

Mesothelioma in southern Nevada likely result of asbestos in environment

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Malignant mesothelioma has been found at higher than expected levels in women and in individuals younger than 55 years old in the southern Nevada counties of Clark and Nye, likewise in the same region carcinogenic mineral fibers including actinolite asbestos, erionite, winchite, magnesioriebeckite and richterite were discovered. These data, published in the *Journal of Thoracic Oncology*, the official journal of the International Association for the Study of Lung Cancer, suggest that these elevated numbers of malignant mesothelioma cases are linked to environmental exposure of carcinogenic mineral fibers.

Malignant mesothelioma is a fatal cancer associated with [asbestos exposure](#) that develops on the outer linings of the lungs. The 3-year survival rate is only 8% and there are limited therapeutic options. The incidence of malignant mesothelioma is higher in locations with known industrial and occupational exposure and for similar reasons the incidence is higher in men, with a male to female ratio of 4:1 to 8:1. The latency period for is 30-50 years so those diagnosed from occupational exposure are usually in their seventies whereas those diagnosed younger than 55 are rarely associated with occupational exposure. Asbestos is a commercial and regulatory term applied to six mineral [fibers](#) historically mined for industrial use. Naturally occurring [asbestos](#) is a term used to describe fibrous minerals that were not used commercially and therefore were not called asbestos and their use was and still is not regulated. Like asbestos, these naturally occurring fibers are natural components of rocks and soils and a potential source of exposure especially if these fibers become airborne through natural erosion or human activities

producing dust.

Researchers from Hawaii, Nevada, and Pennsylvania examined malignant mesothelioma mortality data from the Centers for Disease Control by gender, age group, state, and counties for the period 1999-2010. The two southern Nevada counties of Clark and Nye were grouped together and the proportion of women and those younger than 55 years old in these two southern counties were compared to those in all other Nevada counties grouped together as well as the rest of the United States.

The male to female ratio of malignant mesothelioma in all Nevada counties excluding Clarke and Nye was 6.33:1, but in Clarke and Nye counties it was statistically lower at 2.69:1 ($p=0.0468$), which could not be explained by population demographics, as these were the same. The percentage of individuals younger than 55 was significantly higher in the southern Nevada counties compared to the remainder of the US counties (11.28% vs 6.21%, $p=0.0249$). Tremolite and actinolite, both members of the asbestos family, as well as erionite, winchite, richterite, and magnesioriebeckite are present in southern Nevada and all have been linked to cancer in humans.

The authors acknowledge that women and children can be exposed to fibrous minerals as a result of their husband's or father's [occupational exposure](#) when bringing these fibers home on their clothes. However, the authors conclude "in southern Nevada there are no major asbestos industries, thus this seems an unlikely hypothesis. Instead, the presence of asbestos and other fibers in the environment of Clark and Nye Counties, where a lower M:F sex ratio and an increased proportion of malignant mesothelioma are seen in young individuals, suggests that some of these malignant mesotheliomas are caused by [environmental exposure](#) which can happen when human activities and natural processes such as wind or water release fibers in the air." Michele Carbone, senior

author on the study, states "further research is needed, including epidemiological, geological, mineralogical and health-based personal exposure studies in order to characterize the residential and occupational history of the malignant mesothelioma cases we studied, to highlight the highest risk areas within Clark and Nye counties, to identify the type of fibrous minerals and their precise distribution throughout Nevada, and to identify the activities responsible for the release of fibers in the air, which may be the cause of some of the [malignant mesothelioma](#) in this region."

More information: [journals.lww.com/jto/Abstract/...
e_natural.98978.aspx](http://journals.lww.com/jto/Abstract/...e_natural.98978.aspx)

Provided by International Association for the Study of Lung Cancer

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