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Arizona Amphibole Asbestos Induces Autoimmunity and Fibrosis in Mice

Asbestos is a well-known carcinogen that contributes to autoimmunity and other health consequences. Libby Amphibole (LA) asbestos was a contaminant of vermiculite mined near Libby MT for decades, leading to asbestos diseases not only in mine workers, but in the entire community. Amphibole asbestos fibers in Arizona (AzA) have recently been discovered, but their health impact is unknown. The goal of this study was to determine whether these environmental fibers induce autoimmune and fibrotic responses at a very low dosage. Seven months after exposure, blood, urine and lungs were collected from mice. Serum was used to determine autoantibody (ANA) levels and T helper cytokine responses. Urine was used to measure protein excretion, suggesting kidney involvement. Results revealed ANA levels were statistically significant with positive results with AzA. Also, all three Th-17 cytokines were shown to have increased levels in treated mice that were statistically significant above controls. Urine analysis indicated significant amounts of excreted proteins by treated mice. Using the right lungs, a Total Collagen Assay was performed to determine the presence of fibrosis. The results determined a statistically significant increase in treated mice. Therefore, our results show that the AzA poses a serious health risk, even in small doses.

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