

Silicosis

NSW Control Guideline



Revision history			
Version	Date	Revised by	Changes
1.0	20/08/2020	Environmental Health Branch	First version.

Summary

Public health priority

Routine

Response time

Cases are followed up by SafeWork NSW, based on data provided by Health Protection NSW on a regular basis.

Case management

The treating doctor is responsible for managing patients. SafeWork NSW is responsible for enforcing workplace compliance.

Contact management

Not applicable.

Contents

1. The disease

Causative agent

Silica (silicon dioxide) is among the most abundant compounds in the Earth's surface. It is found in the form of quartz and other minerals, and is a major component of sand and rocks such as sandstone (67%), granite (25-40%) and shale (22%). Engineered stone products can contain up to 97% silica.

Sources and routes of exposure

Silicosis arises from inhalation of high concentrations of respirable crystalline silica. This form of silica can be generated by a number of industrial processes such as concrete and stone cutting, mining, tunneling, excavating and sand blasting. When inhaled, respirable crystalline silica or free silica can deposit in the lungs, and lead to the lung disease silicosis.

Health effects

Silicosis is among a group of occupational lung diseases known as pneumoconiosis. Diseases in this group are classified according to the pathological process in the lung. Fibrogenic agents include silica, asbestos, coal dust, and talc; granulomatous agents include beryllium; and inert or benign agents include inhaled metals.

Silicosis can present in three forms, which vary in their clinical presentation from no symptoms (but with pathological changes apparent on chest radiography or spirometry) to shortness of breath on exertion, cough, and respiratory failure over time. **Acute silicosis** (acute silicoproteinosis) is a rarer diagnosis that results within a few weeks to a few years of exposure to extremely high levels of silica dust. This form of silicosis results from proteinaceous material filling the alveoli; silicotic nodules are rare, and fibrosis of the lung is minimal. **Accelerated silicosis** develops within 3 to 10 years of exposure to silica dust. It is associated with a higher level of exposure, and a greater risk of progressive massive fibrosis. The clinical and radiological features are similar to chronic silicosis. **Chronic silicosis** typically develops 10 to 30 years after exposure to lower levels of silica dust. It is characterised by the formation of silicotic nodules greater than 1 cm in diameter; these nodules can coalesce and lead to progressive massive fibrosis of the lung.

2. Case definition

Silicosis is diagnosed by a medical practitioner based on findings from:

- Occupational history
- Clinical examination
- Respiratory function tests (FEV1, FVC, FEV1/FVC)
- Radiographic evidence (chest X-ray or CT scan).

There is no single diagnostic test to confirm the diagnosis.

3. Routine prevention activities

Primary prevention

Primary prevention is a critical component of silicosis prevention. This is achieved through the implementation of **control measures** in the workplace, such as reducing dust generation (by applying water suppression systems or "wet cutting" of stone benchtops), using power tools with dust capture attachments, installing adequate ventilation systems, isolating areas of the workplace where dust is generated, preventing the accumulation of dust in work areas, and providing suitable personal protective equipment (such as Powered Air Purifying Respirators). **Air monitoring** is used to ensure that workplace controls are effective at keeping levels of respirable crystalline silica below the workplace exposure standard of 0.05 mg/m³ averaged over eight hours.

Secondary prevention

Secondary prevention involves screening to identify those with pre-clinical disease to prevent further exposure. **Staff health monitoring** is required in workplaces with significant risk of exposure to

crystalline silica. This includes an annual review of medical and occupational history, records of personal exposure, respiratory function testing, and chest radiography (X-ray or CT scan). In NSW, health monitoring results are provided to a screening program which results in active case finding of workers at risk of silicosis in the pre-clinical stage of disease.

Tertiary prevention

Tertiary prevention (which includes treatment of clinically apparent disease) is achieved through **removal from work** (which may be necessary for workers displaying signs or symptoms of exposure to crystalline silica), through **supportive therapy** (such as supplemental oxygen), or **lung transplantation**.

4. Surveillance objectives

Silicosis has been made notifiable under the *Public Health Act 2010* to support the work health and safety (WHS) regulators in NSW.

Medical practitioners are required to notify a diagnosis of silicosis (using the approved Silicosis Notification Form) to NSW Health.

NSW Health:

- Receives notifications of silicosis from medical practitioners
- Provides notification data to the WHS regulators.

WHS regulators are responsible for investigating and following up workplaces where silicosis cases are identified.

Health Protection NSW (Environmental Health Branch) is responsible for managing the notification system and providing notification data to WHS regulators, as set out in the Memorandum of Understanding with SafeWork NSW.

SafeWork NSW is required to store notification data securely, and use the information to carry out their functions under their legislation.

5. Data management

The NSW Health Notifiable Conditions Information Management System (NCIMS) is currently not used to record notifications of silicosis.

Medical practitioners are to notify Health Protection NSW (Environmental Health Branch) using the Silicosis Notification Form (available at <https://www.health.nsw.gov.au/Infectious/Pages/notification.aspx>) via the secure fax number 9391 9960. The secure fax is sent as a .pdf or image file to the Environmental Health Branch inbox (MOH-EHB@health.nsw.gov.au).

Notifications are collected and stored in a user-restricted part of the records management system (Content Manager) by Environmental Health Branch, and provided to SafeWork NSW using the Ministry of Health secure file transfer product (Accellion), on a quarterly basis.

The quarterly reporting periods are:

- 1 January to 31 March
- 1 April to 30 June
- 1 July to 30 September
- 1 October to 31 December.

The Silicosis Notification Form should be transferred, at the latest, two weeks after the end of the reporting period (that is, by 14 April, 14 July, 14 October and 14 January each year). SafeWork NSW should be notified by email (silicanotifications@safework.nsw.gov.au) when the file transfer has occurred. Notification forms should not be sent by email.

6. Appendices

Appendix 1: [Frequency asked questions \(FAQs\) for medical practitioners](#)

Appendix 2: [Silicosis Notification Form](#)