

Study finds high amounts of silica exposure in previously deployed military veterans

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Since the conflicts that followed 9/11 in 2001, military veterans deployed to areas in Southwest Asia, Iraq, Afghanistan, and the Horn of Africa have been developing respiratory diseases caused by inhaling

particulate matter linked to their deployment locations and job duties.

New research published in the [*International Journal of Environmental Research and Public Health*](#) shows levels of silica and other silicates are significantly higher in the lungs of those who have had past deployments compared to normal lung tissue.

"Using elemental analysis of lung tissue, we examined the content of different elements—silica, titanium, lead and other metals in lung tissue samples from veterans who have deployed since 2001," said Cecile Rose, MD, MPH, occupational pulmonologist at National Jewish Health and senior author of the published study.

"This research gives us greater insight into hazardous military exposures. It is important for our service members, because when they come back from deployment with respiratory symptoms, their symptoms get taken seriously."

Environmental dust storms, local polluting industries and [military operations](#) generate airborne hazards, not only in the line of duty, but also during leisure activities and sleep. Military operations frequently contribute to [particulate matter](#) burden due to sources such as exhaust from vehicles, aircraft, and heaters, along with smoke from fires, explosive blasts and burn pits. Some military personnel have jobs that expose them to potentially hazardous airborne vapors, such as dusts, gases or fumes.

For this study, scientists at the U.S. Geological Survey (USGS) worked with National Jewish Health investigators to test the lung tissue samples using sensitive tools.

"The sophisticated equipment and techniques used by USGS were essential to measure the amount and types of dusts that are retained in

the lungs following deployment," said National Jewish Health researcher Lauren Zell-Baran, Ph.D., MPH.

"This was a cutting-edge approach combining the tools of geological science and pulmonary medicine to answer questions about what causes lung inflammation and disease."

This study underscores the importance of controlling particulate exposures in military occupational settings, particularly dusts containing silica and silicates, to minimize risk for chronic [respiratory diseases](#).

More information: Heather Lowers et al, Particle Morphology and Elemental Analysis of Lung Tissue from Post-9/11 Military Personnel with Biopsy-Proven Lung Disease, *International Journal of Environmental Research and Public Health* (2024). [DOI: 10.3390/ijerph21010091](#)

Provided by National Jewish Health

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