation includes: Laborers, Cement Masons/Finishers.

Silica Requirement

- Initial and periodic medical exams available to employees required to wear respirator for 30 days or more/year.



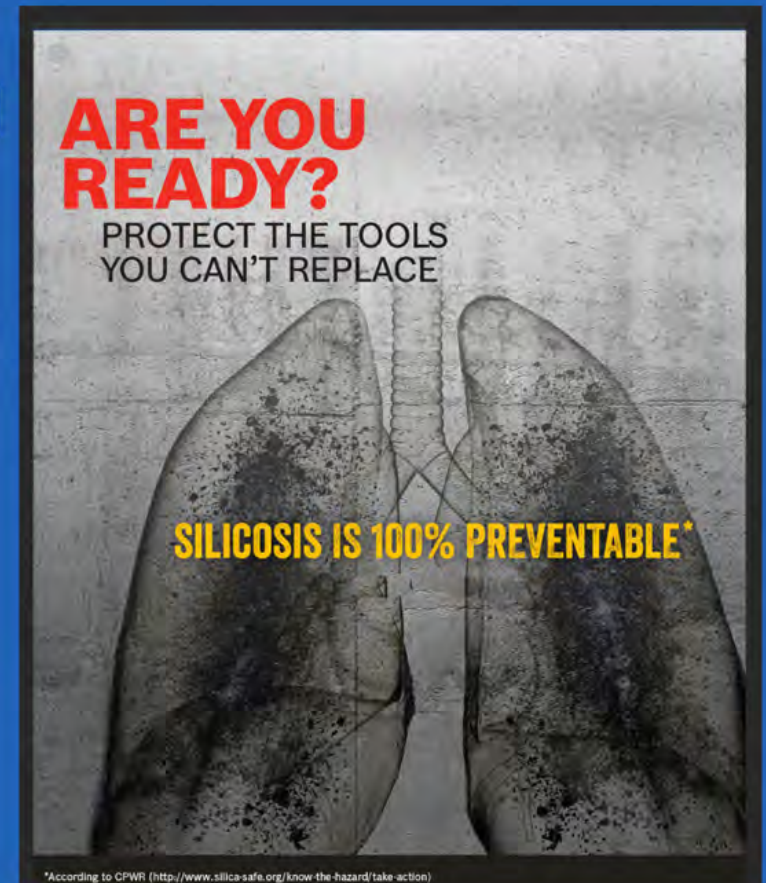
Written Exposure Control Plan

- 1) Each employer exposed to silica must have a plan.
- 2) Must cover:
 - Description of the silica tasks
 - Description of engineering, work practice, and respiratory controls.
 - Description of housekeeping measures.
 - Description of procedures to restrict access.
 - Competent Person must make frequent and regular job site inspections.
- 3) CM must coordinate silica activities.

plan.silica-safe.org

Summary

- 1) Must be able to identify, predict, and plan silica activities/hazards.
- 2) Be confident navigating Table 1 and understanding when Exposure Assessments are required.
- 3) Understand Exposure Control Plan.



"Stop Silicosis"



You Tube



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