What is silica?

Crystalline silica is found in soil, rocks, granite, sand, clay, concrete, mortar and other mixtures from the earth's crust.

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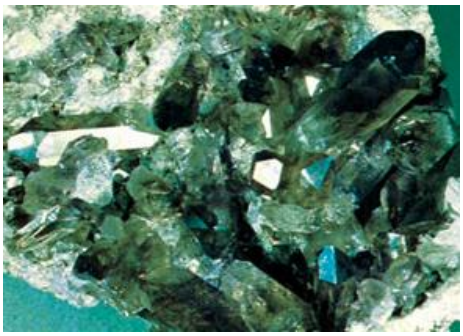

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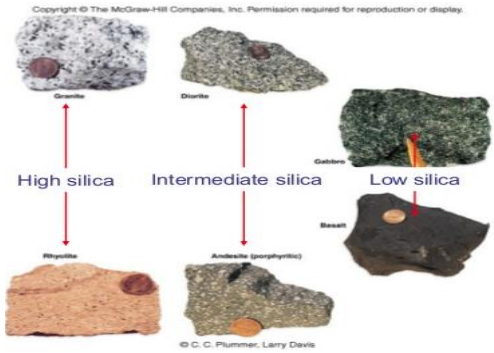

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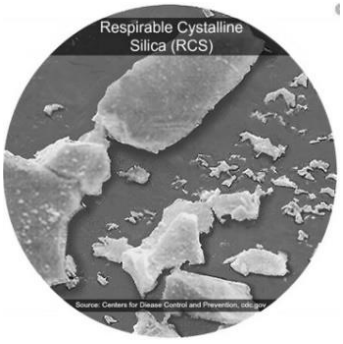
Where can we find silica at work?

Anywhere we cut, grind, sand, polish or drill silica.

"Respirable particles" are small enough to get deep into your lungs where they can't be cleared with coughing. They can't be seen with the naked eye.



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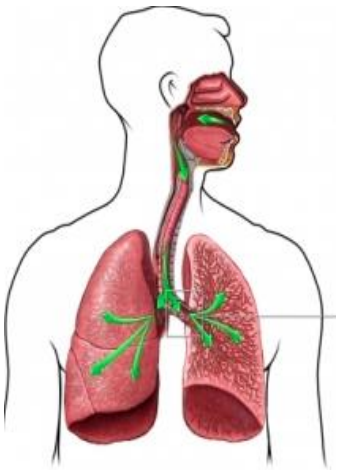

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[1] https://ancavasculitisnews.com/2018/01/29/case-study-links-shipyard-workers-microscopic-polyangiitis-to-silica-dust/
[2] https://www.britannica.com/science/silica-mineral
[3] http://www.geography.hunter.cuny.edu/tbw/Iceland.Field.Trip/Lectures/4.magma.igneous.rocks/magma_and_igneous_rocks.htm
[4] https://www.slideshare.net/koolsk/mc-connell-2epptch07
[5] https://bosstek.com/silica-dust-compliance/silica-particle-size-behavior/
[6] https://www.wnyurology.com/content.aspx?chunkiid=180075

Work where there may be silica:

- Engineered stone (kitchen benchtops)
- Sand blasting
- Rock drilling
- Bricks, tiles, mortar
- Concreting
- Construction
- Road works
- Mining, quarrying, tunnelling
- Stonemasonry
- Glass manufacture
- Foundry work
- Ceramics and pottery
- Oil and gas
- And other

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Why all the talk about silica now?

We've known about silica for years.

Lately, we found that working with engineered stone (kitchen benchtops) can have up to 90% silica, more than in the mining industry. Some engineered stone workers in Queensland Australia got very serious health problems from very high silica exposures.

WorkSafe New Zealand is currently actively checking workplaces with engineered stone.

[7] https://en.wikipedia.org/wiki/Silicosis
[8] https://www.safetyandhealthmagazine.com/articles/15999-cdc-more-information-needed-on-silicosis-deaths-among-young-workers

How can you protect yourself from silica?

Most importantly, ask about what your workplace is doing about silica and about the controls:

- Substitute – using marble instead of engineered stone for kitchen benchtops, using slag or shot instead of sand for blasting.
- Control dust – the most important!
  - Dust collection systems
  - Extraction ventilation
  - On-tool extraction
  - Water suppression (not just a spray bottle).
- Don't use brooms to sweep up dust, or compressors to blow it off. Use an H-class HEPA-filtered vacuum cleaner.
- Limit the time you spend working with silica.
- Wear, use and store your PPE correctly (for silica, overalls, gloves, respirators and sometimes goggles).
- Wash your hands and face before eating, drinking, smoking and going home.
- Don't wear your dusty clothes home.

FIGURE 1: Re-usable half-face respirator (cartridge)

FIGURE 2: Full-face respirator (cartridge)

FIGURE 3: Full-face powered respirator (cartridge)

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[9] https://worksafe.govt.nz/topic-and-industry/dust/silica-dust-in-the-workplace/
[10] https://www.alsco.com.au/2017/07/benefits-proper-hand-washing/

How can silica affect your health?

We're learning more about silica every day.

We know that huge doses of silica may cause health problems quickly. Small doses of silica over a long time may take longer. There may be no health effects at all.

The main problem is Dust Lung Disease (called pneumoconiosis or silicosis):

- Respirable (tiny) particles of silica (and other dust) can inflame the lungs and cause scarring.
- The bad form of silicosis (progressive massive fibrosis) means a lot of scar tissue replaces lung tissue.
- Sometimes, patients can feel totally fine, or, they can have a chronic cough, get short of breath or have other symptoms.
- Silica can also affect your kidneys, immune system and cause some cancers.

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Groups of occupational hygienists (they measure dust levels), nurses, various specialist doctors (lung, immune, occupational, radiology and others), researchers, ACC, the Ministry of Health, WorkSafe and other experts are currently figuring out the best way of managing the health effects of silica.

[11] https://healthtimes.com.au/hub/respiratory/53/news/aap/queensland-health-minister-said-that-silicosis-could-become-an-epidemic/3959/

If you're concerned about silica exposure:

1. Firstly – don't panic, we've all been exposed to some silica. If you feel ok, you've worn your PPE and your workplace always had the right controls, then you're probably fine.
2. Talk to your boss. Ask about the controls – employers in New Zealand have standards that can help to keep you safe.
3. Ask your boss what you can do about silica prevention.
4. Check out the information on the WorkSafe website.
5. Talk to your occupational health nurse or doctor (GP) if you think you've been exposed to a lot of silica, over a long time, or if you have breathing problems.

What do nurses and doctors do?

Our approach has changed a lot over the years, as we've learned more about silica.

It's important not to panic – not every cough is bad news, but you should get it checked by your nurse or doctor (GP).

The doctor may:

- Ask you about symptoms like shortness of breath, cough, sputum, chest tightness, poor exercise tolerance.
- Ask about your jobs, now and in the past.
- Ask about your exposure to silica and dust, fumes, gases, vapours and other hazards that could harm your health, through work and non-work.

It's helpful if you've talked to your boss first. Bring along any useful information, like dust monitoring tests, if you can.

What tests do I need?

Stop – just because you've worked with silica doesn't mean you need any tests.

Let the doctor decide – a medical pathway is being developed.

You may be referred to a specialist doctor, such as a Respiratory Physician (lung doctor), an Occupational Physician (work doctor) or similar.

The Physician may ask you lots of questions and examines your lungs. They may decide to do tests, depending on your exposures and symptoms. Every worker is different, so you may not get the same as your workmates.

The tests aren't perfect, and we have to use them carefully. It would be awesome to have a simple yes/no test, but we don't have one ☹.

We've learned that chest X-rays and spirometry (blow-in-the-tube) tests can sometimes be normal even with lung damage.

Other tests, such as high-resolution CT scans, are good at detecting lung problems but they expose people to radiation. Not everyone needs these.

Blood tests give us clues but are far from perfect.

It's best to speak to a nurse or doctor about the right approach for you.

New treatments are being developed all the time.

Remember:

1. Everyone is responsible for managing hazards and risks. Speak up! Ask! There is no such thing as a stupid question.
2. Get the right training.
3. Make sure you are competent for the job you are doing, every day. Look after yourself and your workmates.

Where can you get more information?

Your employer, your occupational health nurse, doctor and WorkSafe.

Any questions?

Ask Dr Mary Obele any health question you want, and she will answer them in the next publication. Your question could help you and other workers.

Send your questions or comments to office@minex.org.nz.

Disclaimer- This is general advice. If you have questions, speak with your occupational health nurse or doctor.

A special thankyou to Dr Mary Obele for developing this information sheet.

Dr Mary Obele is an Occupational and Environmental Physician and a GP.