

## Silicosis

Silicosis is a specific occupational lung disease caused by inhalation of free crystalline silica dust. It is a type of pneumoconiosis. Silicosis is a debilitating and often fatal lung disease among workers that are employed in mining, tunneling, rock quarrying, rock drilling, crushing stone, chipping, grinding, sandblasting, grinding or polishing in pottery and foundry work, shakeout of molds, construction industry, cutting or manufacturing heat-resistant bricks (fire brick) and many other occupations that expose workers to silica dust.

### **Classification**

#### **Chronic or simple silicosis**

Usually resulting from long-term exposure (10 years or more) to relatively low concentrations of silica dust = This is the most common type of silicosis. Patients with this type of silicosis, especially early on, may not have obvious signs or symptoms of disease, but abnormalities may be detected by x-ray.

#### **Acute silicosis**

Silicosis that develops after exposure to high concentrations of respirable silica dust. Symptoms of acute silicosis include more rapid onset of severe disabling shortness of breath, cough, weakness, chest pain and sputum. The patients may have respiratory insufficiency and low blood oxygen level.

#### **Accelerated silicosis**

Silicosis that develops 5–10 years after first exposure to higher concentrations of silica dust. Symptoms and x-ray findings are similar to chronic simple silicosis, but occur earlier and tend to progress more rapidly. Patients with accelerated silicosis are at greater risk for complicated disease.

Atypical forms of silicosis:

- Caplan's syndrome- silicosis +rheumatoid arthritis
- Erasmus syndrome-systemic sclerosis or systemic sclerosis +silicosis
- One sided silicosis
- Silicosis of the hilar lymph nodes

In 1996, the International Agency for Research on Cancer (IARC) reviewed the medical data and classified crystalline silica as "carcinogenic to humans." The risk was best seen in cases with underlying silicosis.

Patients with silicosis are particularly susceptible to tuberculosis (TB) infection—known as silicotuberculosis.

Diagnosis of silicosis:

There are three key elements to the diagnosis of silicosis. First, the patient history should reveal exposure to sufficient silica dust to cause this illness. Second, chest imaging (usually chest x-ray) that reveals findings consistent with silicosis. Third, there are no underlying illnesses that are more likely to be causing the abnormalities. We may also use HRCT-high resolution computed tomography.

Pulmonary function testing may reveal airflow limitation, restrictive defects, reduced diffusion capacity, mixed defects. Most cases of silicosis do not require tissue biopsy for diagnosis.

Blood gases in arterial blood in cases with respiratory failure.

## Treatment

---

Silicosis is a progressive disease that leads to reduced life expectancy. Treatment options currently available focus on alleviating the symptoms and preventing any further progress of the condition. These include:

- Stopping further exposure to airborne silica, silica dust and other lung irritants, including tobacco smoking.
- Cough suppressants.
- Antibiotics for bacterial lung infection.
- Tuberculosis (TB) prophylaxis for those with positive tuberculin skin test or IGRA blood test.
- Prolonged anti-tuberculosis (multi-drug regimen) for those with active TB.
- Chest physiotherapy .
- Oxygen administration to treat hypoxemia, if present.
- Corticosteroids are used in the rapid progression of changes and the presence of comorbid conditions.
- The modern therapy includes medications directed to the mechanisms of pulmonary fibrosis formation using anti-growth hormone substances, cytokines and antioxidants.