Updated OSHA Standards for Crystalline Silica Dust

Technical Bulletin

What is crystalline silica?

Crystalline silica is a basic ingredient of the Earth's crust, found in many naturally occurring and manmade materials, including rock, soil, sand, concrete and brick. Quartz is the most common form of crystalline silica. Cristobalite and tridymite are a few others.

What are the risks?

When workers crush, cut, chip, drill or grind objects containing crystalline silica, the mineral may be broken down into small particles and breathed in. Crystalline silica exposure is associated with foundry work, sandblasting, hydraulic fracturing and many other jobs. The Occupational Safety and Health Administration (OHSA) estimates that 2.3 million workers are exposed to silica in the United States[1].

Crystalline silica has been recognized as a serious health hazard to industrial workers for decades. Workers who are exposed to crystalline silica are at increased risk of developing serious health problems, including silicosis—an incurable lung illness—as well as lung cancer, chronic obstructive pulmonary disease (COPD) and other respiratory diseases—even kidney disease.

What are the standards?

OSHA established exposure limits for crystalline silica more than 40 years ago, but more recent scientific data suggest that those limits were insufficient to protect workers.

In June 2016, two new OSHA standards for crystalline silica came into effect: one for maritime and general industry, and the other for the construction industry. The new standards establish a permissible exposure limit of 50 micrograms of respirable crystalline silica per cubic meter of air (50 $\mu g/m^3$) as an eight-hour time-weighted average in all industries covered by the rule.

The 2016 standards include additional provisions to help protect employees, including requirements for exposure assessment, exposure control methods, respiratory protection, medical surveillance, hazard communication and recordkeeping.

While respiratory protection is the only personal protective equipment (PPE) prescribed by the new standards, other forms of PPE, including protective clothing, are critical to maximizing worker protection.

Preventing the spread of crystalline silica

In addition to on-the-job exposure, workers can unknowingly carry crystalline silica home on their clothes, shoes, skin, tools and vehicle interiors. Other people, especially family members, can be exposed to silica that has become embedded in auto upholstery, home furniture, and clothing via shared laundry loads. Similarly, crystalline silica can be circulated through household air and transmitted through person-to-person contact.

OSHA has standards aimed at preventing the incidence of these so-called "take-home toxin" events and can impose stiff fines on employers who don't follow them. The new crystalline silica standards include requirements for establishing regulated/restricted areas, engineering controls, work practices and housekeeping to contain and control crystalline silica exposure.

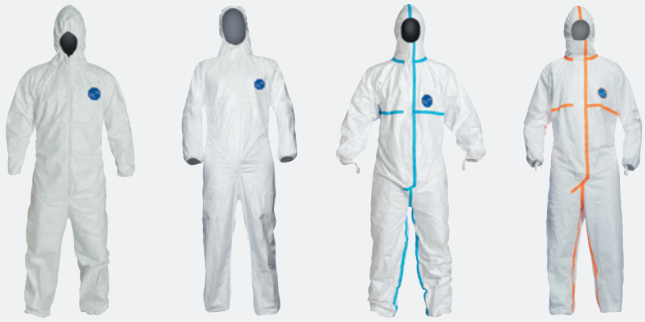
What protective apparel is available?

Employers can help prevent the spread of crystalline silica by choosing effective protective garments for workers and requiring them to don and doff apparel on site. Employers in many industries trust protective garments made with Tyvek®, which are:

- Soft
- Lightweight
- Durable
- Low linting
- Chemically and biologically inert

With Tyvek®, protection is built into the fabric itself. The barrier extends throughout the garment and helps provide excellent protection against particles in the 1-2 µm range. (Spunbonded polypropylene fabric, by contrast, has an open structure and offers a poor barrier against particles in the 1-2 µm range.)

Tyvek® apparel features a comfort-fit design that improves worker mobility and makes garments easier to put on and take off. Available garments include coveralls with and without respirator-fit hoods, lab coats, jackets, as well as a variety of accessories including hoods, sleeves and slip-resistant shoe covers.



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The selection of appropriate PPE (including respiratory, eye, head, foot and hand protection) is the responsibility of the end user and must be made following a thorough hazard assessment of the work tasks and the environment.

References:

[1]OSHA Fact Sheet, *Workers' Exposure to Respirable Crystalline Silica: Final Rule Overview*, 2016

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