



U.S. Department of Labor
Occupational Safety & Health Administration

96-54

Silica Dust Exposures Can Cause Silicosis

- **Record Type:** Fact Sheets
- **Subject:** Silica Dust Exposures Can Cause Silicosis
- **Information Date:** 09/03/1996
- **Abstract:** Every year two million workers in the U.S. are exposed to crystalline silica, which can cause silicosis, a disabling and sometimes fatal disease. About 300 deaths are attributed to silicosis annually. Inhaling airborne crystalline silica dust also has been associated with other diseases such as tuberculosis and lung cancer.
- **Fact Sheet:** 96-54

U.S. Department of Labor
Program Highlights

Fact Sheet No. OSHA 96-54

Silica Dust Exposures Can Cause Silicosis

Every year two million workers in the U.S. are exposed to crystalline silica, which can cause silicosis, a disabling and sometimes fatal disease. About 300 deaths are attributed to silicosis annually. Inhaling airborne crystalline silica dust also has been associated with other diseases such as tuberculosis and lung cancer.

The Occupational Safety and Health Administration (OSHA) is determined to reduce the potential threat of silicosis. Crystalline silica has been identified as a priority rulemaking action. In the meantime, OSHA is conducting a national special emphasis program on silicosis to inform employers and employees about the occurrence and hazards of crystalline silica and ways to reduce exposure to the dust. The 25 states and territories that operate their own occupational safety and health programs have been encouraged to launch similar special emphasis activities on silicosis.

Crystalline silica, also known as quartz, is a natural compound in the earth's crust and is a basic component of sand and granite. Silicosis is a disease of the lungs caused by breathing dust containing crystalline silica particles. The dust can cause fibrosis or scar tissue formations in the lungs that reduce the lungs' ability to work to extract oxygen from the air. There is no cure for this disease, thus prevention is the only answer.

SYMPTOMS OF SILICOSIS

Early stages of the disease may go unnoticed. Continued exposure may result in a shortness of breath on exercising, possible fever and

occasionally bluish skin at the ear lobes or lips. Silicosis makes a person more susceptible to infectious diseases of the lungs such as tuberculosis. Progression of silicosis leads to fatigue, extreme shortness of breath, loss of appetite, pain in the chest, and respiratory failure, which may cause death. Acute silicosis may develop after short periods of exposure. Chronic silicosis usually occurs after 10 or more years of exposure to lower levels of quartz.

WHERE ARE EMPLOYEES EXPOSED TO CRYSTALLINE SILICA DUST?

The most severe worker exposures to crystalline silica result from sandblasting.

In general industry, the sandblasting may be done to clean sand and irregularities from foundry castings, finish tombstones, etch or frost glass, or remove paint, oils, rust or dirt from objects that will be repainted or treated.

Other exposures to dust from sand in general industry employment occur in cement manufacturing, asphalt pavement manufacturing, and the foundry industry. Crystalline silica is used in the electronics industry and in manufacturing abrasives, paints, soaps, and glass. Calcined diatomaceous earth, often contaminated with crystalline silica, can be used for filtration in a variety of applications.

In the construction industry, sandblasting may be done to remove paint and rust from stone buildings, metal bridges, tanks, and other surfaces. Other construction activities that may produce crystalline silica dust include jack hammer operations, rock/well drilling, concrete mixing, concrete tunneling, and brick and concrete block cutting and sawing. Tunneling operations, repair or replacement of linings of rotary kilns and cupola furnaces; and setting, laying, and repairing railroad track also are potential sources of exposure.

In the maritime industry, exposure to crystalline silica occurs primarily in abrasive blasting operations such as in removing bottom fouling organisms from paint.

Employers are required to provide and assure the use of appropriate controls for crystalline silica-containing dust. OSHA has a Permissible Exposure Limit (PEL), which is the maximum amount of airborne crystalline silica that an employee may be exposed to during a work shift. Employers are to use all available engineering controls such as water sprays, blasting cabinets, and ventilation of containment structures.

WHAT CAN EMPLOYEES DO TO LIMIT THEIR EXPOSURE TO CRYSTALLINE SILICA?

- * Be aware of the health effects of crystalline silica and that smoking adds to the damage.
- * Know the work operations where exposure to crystalline exposure may occur.

- * Participate in any air monitoring or training programs offered by the employer.
- * Use type CE positive pressure abrasive blasting respirators for sandblasting.
- * For other operations where respirators may be required, use a respirator approved for protection against crystalline silica-containing dust. Do not alter the respirator in any way. Workers who use tight-fitting respirators cannot have beards or mustaches which interfere with the respirator seal to the face.
- * If possible, change into disposable or washable work clothes at the worksite; shower (where available) and change into clean clothing before leaving the worksite.
- * Do not eat, drink, use tobacco products, or apply cosmetics in areas where there is dust containing crystalline silica.
- * Wash your hands and face before eating, drinking, smoking, or applying cosmetics outside of the exposure area.

WHERE CAN I GET MORE INFORMATION?

Contact your local or Regional OSHA office (listed in the telephone directory under United States Government-Department of Labor-Occupational Safety and Health Administration). OSHA has included extensive outreach activities as part of this special emphasis program on silicosis. OSHA has designated a crystalline silica coordinator in each Regional OSHA office. The regional coordinator or the OSHA consultation service in your state can be contacted for assistance in obtaining more information.

#

This is one of a series of fact sheets highlighting U.S. Department of Labor programs. It is intended as a general description only and does not carry the force of legal opinion.