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**4 May 2026**

## **Former asbestos miners face elevated mortality decades after exposure, study finds**

A recent study conducted by researchers at the University of Cape Town's (UCT) [School of Public Health](#) has provided new insights into the long-term health consequences and mortality experience of former asbestos miners in South Africa.

Published in the [American Journal of Industrial Medicine](#), the study examined mortality rates and their determinants in a large cohort of ex-miners, offering one of the most comprehensive analyses to date of the human cost of asbestos exposure in the country. The study served as the basis of an MMed dissertation by Dr Yumna Williams-Mohamed, a registrar in occupational medicine, which was awarded cum laude. She was supervised by Professor Rodney Ehrlich, Dr Jim teWaterNaude and Associate Professor Shahieda Adams.

South Africa has historically been a major global producer of asbestos, supplying crocidolite, amosite and chrysotile to international markets. Although asbestos mining and use were banned in 2008, the health effects of exposure continue decades after operations ceased. Many former miners remain underdiagnosed and undertreated, with limited surveillance systems in place.

The research team analysed data from 11 343 former miners recorded in the electronic database of the Asbestos and Kgalagadi Relief Trusts between January 2004 and March 2023. Data included health assessments, occupational histories, chest radiographs and spirometry findings collected from individuals seeking compensation and medical evaluation for asbestos-related disease.

The study found that all-cause mortality among former asbestos miners was 4% higher than in the general population. While this excess was modest overall, the increase was far more pronounced among women, whose mortality was 17% higher than expected.

"This is reflective of gender specific job tasks, aboveground asbestos work and inadequate protective measures in historical mining settings. The finding highlights the often-overlooked experiences of women in asbestos-related occupations," said Dr Williams-Mohamed.

A major contribution of the study lies in its identification of the main predictors of mortality in this population. Severity of lung abnormalities on chest radiographs, measured using

International Labour Organization profusion categories, was strongly associated with increased risk of death (13-42%) with worsening of lung disease severity.

Similarly, severely reduced lung function was linked to greater mortality risk. Former miners with very low forced expiratory volume in one second (FEV<sub>1</sub>) had a 60% increased risk of dying, while those with very low forced vital capacity (FVC) had a 26% increased risk of dying. These findings, said Williams-Mohamed, underscore the importance of routine respiratory monitoring and early management of lung disease in exposed workers.

Additional predictors of mortality were a low body mass index (BMI) and smoking history. Participants who were underweight (BMI < 18.5 kg/m<sup>2</sup>) had a substantially increased risk of dying (46%), as did former smokers (43%). "These results suggest that mortality risk is shaped not only by past occupational exposure but also by broader clinical and lifestyle factors that interact with asbestos-related lung damage over time," explained Williams-Mohamed.

The study observed that standardised mortality ratios declined over the 20-year study period. "While this may suggest some improvement, we caution that interpretation is limited by incomplete data. Nevertheless, the trend reflects how mortality patterns may be shifting and highlights the importance of continued surveillance," she said.

Williams-Mohamed said the findings carry significant implications for occupational health policy and clinical practice. "It reinforces the need for risk stratification tools to identify the most vulnerable former miners before respiratory disease becomes severe. It also highlights the importance of early intervention, routine monitoring and smoking cessation support as strategies to reduce mortality."

She added: "The gendered dimensions of exposure identified in the study call for greater recognition of women's experiences in asbestos-related work environments and underscore the need for more inclusive approaches to surveillance and compensation. Historically, women's occupational health risks have often been overlooked."

South Africa's role in the global asbestos industry means that the legacy of exposure extends beyond individual miners to entire communities. Currently, asbestos-related disease remains underdiagnosed and undertreated, with most individuals only identified when they present to health services with advanced disease. The absence of a national policy mandating active surveillance further compounds the challenge.

"By leveraging the Trusts' database, we were able to provide one of the clearest large-scale pictures yet of mortality among former asbestos miners. This demonstrates the value of such resources for public health research and highlights the need for continued investment in data collection and monitoring. It furthermore represents an important contribution to occupational and environmental health scholarship. It provides robust evidence of excess mortality among former asbestos miners, identifies key predictors of risk and underscores the need for earlier clinical intervention and stronger support systems," said Williams-Mohamed.

For policymakers, clinicians and researchers, the findings carry a broader message: the effects of hazardous occupational exposure do not end when a mine closes. Former workers may continue to experience illness, disability and premature mortality for years or decades. Williams-Mohamed said that addressing these challenges requires a combination of

surveillance, clinical care, lifestyle support and recognition of the gendered dimensions of exposure.

By documenting the long-term human cost of asbestos mining, the study not only advances scientific understanding but also honours the lived reality of thousands of former miners whose health has been shaped by one of South Africa's most hazardous industries.

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***Issued by: UCT Communication and Marketing Department***

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