

# Report: High risk of lung cancer from respirable crystalline silica even below the current occupational exposure limit

September 10 2024

---



Credit: Pixabay/CC0 Public Domain

A [new report](#) from the Nordic Expert Group (NEG) and the Dutch Expert DECOS committee has evaluated the health hazards and

calculated cancer risk of occupational exposure to respirable crystalline silica (RCS). Several experts from Karolinska Institutet participated in the report.

Gunnar Johanson, professor of toxicology at the Institute of Environmental Medicine at Karolinska Institutet and chairman of NEG, explains, "Crystalline silica is abundant in nature and in many [work environments](#), such as mining, farming, construction, foundry processes and production of glass, ceramics and cement.

"When cut or crushed, dust containing very small RCS particles is released and reaches deep down in the airways and may cause severe diseases including silicosis and [lung cancer](#)."

One example is artificial stone, also called engineered stone or synthetic stone, which has become popular in kitchen benchtops. Huge amounts of RCS particles are released during manufacturing, processing and installation. Artificial stone was recently banned in Australia (June 2024) because of the severe health risks.

At the request of the Dutch and Nordic authorities, the experts have evaluated the [health hazards](#) and [cancer risk](#) of occupational exposure to RCS. Recent epidemiological studies have shown excess lung cancer risk among workers exposed to RCS even in the absence of silicosis although silicosis increases the risk of developing lung cancer.

Johanson says, "We decided to use lung cancer as the critical effect, the adverse health effect that occurs first at increasing exposure. As a direct genotoxic mechanism cannot be excluded, we used a non-threshold (risk-based) approach to calculate the cancer risk."

Two cancer risk levels were calculated:

- Four additional deaths of lung cancer per 100,000 workers after 40 years of occupational exposure at  $0.0004 \text{ mg/m}^3$  (low risk level, no extra protective measures need to be taken).
- Four additional deaths of lung cancer per 1,000 workers for 40 years of occupational exposure at  $0.04 \text{ mg/m}^3$  (high risk level that should not be exceeded).

These recommended risk levels are considerably lower than the current legal occupational exposure limits in the Netherlands, Denmark, Finland, Norway and Sweden.

**More information:** Report: [Respirable crystalline silica](#)

Provided by Karolinska Institutet

Citation: Report: High risk of lung cancer from respirable crystalline silica even below the current occupational exposure limit (2024, September 10) retrieved 12 September 2024 from <https://medicalxpress.com/news/2024-09-high-lung-cancer-respirable-crystalline.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.