

Occupational exposure to particles may increase the risk of chronic kidney disease

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Exposure to dust and particles at work may increase the risk of chronic kidney disease, a University of Gothenburg study shows. Among Swedish construction workers, followed since the 1970s, the risk was

15% higher among exposed.

Chronic kidney disease is the most common form of kidney disease and involves a slow and progressive deterioration of the kidneys' ability to cleanse the body. Harmful substances and fluids that would otherwise have been excreted from the body with the urine are instead retained.

Research in recent years shows that outdoor air pollution particles from sources such as industry, vehicle exhaust and heating may increase the risk of [chronic kidney disease](#). The current study shows that this is also likely to be the case for occupational exposure to particles in the construction industry.

The first author of the study is Karl Kilbo Edlund, a Ph.D. student in occupational and environmental medicine at the Sahlgrenska Academy at the University of Gothenburg:

"We see a clear link between having worked in construction environments with high dust levels and the risk of developing chronic kidney disease before the age of 65. But further studies are required to show whether there is a causal link and to identify the biological mechanisms," he says.

The importance of prevention

The study, [published](#) in the journal *Occupational and Environmental Medicine*, is based on data from more than 280,000 construction workers who participated in health surveys between 1971 and 1993. The surveys were organized by Bygghälsan, a former [occupational health](#) service for the construction industry.

The results reveal that construction workers exposed to dust and particles were about 15% more likely to be diagnosed with chronic kidney disease

and receive medical treatment to replace lost kidney function. However, the increased risk did not persist beyond retirement age.

The study is part of a research project about particles and kidney disease, which focuses on health, working life and welfare. The project leader is Leo Stockfelt, Associate Professor of Occupational and Environmental Medicine at Sahlgrenska Academy, University of Gothenburg.

"Chronic kidney disease is a serious disease that has a major impact on an individual's quality of life, increasing the risk of secondary diseases and leading to high health care costs. Primary prevention is therefore of great importance," he says.

More to do on occupational health and safety

Improvements in workplace emissions and the use of personal protective equipment have reduced the [occupational exposure](#) of construction workers to [particulate matter](#) over the period studied, from the 1970s to the 1990s. This is believed to have contributed to a reduction in kidney disease, but according to the researchers, more needs to be done to improve the occupational environment within the construction industry.

The study is the first to investigate the risk of kidney disease in [construction workers](#), using registry data from Bygghälsan as a basis. The material, managed by Umeå University, has been used in several previous studies on occupational environment and health within the [construction industry](#).

The next step for the research team will be to study the link between dust and particle exposure and kidney disease in further groups, to see if the results can be confirmed and to better identify the mechanisms.

More information: Edlund, K. K. et al. Occupational particle exposure and chronic kidney disease: a cohort study in Swedish construction workers, *Occupational and Environmental Medicine* (2024). DOI: [10.1136/oemed-2023-109371](https://doi.org/10.1136/oemed-2023-109371). oem.bmj.com/content/81/5/238

Provided by University of Gothenburg

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