

Silica Dust Poses Health Hazard in Stone Fabrication Industry

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Fabricating granite counter tops and other silica-containing materials may expose workers to levels of respirable crystalline silica above state limits, as was found recently by the Department of Labor & Industries and the University of Washington. Workers who inhale excessive amounts of crystalline silica can develop silicosis, a serious and potentially fatal lung disease. Methods for controlling exposure to silica are available. This hazard alert tells you more.

What is crystalline silica?

Crystalline silica is a natural component of the earth's crust and is a basic component of sand, quartz, and granite rock.

What are the health hazards of exposure to silica dust?

Crystalline silica inhaled in excessive amounts can cause a serious and potentially fatal lung disease called silicosis. Silica is also capable of causing lung cancer with prolonged heavy occupational exposures. Workers with impaired lung function due to silica exposure are also more susceptible to other respiratory diseases such as tuberculosis. The health hazards of silica are not new - silicosis is one of the world's oldest known occupational diseases, with reports dating back to ancient Greece. Although very high short-term exposures to silica (as experienced by many workers in past times) can pose a serious health hazard, long-term exposures to silica levels exceeding the state limits also pose these serious health hazards.

What activities in stone fabrication expose workers to silica dust?

Activities such as grinding, cutting, routing, drilling, chipping, or polishing on granite and other stone materials containing crystalline silica can create airborne dust and the potential for health hazards to workers.

Silica exposures above mandatory state limits were found during recent inspections by the Department of Labor & Industries' WISHA Services and during consultations by the University of Washington's Field Research and Consultation Group. High silica exposures have also been found in other businesses performing similar tasks on stone products, for example making tombstones.

Worker exposure to silica-containing dust is dependent on a number of factors, including the amount of crystalline silica in the material, which tasks are being done, length of time performing dusty tasks, work practices (e.g. dry work or wet work), type of ventilation in use, and specific tools utilized.

What are Washington State's limits on silica exposure?

The state permissible exposure limit (PEL) for exposure to respirable crystalline silica is 0.1 milligrams silica per cubic meter of air (0.1 mg/M³), averaged over an 8-hour workshift. This limit can be exceeded in just ten minutes of "dry" work on silica-containing granite/stone products. Employers with workers exposed to silica dust above the legal limit must reduce exposure through a variety of control options. Employers also need to explain to workers the health risks of silica exposure and methods they use to eliminate or reduce exposures.

What methods can be used to reduce exposure to silica?

Methods for reducing exposure to silica dust are available. Using water to suppress dust is perhaps the most effective and often used control method. Purchasing water-fed tools, or finding ways to use water at the point of operation (e.g. a directed water spray, or trickling water on the working surface from a pop bottle with a small hole at the bottom) should always be considered. Grinders can produce the most dust and have been successfully adapted with a water feed system. Another control option would be to purchase or equip grinders and saws with ventilation devices that capture and route dust to an industrial type vacuum. Assistance for identifying or implementing controls may be found from the consultants listed below.

Respirators may be used as a control for very infrequent tasks or where no feasible engineering controls (e.g. using water or ventilation) can be found for a particular task. Where respirators are used (in most cases a half-face respirator equipped with HEPA type filters), a complete respirator program must be put in place. Such a program includes proper selection, fit-testing, cleaning and maintenance, supervision, training, and written procedures.

What other hazards need to be addressed?

When using water for dust suppression, floor drainage and appropriate clothing must be considered. Also, the use of electrical equipment with water requires grounded equipment, ground fault circuit interrupters (GFCI), electrical cords routed overhead, and good maintenance of electrical tools. The use of air powered tools can eliminate the electrical hazards. Handling large pieces of stone necessitates specific safe work practices to prevent back and crush injuries. An effective accident prevention program addresses these and other hazards associated with the stone fabrication industry.

Where can I learn more about controlling silica exposure?

If your company would like more information on this serious health hazard or help in monitoring or controlling silica exposures, [contact a Labor & Industries' consultant in your area](#), or contact the University of Washington Field Research and Consultation Group at 206-543-9711.