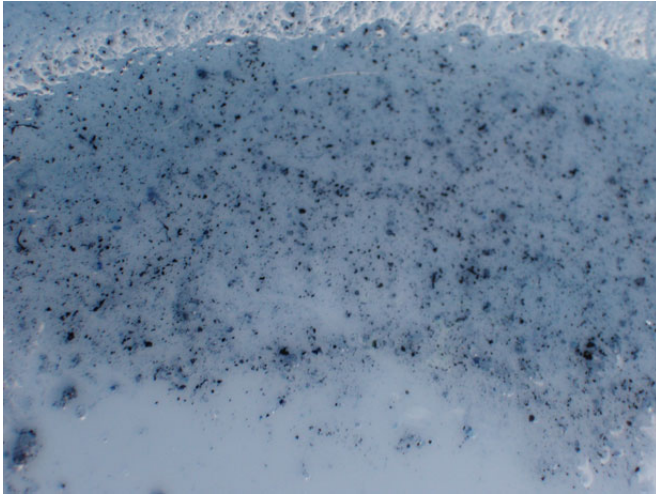


Dust at work can lead to rheumatic diseases

16 April 2021



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If you are exposed to silica (quartz) dust at work—e.g. from working with concrete and granite—you have a greater risk of certain types of rheumatic disease. This is shown by results from Aarhus University and Aarhus University Hospital, which have just been published in the *International Journal of Epidemiology*.

As the research results from Aarhus University show, exposure to [silica dust](#) comes at a cost.

"Exposure to silica [dust](#) at work, which is the case especially at workplaces within construction and industry, may lead to autoimmune rheumatic diseases—even at low levels of exposure," says one of the researchers behind the largest study of its kind, Medical Doctor and Ph.D. Signe Hjuler Boudigaard from Aarhus University and Aarhus University Hospital.

Silica dust is formed when flint, sandstone, granite and concrete are grinded or processed in other ways. Some of the dust consists of [small particles](#) which—when you inhale them—are carried right down into the smallest parts of the lungs. This so-

called respirable dust accumulates in the lungs, where it causes an inflammatory reaction and activates the immune system.

The risk of rheumatic diseases increases

The researchers examined the association between exposure to silica dust and the rheumatic diseases systemic sclerosis, rheumatoid arthritis, lupus erythematosus and small vessel vasculitis, which is a chronic inflammation of the small blood vessels.

They found that the risk of autoimmune rheumatic diseases increased with increasing exposure levels of silica dust. The risk for persons with the highest exposure was one-and-a-half times greater compared to non-exposed people.

The survey comprised 1,541,505 men and 1,470,769 women from the Danish labor force from 1979 to 2015. A total of 17,000 were diagnosed with one of these autoimmune diseases,

and of these, 1,490 had been exposed to silica dust at work. The study shows a clear association between level of exposure to silica dust at work and autoimmune rheumatic disorders, most clearly for systemic sclerosis and rheumatoid arthritis.

"The most important competing factor is [tobacco smoking](#). We accounted for smoking and there was still an association between silica exposure and autoimmune rheumatic diseases. We know that smoking is not randomly distributed in the population, so it was important to take this into account," says Henrik Kolstad, professor at Aarhus University and Aarhus University Hospital and continues:

"In Denmark and Europe, the occupational exposure limit for silica dust is twice the limit in the USA. It's therefore clearly relevant to include our findings when reviewing the current Danish occupational exposure limit."

The next step is to examine whether exposure to

[silica](#) dust leads to increased levels of antibodies specific for autoimmune rheumatic diseases. According to Henrik Kolstad, the purpose of these studies is to substantiate the causal relationship and gain insight into the possible causal mechanisms.

More information: Signe Hjuler Boudigaard et al. Occupational exposure to respirable crystalline silica and risk of autoimmune rheumatic diseases: a nationwide cohort study, *International Journal of Epidemiology* (2021). [DOI: 10.1093/ije/dyaa287](https://doi.org/10.1093/ije/dyaa287)

Provided by Aarhus University

APA citation: Dust at work can lead to rheumatic diseases (2021, April 16) retrieved 25 April 2021 from <https://medicalxpress.com/news/2021-04-rheumatic-diseases.html>

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