# Silicosis: A Chronic Work-related Lung Disease

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## WHAT IS SILICOSIS?

Silicosis is a lung disease caused by breathing in small particles of silica (Figure 1). Silica is a common mineral found in many rocks, stones, and sand. Working with materials that contain silica can create silica dust which can enter the lungs and cause inflammation and scarring, making it difficult to breathe. Silicosis typically occurs after breathing in silica dust for 10 or more years. Silicosis can also develop after breathing in large amounts of silica for only a few months or years.

## WHO GETS SILICOSIS?

People who work around silica dust can get silicosis. This includes jobs in construction and demolition, mining and quarrying, stone masonry, sandblasting, and certain types of manufacturing (Figure 2). Workers who cut, grind, fabricate, or polish engineered or artificial stone to make countertops for kitchens and bathrooms have developed silicosis, many with advanced disease. This is because engineered or artificial stones, such as those with high amounts of quartz, have more silica than natural stones such as marble or granite.

## WHAT ARE THE SYMPTOMS OF SILICOSIS?

In the early stages, patients with silicosis may have little to no symptoms. However, with time, the symptoms may begin to appear or worsen, even if the patient is no longer around silica dust (Figure 1). Common symptoms include the following:

- Cough that does not go away
- Difficulty breathing
- Chest or back pain

## HOW IS SILICOSIS DIAGNOSED?

If you think you may have silicosis, tell your healthcare provider the type of work you do now and work you did in the past, because symptoms can develop years after exposure. Tests used to diagnose silicosis include a breathing test and a chest radiograph (Figure 1). A computed tomographic scan of the chest provides a more detailed picture of the lungs than a radiograph and can detect disease at earlier stages. In some cases, a doctor may recommend a biopsy, which is a procedure in which a small sample of lung tissue is removed to make the diagnosis.

## HOW IS SILICOSIS TREATED?

Silicosis has no cure, because the lung scarring cannot be reversed. Treatment is



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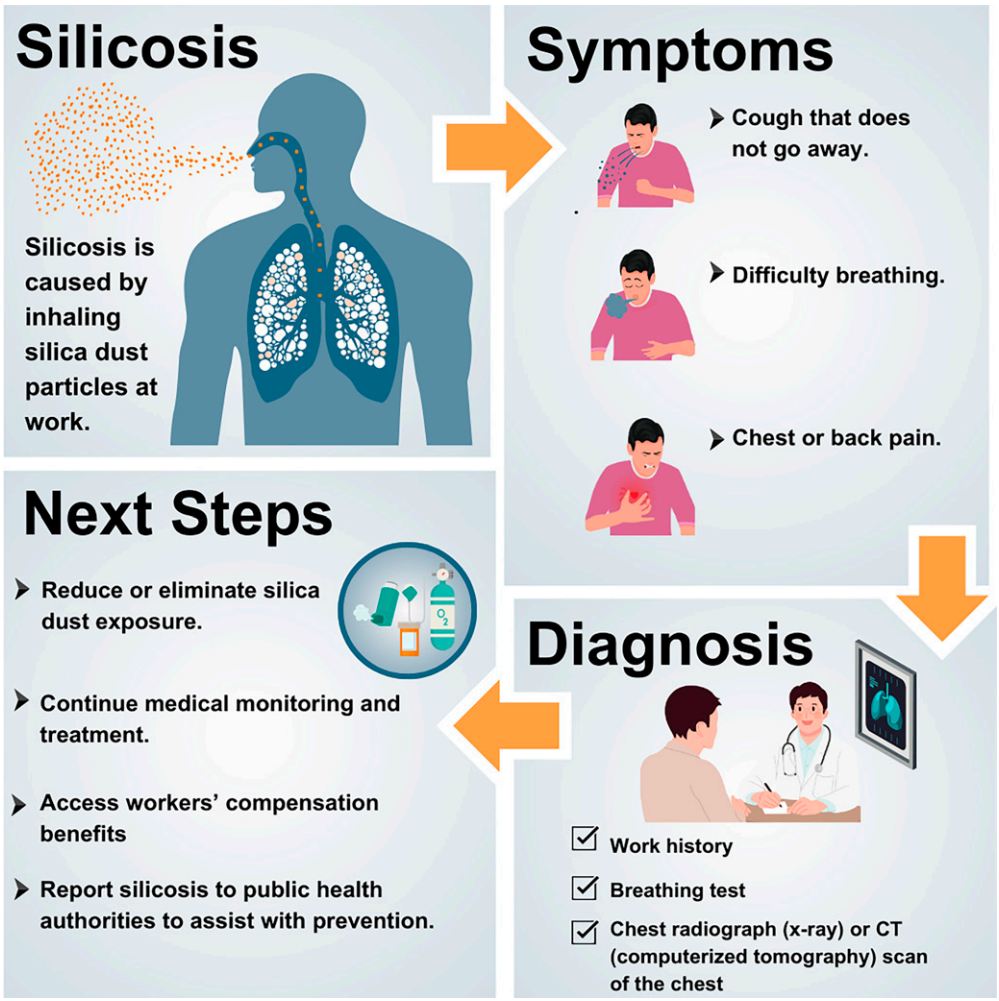


**Figure 1.** Schematic detailing the symptoms, diagnosis, treatment, and prevention of silicosis.

aimed at improving symptoms and reducing complications (Figure 1). Patients with silicosis should avoid or limit additional exposure to silica as much as possible. Inhalers may improve symptoms of cough and shortness of breath. Some patients may be helped by medications that slow inflammation and scarring, such as steroids, antifibrotics, and biologics. Patients with trouble breathing may feel better after undergoing pulmonary rehabilitation, a type of structured exercise program. Vaccinations for pneumonia, COVID-19, and yearly influenza may prevent severe lung infections and are recommended. Supplemental oxygen can help patients with advanced silicosis and low oxygen concentrations. Lung transplant may be an option for some patients with advanced silicosis.

## WHAT ARE THE COMPLICATIONS OF SILICOSIS?

Patients with silicosis can develop lung infections with tuberculosis, other bacteria, or fungi, which can cause increased cough with phlegm, weight loss, fevers, and chills. Patients with silicosis are also more likely to develop autoimmune diseases such as rheumatoid arthritis, scleroderma, and myositis. In these diseases, the



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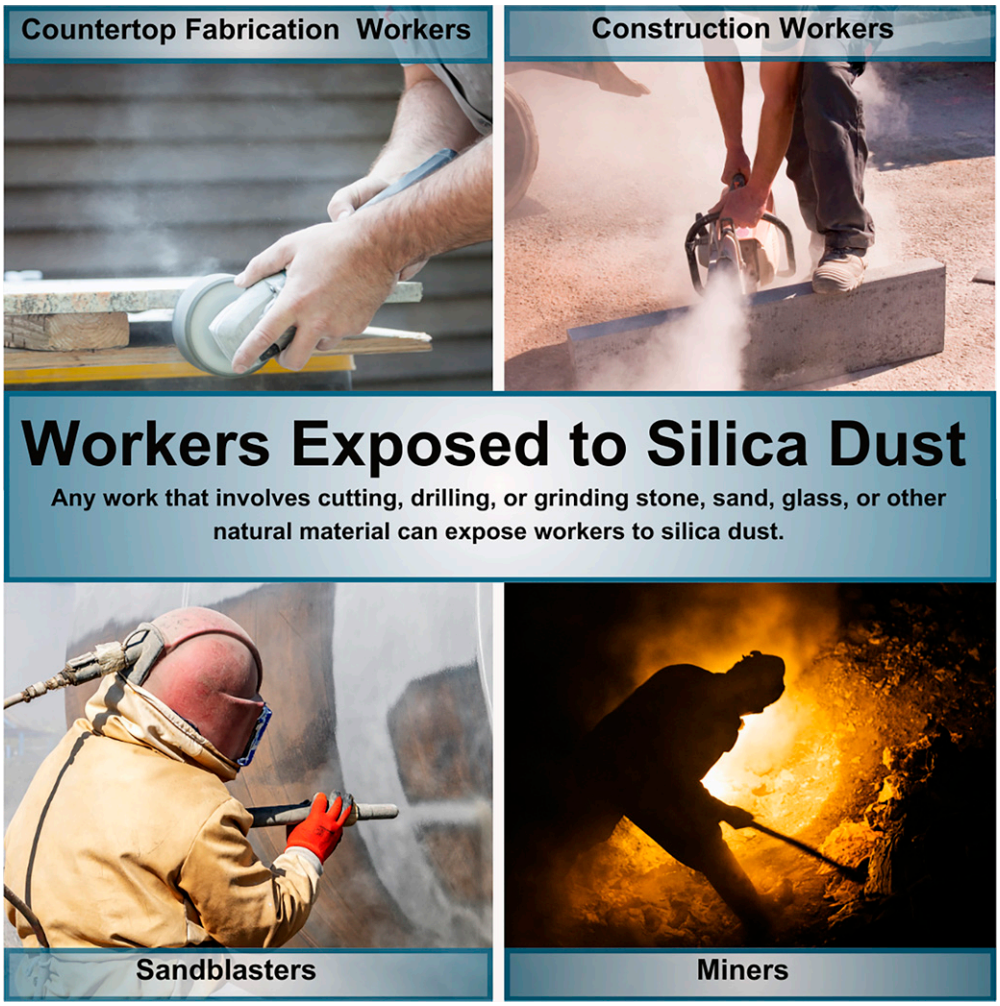


**Figure 2.** Occupations associated with silicosis.

immune system mistakenly attacks other parts of the body. If you have symptoms such as joint pains, muscle aches, or rashes, you should be evaluated for these associated conditions.

Patients with silicosis also are more likely to develop chronic obstructive pulmonary disease, lung cancer, and chronic kidney disease. Silicosis may not be diagnosed until after the person develops one of these complications. Many clinicians are not familiar with silicosis, which can be misdiagnosed as a lung infection, autoimmune-related lung disease, or chronic obstructive pulmonary disease.

## HOW CAN SILICOSIS BE PREVENTED?

Silicosis can be prevented by avoiding breathing in silica dust. In the United States, employers must follow laws to protect their workers from silica. These laws are set by the Occupational Safety and Health Administration.

Your employer is required to do the following:

- Check silica concentrations in the air to make sure they are below the legal limit.
- Reduce silica concentrations in the air with controls such as tools with water and ventilation systems.
- Teach you about the risks of silica.



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- Give you personal protective equipment, including a properly fitted respirator, if silica concentrations are above the legal limit.
- Offer you silica medical surveillance examinations free of cost if you work around silica above the legal limit. These examinations include a chest radiograph, a breathing test, and a test for tuberculosis.

## WHAT BENEFITS ARE AVAILABLE?

If you have been diagnosed with silicosis, you should be eligible for worker's compensation benefits, which typically cover medical expenses related to your silicosis and financial compensation for lost income and the severity of your disease (Figure 1). Each state in the United States has its own worker's compensation regulations and policies. However, immigrant workers, including undocumented workers, are eligible for benefits in almost all states.

## RESOURCES

Public Health

- https://www.cdph.ca.gov/Programs/CCDPHP/DEODC/OHB/Pages/SilicaStoneFabricators.aspx

Occupational Safety and Hazard Administration Silica Regulation

- https://www.osha.gov/silica-crystalline
- https://www.dir.ca.gov/dosh/respiratory-silica-FAQ.html

National Institute for Occupational Safety and Health

- https://www.cdc.gov/niosh/silica/about/index.html

Worker's compensation resources

- https://www.dol.gov/agencies/owcp/wc



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