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Beyond the cutting and grinding

Keeping workers safe from Crystalline Silica

Every time you set foot on a new construction site, you take stock of the different risks and dangers to avoid. You spot small pieces of concrete flying into the air as your coworker jackhammers up a piece of pavement. You notice the dust as the masonry saw cuts into the cinder block. But what about the dangers you can't see? The tiny silica particles from the concrete and block that enter your respiratory system and potentially your lungs?

For years, we have been available to help employers better understand potential risks on their jobsites, helping companies keep their workers safe. Here's an overview at 3M.com/OSHASilica relating to the new OSHA standard on silica, found at www.osha.gov/silica/.

Magnification of Silica

What is Crystalline Silica?

As a basic component of soil, sand and rock, Silica is one of the most widespread minerals on earth. It's most commonly found in quartz, which in turn is used in products like concrete, brick, ceramic tiles, dental filings, jewelry, tombstones and more. Crystalline silica can become airborne in many ways, such as when grinding, crushing and sawing.

How could it affect me?

When respirable crystalline silica particles are inhaled, they can make their way deep into your lungs. When that happens, the lungs can then cause scar tissue nodules to develop around these particles. While it may take years to develop, this is the disease silicosis. Silicosis is a non-reversible lung disease with symptoms that can range from shortness of breath and chest pains to increased difficulty in breathing. It may eventually also be fatal. Exposure to respirable crystalline silica has also been recently associated with other lung diseases.

When am I at risk?

Crystalline silica is more likely to be present in the air when there is cutting, sawing, drilling or crushing of concrete, brick, ceramic tiles, rocks or stones. Examples of potential workplaces with these types of activities might include construction sites and foundries, mines, and sites that use abrasive blasting.

State and federal authorities have astablished occupational exposure limits and guidelines to help manage the risks posed by airborne crystalline silica. So it is essential to understand the different products and processes being used around your site, to help determine the appropriate controls (engineering and administrative), as well as protective gear, to reduce the potential risk.

What can I do to protect my workers?

Did you know?

Approximately 2.3 million Americans are occupationally exposed to silica on a regular basis. Amongst the most at risk are construction workers, heavy equipment operators and plasterers or drywallers.

https://www.osha.gov/silica/

2.3 million
Workers (Est.)

CRYSTALLINE SILICA
Exposure in the
United States

Number of Workers Exposed to Respirable Crystalline Silica in Selected General Industry/Maritime Sectors

Industry Sector	Workers currently exposed	Workers currently exposed above the new PEL
Asphalt Roofing Materials	3,158	1,410
Concrete Products	32,981	9,391
Cut Stone	9,429	5,243
Foundries	34,591	12,173
Railroads	16,895	5,340
Ready-Mix Concrete	27,123	19,941
Shipyards	3,038	2,228
Structural Clay Products	7,893	3,198
Support Activities for Oil and Gas Operations	16,960	11,207

year: 2016

Source: US OSHA Fact Sheet - Workers' Exposure to Respirable Crystalline Silica: Final Rule Overview (retrieved 20 FEB 2017)

Keep dust levels down

There are a few different ways of keeping dust levels down on your construction site, which in turn will keep silica particles from becoming airborne. Many worksites will opt for methods like wet cutting, vacuum dust collection systems, or water misting of work sites to keep silica dust from forming.

Stay informed

Certain states have different rules and regulations around managing silica exposure so it's important to stay up to date on legal requirements and testing to help minimize risk.

https://www.osha.gov/Publications/OSHA3683.pdf

Get the equipment you need

Once you know your exposure level, you'll want to take a look at 3M's broad range of respiratory protection products to find the right product for your exposure level. Whether it be a lightweight disposable respirator, a half-face respirator, full-face protection or a powered air purifying respirator, all our products help your workers breathe comfortably, while helping reduce exposure to harmful particles.

You can get in touch with one of our respiratory protection specialists for further information and personalized assistance.

Go to 3M.com/OSHASilica to get more information.

⚠WARNING

These respirators help protect against certain airborne contaminants. Before use, the wearer must read and understand the User Instructions provided as a part of the product packaging. A written respiratory protection program must be implemented meeting all the requirements of OSHA 1910.134 including training, fit testing and medical evaluation. In Canada, CSA standards Z94.4 requirements must be met and/or requirements of the applicable jurisdiction, as appropriate. Misuse may result in sickness or death. For proper use, see packaging instructions, supervisor, or call 3M PSD Technical Service in USA at 1-800-243-4630 and in Canada at 1-800-267-4414.