

Reducing workplace dust limits could significantly reduce silicosis cases

August 7 2024, by Samantha Rey



Credit: Patrick Howlett

Scientists have found that a worker's lifetime exposure to "permissible" levels of silica dust results in a considerable risk of developing silicosis.

New research led by Imperial College London has found that workplace exposure to [silica dust](#) is linked to an increased risk of the acute lung condition silicosis and recommends current occupational exposure limits should be halved.

Silicosis is a progressive incurable lung disease caused by breathing in silica dust. Millions of people around the world work in jobs where they are exposed to silica dust, including miners, pottery workers and those involved in the manufacture and fitting of quartz and granite kitchen counters. The UK's legal occupational limit is $0.1\text{mg}/\text{m}^3$ but there is a lower limit in some other countries.

An All Party Parliamentary group in the UK Government has called for evidence regarding whether current occupational exposure levels are safe.

The researchers, at Imperial's National Heart and Lung Institute, looked at all the available evidence relating to silicosis research, including studies drawing on X-rays, post-mortem examination results, and death certificates. They wanted to establish the cumulative risk of silicosis and identify the exposure level at which the risk would be reduced.

In the research, published in the journal *Thorax* today titled "[Relationship between cumulative silica exposure and silicosis: a systematic review and dose response meta-analysis](#)," the team assessed eight studies involving 8792 cases of silicosis among 65,977 participants.

The majority (six) of the studies involved miners. For this group, researchers found that if average exposures over a 40-year working lifetime was halved, from $0.1\text{mg}/\text{m}^3$ to the current permissible limit in the US of $0.05\text{mg}/\text{m}^3$, there would be likely to be a significant reduction of 298–344 fewer cases per 1000 miners, equal to a reduction of 77%.

While only two studies related to non-miners, the researchers believe this same reduction would lead to 9–33 fewer cases per 1000 of these workers.

Study author Dr. Patrick Howlett, MRC Clinical Research Fellow at Imperial College London, said, "This research supports the halving of legal limits over an 8-hour working shift. Although lowering exposure limits across different settings is challenging, it has been shown to be achievable. We strongly believe it is important to reduce the number of silicosis cases, given the severity of the disease."

The authors caution that more studies are needed among non-miners to understand differences between occupations. In particular, no studies link dust exposures to the risk of silicosis among artificial stone workers, who suffer from a particularly severe form of silicosis.

More information: Patrick Howlett et al, Relationship between cumulative silica exposure and silicosis: a systematic review and dose-response meta-analysis, *Thorax* (2024). [DOI: 10.1136/thorax-2024-221447](https://doi.org/10.1136/thorax-2024-221447)

Provided by Imperial College London

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