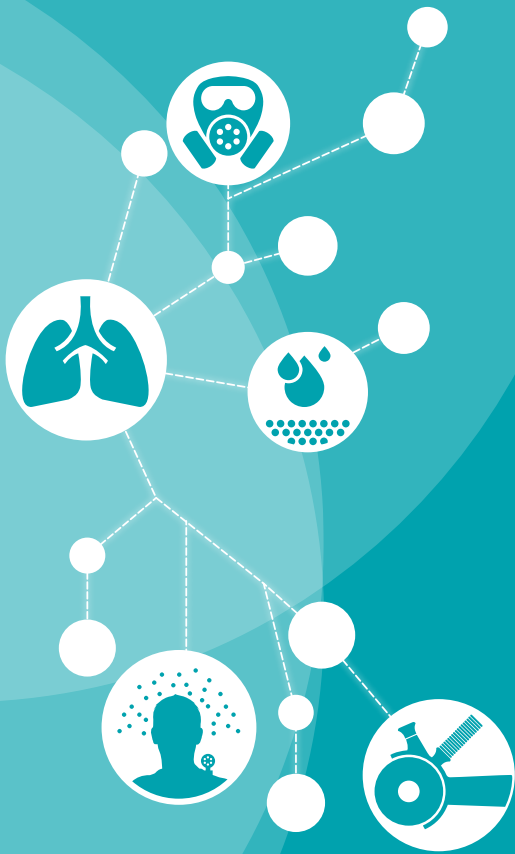


Information for employers

Managing respirable crystalline silica dust exposure in the construction industry



What is silica?

Silica is a mineral found in the earth's crust. The crystalline form of silica which is called quartz has been associated with a variety of diseases primarily affecting the lung.

Crystalline silica is a common mineral found in:

- most rocks, sands, and clays
- products such as concrete, mortar, brick, blocks, pavers, tiles, natural and composite stone benchtops
- cement-based materials such as fibre-cement sheeting and autoclaved-aerated concrete.

Dust containing respirable crystalline silica (RCS) is generated by high-energy processes such as cutting, sawing, grinding, drilling, polishing, scabbling and crushing of silica-containing materials.

RCS particles are so small they cannot be seen under ordinary lighting and stay airborne long after larger particles have settled to the ground – the small particle size means it is easily inhaled deep into the lungs.

Certain work processes can also create RCS exposure risks, including housekeeping activities involving dry sweeping, compressed air or blowers on silica-containing dusts.

Construction or building material	Amount of crystalline silica (quartz)
Sand and sandstone	96 - 100%
Calcium-silicate bricks	50 - 55%
Aggregate in concrete	30%
Clay bricks	12 - 27%
Fibre cement sheets	10 - 30%
Demolition dust	3 - 4%

Table 1: Typical concentrations of crystalline silica in building materials

Health risks

RCS is a hazardous chemical. Inhaling RCS can lead to silicosis, an incurable lung disease which can cause disability and death. RCS can also contribute to lung cancer, renal cancer and chronic obstructive pulmonary disease (COPD).

Silicosis usually follows exposure to RCS over many years, but extremely high exposures across the short-term can cause it to develop rapidly.

Legislation

Persons in control of a business or undertaking (PCBUs) working with materials that create exposure to silica dust must ensure no-one's health is affected by that work. This includes:

- providing and maintaining a safe and healthy work environment
- providing and maintaining safe plant and structures for working with materials containing silica
- ensuring safe systems of work
- ensuring safe use of silica containing substances
- providing information, instruction, training and supervision
- ensuring the workplace conditions are monitored to prevent illness from carrying out work with silica.

Specific silica requirements are found in the Managing respirable crystalline silica dust exposure in the stone benchtop industry Code of Practice 2019, the Foundry industry Code of Practice 2004, the Abrasive blasting Code of Practice 2013, and the Workplace Exposure Standards and their guidance.

Induction, information, training and supervision

The PCBU must provide induction, and training about silica hazards and must supervise the safe use of silica hazards in the workplace. Information provided should cover:

- the health risks from inhaling RCS
- where to gain information about RCS (e.g. safety data sheet or labels)
- how the work operations will expose workers
- how the control processes are intended to operate
- any use of respiratory protection and worker respirator fit and check processes
- what air monitoring results indicate
- the health monitoring process and the health monitoring report
- accessing all appropriate records on their work with and exposure to RCS.

The training given has to take into account the level of risk posed by the RCS exposure. Keep a record of who was trained, who conducted the training, when it was given, and the topics covered.

Health monitoring

You must ensure health monitoring is provided to workers who are carrying out ongoing work using, handling, generating or storing RCS and there is a significant risk to the worker's health because of exposure. Further guidance on determining significant risk can be found in Safe Work Australia's *Health Monitoring for Exposure to Hazardous Chemicals - Guide for persons conducting a business or undertaking*.

Controlling the dust

Where elimination or substitution of RCS materials or work processes is not practical, engineering controls such as dust extraction and water suppression must be used in addition to suitable respiratory protection. Common control options:

On-tool extraction

This method removes dust as it is being produced. It is a type of local exhaust ventilation (LEV) system that fits directly onto the tool. This system consists of several individual parts – the tool, capturing hood, an M or H class dust extraction unit or vacuum and tubing.

Water suppression

Water or fine mist suppression can also be used to control RCS dust when LEV is not suitable. However, it needs to be used correctly.

This means enough water supplied at the right levels for the whole time that the work is being done. Just wetting the material beforehand does not work. Examples for use include wet cutting methods for brick, tile, stone and concrete.

Isolation

Fully enclosed operator cabins, such as those found on earthmoving plant have been shown to effectively control exposure to RCS when fitted with properly designed and maintained HEPA air filtration.

RCS work processes should be done outdoors away from other workers where possible. Indoors, separate the RCS work processes from other work activities where possible.

Respiratory protective equipment (RPE)

RPE does not prevent or control RCS from becoming airborne. It should not be used as the primary means of control, but rather in combination with higher order controls like LEV or water suppression.

It is important to choose the right respirator for the job. The fit of a respirator to a worker's face is critical. Have workers fit tested to ensure the respirator is comfortable and capable of giving the right level of protection. The amount of time the respirator is worn also needs to be considered.

Selection of RPE should be undertaken in accordance with *AS/NZS 1715:2009 Selection, Use and Maintenance of Respiratory Protective Devices*.

Record-keeping

A workplace exposing workers to RCS will produce a number of documents which must be kept for significant time periods and be available for inspection by various parties. These records must be kept for a period of 30 years from the day a document was made:

- an air monitoring result (WHS Regulation Section 50). These records for respirable dust and silica must be readily accessible to those workers who have been exposed to the silica
- a health monitoring report (WHS Regulation Section 378). The period here is for at least 30 years after the record is made, but it may be longer.

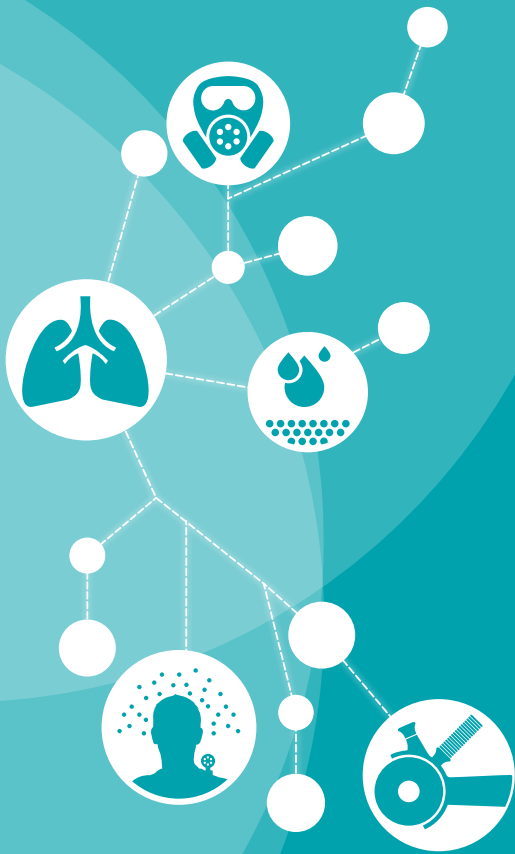
Workers who have been exposed at the workplace to silica must be permitted ready access to their exposure records. A useful procedure for workers exiting a workplace where air monitoring and health monitoring have been carried out would be to provide those workers with copies of each relevant report pertaining to a worker. All air monitoring and health monitoring records may also be reviewed by a Workplace Health and Safety Queensland inspector as part of an inspection process.

For more information

Call **1300 362 128** or visit **worksafe.qld.gov.au** and search for silica.

Information for workers

Managing respirable crystalline silica dust exposure in the construction industry



What is silica?

Crystalline silica is a common mineral found in:

- most rocks, sands, and clays
- products such as concrete, mortar, brick, blocks, pavers, tiles, natural and engineered stone benchtops
- cement-based materials such as fibre-cement sheeting and autoclaved-aerated concrete.

Do you work with products containing silica?

Dust containing respirable crystalline silica can be released when you cut, grind, sand, saw, drill, polish products that contain crystalline silica.

Certain work processes can also create silica exposure risks, including housekeeping activities involving dry sweeping, compressed air or blowers on silica containing dusts.

What are the health risks of respirable crystalline silica?

Silica dust particles are so small they cannot be seen and stay airborne long after larger particles have settled to the ground – the small particle size means it is easily inhaled deep into the lungs.

Silica dust can be harmful when it's inhaled into your lungs over a long period of time at low to moderate levels, or short periods at high levels.

Breathing in this dust can lead to serious diseases, including:

- silicosis - irreversible stiffening of the lungs
- lung cancer
- chronic obstructive pulmonary disease
- kidney disease.

There is no known cure for silicosis.

How your workplace must keep you safe

Depending on the materials you are working with your employer must eliminate or minimise your exposure to silica by controlling the dust. Dust controls can include:

On-tool dust extraction

This method removes dust as it is being produced and prevents it from being released into the atmosphere.

It is a type of local exhaust ventilation system that fits directly onto the tool. This system consists of several individual parts – the tool, capturing hood, an M or H class dust extraction unit or vacuum and tubing.

Water suppression

Water or fine mist suppression can also be used to control silica dust when local exhaust ventilation is not suitable. However, it needs to be used correctly. This means enough water supplied at the right levels for the whole time that the work is being done. Just wetting the material beforehand does not work. Examples for use include wet cutting methods for brick, tile, stone and concrete.

Isolation

Fully enclosed operator cabins, such as those found on earthmoving plant have been shown to effectively control exposure to silica when fitted with properly designed and maintained high efficiency air filtration.

Silica work processes should be done outdoors away from other workers where possible. Indoors, separate the silica work processes from other work activities where possible.

Respiratory protective equipment

Wearing a respirator does not stop silica from becoming airborne. Respirators should not be used as the primary means of control, but rather in combination with higher order controls like local exhaust ventilation or water suppression.

It is important to choose the right respirator for the job and you must wear it for the whole-time silica is in the air.

If you wear a tight-fitting respirator, you must pass a respirator fit-test to ensure it provides a good seal for your face size and shape. You must be completely clean-shaven or clean-shaven beneath the seal of the respirator for the respirator to seal properly.

Health monitoring

You must be provided with health monitoring when you:

- carry out ongoing work using, handling, generating or storing RCS
- are exposed to significant risk to your health from the work.

For more information on health monitoring and determining significant risk, visit [worksafe.qld.gov.au](https://www.worksafe.qld.gov.au) and search for health monitoring.

What you can do to protect your health

- Make sure the dust controls pull the dust away from you.
- Learn how to clean and maintain the dust controls in your workplace.
- To clean up dust, use wet sweeping and wiping or vacuums that have high efficiency filters. It is not safe to dry sweep or use compressed air to clean surfaces or clothes.
- Inspect, clean, store, and wear your respirator correctly.

What should I do if I think I have symptoms from breathing dust?

If you think something at work is causing your symptoms, let your employer or health and safety representative know.

If you are concerned about silicosis, are coughing or have trouble breathing, visit your doctor to discuss your concerns.

You should also talk to your employer about health monitoring at your workplace.

What are your workers' compensation rights?

If you have an illness caused by the work that you do, you have the right to workers' compensation. This applies if you are currently working or retired.

If your doctor issues a medical certificate that indicates you may have a work-related respiratory disease, you can make a workers' compensation claim.

For more information

To lodge a workers' compensation claim or for more information call **1300 362 128** or visit [worksafe.qld.gov.au](https://www.worksafe.qld.gov.au) and search for silica.



Facial hair and respiratory protection

Workers must take all necessary steps to ensure the proper fit and use of respirators. When wearing tight-fitting respirators, workers must ensure an effective face seal. This means being clean-shaven or only having facial hair that doesn't interfere with the fitting surfaces and the valve of the respirator.

For workers who want to keep facial hair that may interfere with the operation or proper fit of tight-fitting respirators, a powered air purifying respirator with a loose hood will provide the protection needed.

What to expect from an inspector

Inspectors will take enforcement action where a person conducting a business or undertaking has provided tight-fitting respirators to workers without undertaking fit-testing and/or facial hair is likely to prevent the seal of the respirator to the face.



Fit-testing requirements for tight-fitting respirators

Many common types of respirators are tight-fitting where performance relies on a good seal between the respirator and the wearer's face.

If there isn't a good seal, contaminated air will leak into the respirator and the wearer may not get the level of protection that is needed to protect their health.



Note: Everyone's face is a different size and shape so there is no 'one size fits all'.

Workers must pass a respirator fit-test before they first start wearing a tight-fitting respirator. Fit-testing measures the effectiveness of the seal between the respirator and the wearer's face. It is required for all tight-fitting respirators, including:

- half-face disposable
- half-face reusable
- full-face reusable
- tight-fitting powered air purifying respirators (PAPR).

There are two methods of fit-testing that meet AS/NZS1715:2009 Selection, use and maintenance of respiratory protective equipment:

- Qualitative – a pass/fail test that relies on the wearer's ability to taste or smell a test agent. This type of test can only be used on half-face respirators.
- Quantitative – uses specialised equipment to measure how much air leaks into the respirator. This type of test can be used on half-face respirators, full-face respirators and PAPR.

Quantitative fit-testing results are more objective than qualitative testing because some workers have difficulty with their ability to taste or smell. This can result in a potential for a false pass to the qualitative fit-test and worker health not being adequately protected.



Fit-checking is a quick check to ensure the respirator, which has already been fit-tested, has been properly positioned on the face and there is a good seal between the respirator and face. Each time a tight-fitting respirator is put on, the wearer should carry out a fit check, following the manufacturer's instructions.

A fit-check does not replace the need for a fit-test.

Full-face respirators and PAPR must be fit-tested using the quantitative method.

All fit-testing must be carried out by a competent in-house person, manufacturer, supplier or consultant:

- before wearing a tight-fitting respirator for the first time
- each time a new make or model of respirator is issued
- whenever there is a change in the wearer's facial characteristics or features which may affect the facial seal (e.g. large weight loss or gain).

Fit-testing should be repeated on a regular basis based upon risk assessment (e.g. every one or two years).



Note: Facial hair that lies along the sealing surface of a tight-fitting respirator will stop it sealing properly. Fit-testing must be carried out on males who are clean-shaven or have no hair between their face and the fitting surfaces of the respirator face piece.

Keep a written record of fit-tests carried out for each worker, including the:

- type of test performed
- make, model, style and size of respirator tested
- date and result of the test.

Issue workers with a fit-test record card after fit-testing.

For more information visit:

- www.standards.org.au and search **AS/NZS 1715**
- www.worksafe.qld.gov.au and search **respiratory protective equipment**

Facial Hairstyles and Filtering Facepiece Respirators

RESPIRATOR SEALING SURFACE



*If your organization has an evaluation data, some of these styles may be acceptable for use with certain respirators. These graphics may not include all types of facial hair styles. For any style, hair should not cross under the respirator sealing surface.

Source: OSHA Respiratory Protection Standard

<https://www.osha-slc.gov/OSHA-Respiratory-Protection-Standard>

Further Reading: NIOSH Respirator Trusted Source Webpage

<https://www.niosh.gov/OSHA-Respiratory-Protection-Standard>



s47(3)(b))

s47(3)(b))











REMOVE FOR CLEANING

H

VARNING! Denna utrustning innehåller hälsofarligt damm. Tömning och service, inklusive filterbyte får endast utföras av fackmän med lämplig personlig skyddsutrustning. Får ej användas utan komplett filterssystem.

WARNING! This appliance contains dust hazardous to health. Emptying and maintenance operations, including removal of the dust bag, must only be carried out by authorised personnel, wearing suitable personal protection. Do not operate without the full filtration system fitted.

ACHTUNG! Dieses Gerät enthält gesundheitsgefährdenden Staub. Leertungs- und Wartungsarbeiten, einschließlich der Beibehaltung der Staubbeutel, dürfen nur von Fachmännern durchgeführt werden. Entsprechende Schutzkleidung tragen. Dieses darf niemals ohne vollständige Filtersystemanlage betrieben werden.



CONCRETE

(07) 54



s47(3)(b))

s47(3)(b))

s47(3)(b))

s47(3)(b))





