

Silica

Specifically

Respirable Crystalline Silica (RCS)

Construction



Goals for this presentation

- What is Silica?
 - Where is Silica on our jobsites?
 - How is Silica a hazard?
- What does OSHA require from Contractors?
 - What is Table 1?
 - Alternate Methods of Compliance (AMC)?
 - Housekeeping?
 - Written Exposure Control Plan? (WECP)
 - Competent Person Requirements?
 - Training?



What is Silica?



- **Crystalline silica** is one of the most common, naturally occurring minerals on the planet, found within the earth. You could almost say it's what makes up 10% the earth.

Where is Silica on our jobsites?

- **Crystalline silica** is found and used within materials like:
 - Asphalt
 - Brick
 - Cement
 - Concrete
 - Concrete Block
 - Drywall
 - Fiber Cement Products
 - Grout
 - Gunite/Shotcrete
 - Mortar
 - Paints
 - Roof Tile
 - Sand
 - Soil
 - Stucco
 - Terrazzo and more..

How is Silica a problem?



- **When it becomes Respirable** (small enough and light enough to become airborne and inhaled into the lungs)

- **Respirable crystalline silica** – very small particles typically at least **100 times** smaller than ordinary piece of sand found on beaches or playgrounds – is generated by high-energy operations like cutting, sawing, grinding, drilling and crushing stone, rock, concrete, brick, block and mortar, or when abrasive blasting with sand.

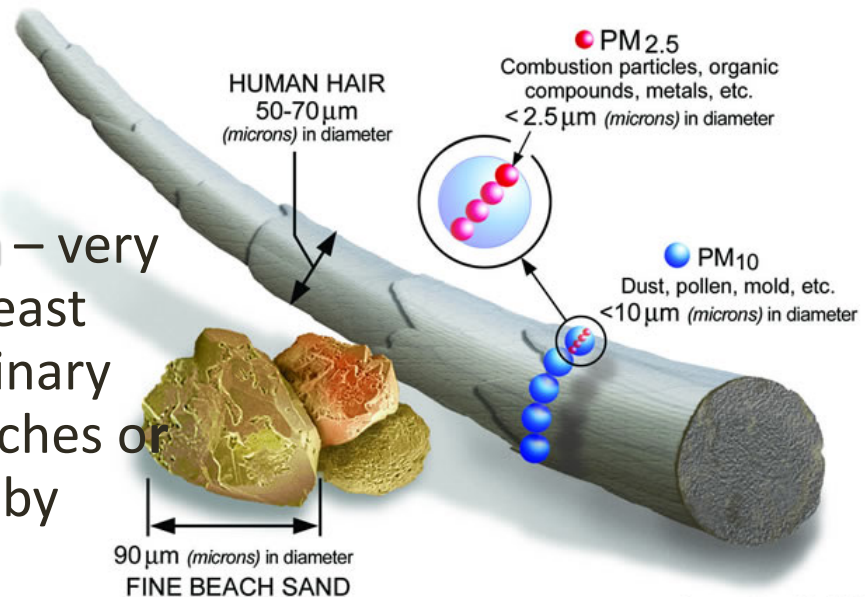


Image courtesy of the U.S. EPA

What does OSHA require from contractors?



- **Ask the question:**

1. **Does the Silica Standard apply on my site?**

- **Could** employees be exposed to RCS at or above 25 $\mu\text{g}/\text{m}^3$ as an 8-hour TWA under any foreseeable conditions, including the failure of engineering controls, while performing construction activities?



YES

NO

No further action is required

What does OSHA require from contractors?



- **Ask the question:**

1. **Does the Silica Standard apply on my site?**

- **Could** employees be exposed to RCS at or above $25 \mu\text{g}/\text{m}^3$ as an 8-hour TWA under any foreseeable conditions, including the failure of engineering controls, while performing construction activities?



YES



You must do one of two things:

NO



1. Follow Table 1 completely
2. Develop alternate methods of compliance

What is Table 1?

- **Table 1:**

- Table 1 was created to give special flexibility to the construction industry for 18 of the most common tasks they would be performing that involved RCS. It contains very specific directions on exactly how to best protect workers during those tasks.

- **NOTE:**

- If employers follow Table 1 fully and properly implementing the engineering controls, work practices, and respiratory protection specified in it, they can be confident that they are providing their workers with the required level of protection and no other actions are needed.



What is Table 1?

- **Fully and Properly Implemented:**

- means that controls are in place, are properly operated and maintained, and employees engaged in the task understand how to use them.

- **NOTE:**

- The presence of large amounts of visible dust generally indicates that controls are not fully and properly implemented. A small amount of dust can be expected from equipment that is operating as intended by the manufacturer; however, a noticeable increase in dust generation during the task is a sign that the dust controls are not operating correctly.



What is Table 1?



- **Fully and Properly Implemented:**

- means that controls are in place, are properly operated and maintained, and employees engaged in the task understand how to use them.

- **NOTE:**

- Some employees perform tasks involving occasional, brief exposures to RCS that are incidental to their primary work. These workers include carpenters, plumbers, and electricians who occasionally drill holes in concrete or masonry or perform other tasks that involve exposure to RCS. Where employees perform tasks that involve exposure to RCS for a very short period of time, exposures for many tasks will be below 25 $\mu\text{g}/\text{m}^3$ as an 8-hour TWA. For example, for hole drillers using hand-held drills, if the duration of exposure is 15 minutes or less, the 8-hour TWA exposure can reasonably be anticipated to remain under the 25 $\mu\text{g}/\text{m}^3$ threshold (***assuming no exposure for the remainder of the shift***), and the standard would not apply.

What is Table 1?

- **Fully and Properly Implemented:**

- means that controls are in place, are properly operated and maintained, and ***employees engaged in the task*** understand how to use them.



- **NOTE:**

- Employees engaged in the Table 1 task means the equipment operator, helpers, laborers and other employees who are assisting with the task; or any other employee responsible for completing the task. [See Table 1 handout.](#)



What does OSHA require from contractors?



- **Ask the question:**

1. **Does the Silica Standard apply on my site?**

- **Could** employees be exposed to RCS at or above $25 \mu\text{g}/\text{m}^3$ as an 8-hour TWA under any foreseeable conditions, including the failure of engineering controls, while performing construction activities?



YES



You must do one of two things:

1. Follow Table 1 completely

NO



2. Develop Alternate Methods of Compliance (AMC)



Alternate Methods of Compliance (AMC)?



- **When do I use AMC?**
 - Employers that conduct tasks **not listed** in Table 1 or **do not fully and properly implement** the engineering controls, work practices, and respiratory protection described in Table 1 of the specified exposure control methods approach, *must follow* the alternative exposure control methods approach.
- **What is required in the alternate exposure control method?**
 - The alternative exposure control methods approach involves **assessing employee exposure** to respirable crystalline silica, and **limiting exposure to the PEL** using feasible engineering and work practice control methods, and **respiratory protection** when necessary.

Alternate Methods of Compliance (AMC)?

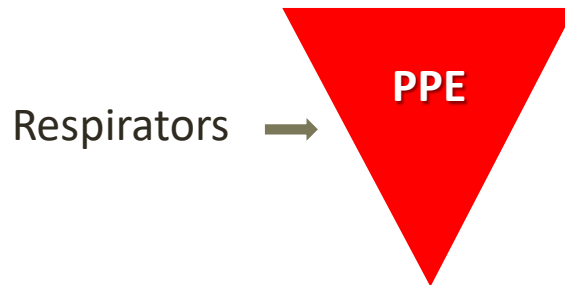
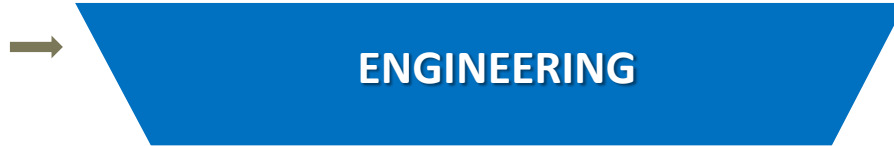


- What is required in the alternate exposure control method?
 - The alternative exposure control methods approach involves assessing employee exposure to respirable crystalline silica, and limiting exposure to the PEL using feasible engineering and work practice control methods, and respiratory protection when necessary.
- **NOTE:**
 - The methods of compliance section of the standard requires employers to protect employees following the **hierarchy of controls**, which relies on engineering and work practice controls for reducing exposures and only allows for respirator use, in addition to those controls, *when feasible engineering controls cannot reduce exposures to acceptable levels.*

Alternate Methods of Compliance (AMC)?

Hierarchy of Controls

Wet Methods
Local Exhaust
Isolation



Scheduling of work
Maintenance of
equipment



Best
Effective



Least
Effective



Alternate Methods of Compliance (AMC)?



- **Respirator Usage?**

- Where respirator use is required, employers must implement a respiratory protection program in accordance with the respiratory protection standard including medical surveillance*.

*Medical Surveillance is required if any worker will use respirator protection for more than 30 days in a year.

- **NOTE:**

- Employers following Table 1 must comply with all other requirements of the Respiratory Protection standard.



Housekeeping



- The RCS standard requires all construction employers covered by the standard, *including those who fully and properly implement the control methods specified in Table 1*, to avoid certain housekeeping practices. When cleaning up dust that ***could contribute*** to employee exposure to respirable crystalline silica, employers must:
 - Not allow dry brushing or dry sweeping, unless methods such as wet sweeping and HEPA-filtered vacuuming are not feasible*;
- Not allow cleaning of surfaces or clothing with compressed air, unless the compressed air is used together with a ventilation system that effectively captures the dust cloud or no other cleaning method is feasible.

*"Situations in which no acceptable cleaning methods can be used are expected to be very rare" OSHA.

Written Exposure Control Plan (WECP)



- **Who is required to have a WECP?**
 - All employers covered by the standard, *including employers who fully and properly implement the specified exposure controls in Table 1*, must develop and implement a written exposure control plan.
- **What must be included in a WECP?**

Written Exposure Control Plan (WECP)



- What must be included in a WECP?
 - Employers must list **all tasks** that employees perform that could expose them to RCS dust.
 - A description of engineering controls, work practices, and respiratory protection used to limit employee exposure to RCS **for each task**.
 - A description of the housekeeping methods used to limit employee exposure to RCS.
 - A description of the **procedures used to restrict access** to work areas, when necessary, to limit the number of employees exposed to RCS and the levels to which they are exposed, including exposures generated by other employers or self-employed workers.

Written Exposure Control Plan (WECP)

- Employers ***must allow*** the WECP to be viewed or copied by ***each employee*** covered by the standard, their designated representative, and representatives from OSHA or NIOSH, upon request.



Competent Person?



- **One who frequently and regularly inspects job sites, materials, and equipment to implement the WECP. He must be able to:**
 - Identify existing and foreseeable RCS hazards;
 - Promptly eliminate or minimize silica hazards; and
 - Implement the WECP.

Training?



- **The employer must make sure that employees trained under the silica standard can demonstrate knowledge and understanding of at least:**
 - Health hazards associated with RCS exposure.
 - Specific workplace tasks that could expose employees to RCS.
 - Specific measures the employer is implementing to protect employees from RCS exposure.
 - The contents of the RCS standard.
 - The identity of the competent person.
 - The purpose and a description of the medical surveillance program required under the standard.

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