



The National Institute for Occupational Safety and Health (NIOSH)

Promoting productive workplaces
through safety and health research / **NIOSH**

Crystalline Silica

Health Risks of Exposure

Breathing in dust from silica-containing materials can lead to silicosis. Silica dust particles become trapped in lung tissue causing inflammation and scarring. The particles also reduce the lungs' ability to take in oxygen. This condition is called silicosis. Silicosis results in permanent lung damage and is a progressive, debilitating, and sometimes fatal disease.

Chronic silicosis typically occurs after 10 or more years of exposure to respirable crystalline silica. However, the disease can occur much more quickly after heavy exposures. Silicosis can develop or progress even after workplace exposures have stopped.

Symptoms of silicosis may include:

- Cough
- Fatigue
- Shortness of breath
- Chest pain


There is no cure for silicosis and some patients may require lung transplantation.

Workers exposed to silica and those who have silicosis are also at increased risk of tuberculosis (TB), a contagious and potentially life-threatening infection.

Exposure to respirable crystalline silica puts workers at risk for developing other serious diseases including the following:



An x-ray of a lung with silicosis and progressive massive fibrosis (PMF). Photo by NIOSH.

- [Lung Cancer](#) – Lung cancer results from cells in the body that grow out of control and develop into tumors. Cancerous cells from the lung can also invade other parts of the body, a process known as metastasis.
- [Chronic Obstructive Pulmonary Disease \(COPD\)](#) – COPD includes chronic bronchitis and emphysema. Symptoms of COPD include shortness of breath, coughing or wheezing, phlegm or sputum production, and trouble breathing. The National Occupational Research Agenda (NORA) Respiratory Health Cross-Sector Council produced [Faces of Work-related COPD](#). This video series provides impact stories from patients and discussion from a physician on the disease.
- [Kidney Disease](#) – Studies of workers have shown that increasing levels of silica exposure are associated with increasing risks for chronic kidney disease.
- [Autoimmune Disease](#)  – Studies of workers have shown that silica exposure is associated with increased risk for a variety of autoimmune diseases. These diseases include rheumatoid arthritis, systemic lupus erythematosus, and systemic sclerosis (scleroderma).

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