



## Do indicators of beryllium skin exposure predict beryllium sensitization?

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Sensitization to the metal beryllium precedes the development of chronic beryllium disease in the lungs. An earlier analysis of screening data from 74 recently-hired beryllium ceramics workers in the United States revealed that those with higher versus lower mean airborne exposure had a greater prevalence of sensitization, although the contrast was not statistically significant ( $p=0.24$ ). Animal studies suggest that sensitization might result from entry of beryllium through the skin. The survey data for the ceramics workers were re-analyzed to investigate whether skin exposure, either alone or in combination with airborne exposure, was associated with beryllium sensitization. Historical settled dust measurements of beryllium were used as indicators of skin exposure. Workers with high skin exposure (i.e., those who had ever worked in an area with high settled dust exposure) had an elevated prevalence of sensitization ( $6/30=20\%$ ) compared to those with low skin exposure ( $1/44=2.3\%$ ,  $p=0.02$ ). Those with combined skin/airborne exposures of high/high had an increased prevalence of sensitization ( $5/19=26.3\%$ ) versus those with combined exposures of low/low ( $1/28=3.6\%$ ,  $p=0.03$ ). The workers with a history of either high skin exposure alone ( $1/11=9.1\%$ ) or high airborne exposure alone ( $0/16=0\%$ ) did not demonstrate an increased prevalence of sensitization relative to the workers with low/low exposures. These findings suggest that the combination of high skin exposure and high airborne exposure contributes to an increased risk for sensitization, while either alone does not. More definitive findings await additional research with larger cohorts of exposed workers.

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