

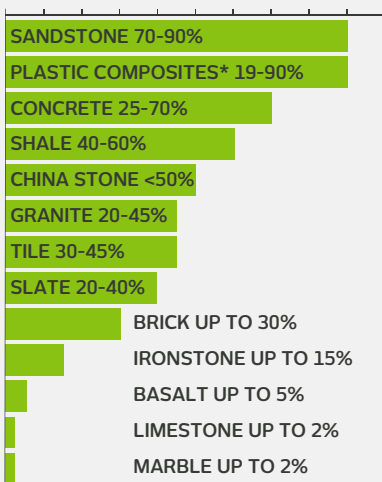
Silica Dust:

The Facts, The Risks & How To Protect Yourself

Silica Dust: The Facts

- Silica dust is the 2nd highest cause of occupational cancer deaths, after asbestos
- Over 500 UK Construction workers die every year from exposure to silica dust
- Harmful silica dust particles are created when working with stone, rock, concrete, brick, mortar, plaster and industrial sand
- Silica dust particles are 100 times smaller than a grain of sand
- Overexposure can lead to silicosis, tuberculosis, kidney disease, chronic obstructive pulmonary disease and arthritis

The Numbers: Materials Containing Silica



Silica dust kills over 1,000 workers in the UK every year

Currently, over half a million construction workers are exposed to silica dust in the UK, even with today's tighter regulations. Second only to Asbestos, it is one of the main causes of occupational cancer deaths.



What is Silica Dust?

Crystalline silica is a material found naturally in the earth's crust. It is found in sand, stone, rocks, concrete, bricks and mortar. The dust from crystalline silica is generated during work operations that significantly disturb any of these materials, such as cutting, sawing, sanding and drilling.

Silica dust particles are over 100 times smaller than a particle of beach sand, meaning you won't even be aware of inhaling them. And due to their microscopic size, the body's natural defences can't stop them from penetrating deep into the lungs with potentially fatal consequences.

Only 16% of UK construction professionals believe workers know the risks of breathing in dust particles

Sources of Silica Dust in Construction

- Demolition
- Cutting or grinding
- Sanding
- Drilling
- Abrasive blasting
- Stonemasonry
- Buffing
- Polishing and tunnelling

Workplace Exposure Limits (WEL's) for Silica Dust

“WELs are concentrations of hazardous substances in the air, averaged over a set period of time
- HSE England (2025)”

Because silica dust has been identified as a carcinogen, the Health and Safety Executive (HSE) set an exposure limit for respirable crystalline silica (RCS) of 0.1 mg/m over an 8 hour time weighted average.

How does this translate into everyday life? The diagram below puts it into perspective.



The amount of silica dust considered safe to absorb in a day.

What are the health implications of exposure to Silica dust?

With continuous exposure to silica dust, its build-up over time can lead to fatal cancers, diseases and severe chronic illnesses, including:

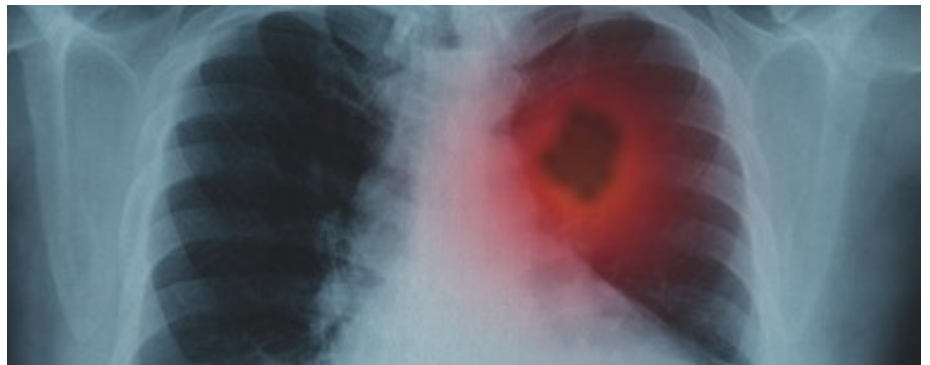
Silicosis: A form of occupational lung disease caused by inhaling large amounts of crystalline silica dust over a long period of time. This continuous build-up leads to areas of hardened and scarred lung tissue which results in the lungs being unable to function effectively.

Chronic obstructive pulmonary disease (COPD): The collective term of a group of lung diseases where the lungs become inflamed, damaged and narrowed. The result is an inability to breathe easily making day-to-day activities a challenge.

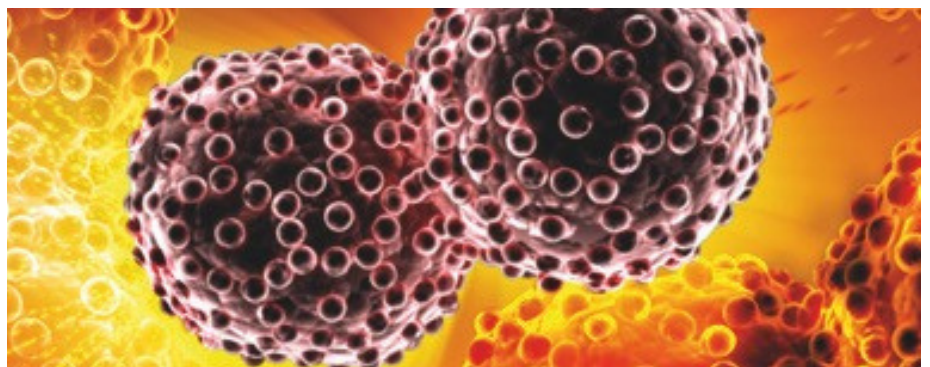
Tuberculosis: A disease of the lungs with symptoms including a persistent cough, fatigue, loss of appetite and fever. If left untreated, tuberculosis can kill.

Kidney disease & Rheumatoid arthritis: Continuously inhaling silica dust can cause renal diseases, and studies also link skin exposure to silica dust particles with the development of autoimmune disorders such as SLE, rheumatoid arthritis and scleroderma.

Lung cancer: Exposure to silica dust can cause lung cancer, contributing to the occupational deaths seen within the construction industry. The International Agency for Research on Cancer (IARC) notes: "Crystalline silica in the form of quartz or cristobalite dust is carcinogenic to humans (Group 1)."



X-ray image of patient lungs to lung tumour.



Lung cancer cells.

Employer Responsibilities

Employers have a legal duty to take all practicable steps possible to ensure that the health of their workers is protected by removing, isolating or reducing silica dust in the workplace.

Ensure workers know best practice when carrying out work activities which may expose them to silica dust and ensure that they're trained in the following areas:

- Dust risks and how this can harm their health
- Dust controls and how to check that they are working
- How to maintain and clean equipment
- What RPE should be used and how to look after each piece
- What to do if something goes wrong

RVT offers a free site assessment and best practice guidance

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Controlling the harmful effects of Silica dust

To protect workers from the harmful effects of silica dust, there are three key control methods to apply:

1. Assess the risks

When assessing the risk of exposure to silica dust, it's important to consider these four points:

- **Type of task:** If machinery such as sanders, grinders and grit blasters are to be used, more dust will be generated.
- **Work environment:** Dust builds up quicker in small spaces. Both indoor and outdoor environments pose risk but control methods vary.
- **Time involved:** If the task is complex or large, the length of time that dust will be generated increases, as does worker-exposure.
- **Frequency:** For repetitive tasks, dust is continually being produced and for workers carrying out the activity regularly, the risk grows.

2. Implement control measures

Per the hierarchy of control, you should first look to see if there is a way to eliminate or substitute the risk by considering:

- **Alternative materials**
- **Different methods of work**

If the risk cannot be eliminated or substituted you will need to select the appropriate engineering controls:

- **Extraction and filtration units:** Select an extraction system that has a suitable capture hood, sufficient airflow for the amount of dust being produced, and a HEPA filter that will remove 99.97% of particulate. Containment tents or enclosures and creating a negative pressure environment can also reduce the risk of dust migration.
- **Water:** Using water to dampen the work area before, during and after the dust-generating task can reduce harmful dust particles from permeating the air. For this method to be effective, sufficient water at the right levels must be used.
- **Respiratory protective equipment (RPE):** In addition to the control methods detailed above, RPE should also be provided and used correctly. When working in an environment where dust is present, the assigned protection factor (APF) is a minimum of 20.

3. Review the controls

Monitoring control methods must be carried out regularly, including:

- ☐ **Are procedures in place to ensure the work is being carried out correctly?**
- ☐ **Are the control measures effective or is there still a visible dust in the air?**
- ☐ **Have you involved all site personnel to help identify problems and find solutions?**
- ☐ **Is the equipment being properly maintained?**



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The 3Cs[®] Methodology



Capture the hazard

Position the dust extraction hood as close as possible to the activity to ensure the dust is captured at source.

Contain the hazard

The immediate work area should be contained as much as possible to prevent dust/fume migrating and affecting other workers on site or people nearby.

Control the hazard

Negative pressure can be applied to prevent dust migration outside of the work area.



Capture
Contain
Control

Visit www.rvtgroup.co.uk
to download more resources.

Engineering Controls for Silica Dust

As mentioned on the previous page, if you can't eliminate or substitute the hazard, you will need to source suitable engineering controls to manage it.

Suitable dust extraction & filtration units offered by RVT Group:

Ideal for Silica Dust



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DUSTEX[®] Raptor

The Raptor incorporates a three-stage filter system, including a H13 HEPA filter, making it ideal for protecting workers against silica dust. The unit comes with a capture hood and ducting. This unit is portable and lightweight, and has a variable airflow of up to 1000 m³/h Airflow.

Ideal for Silica Dust

LEARN MORE



DUSTEX[®] DustMaster[®] Pro

The DustMaster[®] Pro is the ultimate solution for silica dust control. The unit features; a 600mm x 600mm capture hood, ducting and a sealed casing to ensure up to zero dust migration. Three stages of filter media sit within the plastic body, alongside a high performance mixed flow fan. The initial filter is a grade EU4 washable filter, followed by an EU7 filter and a HEPA filter. This unit is compatible with both H13 and H14 HEPA filters making it ideal for silica dust control. This unit can achieve an impressive airflow of up to 2500 m³/h when used with 3 stages of filter media.



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