

# LOW-LEVEL ARSENIC EXPOSURE AND OBSTRUCTIVE PULMONARY DISEASE IN THE U.S. POPULATION

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**Background and Aims:** Arsenic is a known carcinogen found in drinking water throughout the world. Contaminated aquifers in parts of India, China, and Bangladesh have resulted in the poisoning of hundreds of millions of people. An unknown number of workers have occupational exposures from wood preservation, glass production, smelter operation, and semiconductor manufacturing. An emerging body of evidence suggests that exposure to inorganic arsenic may be associated with non-malignant respiratory disease.

**Methods:** We attempt to determine if there is an association between arsenic exposure at levels seen in the U.S. and prevalence of asthma, emphysema, and chronic bronchitis. Urinary arsenic is collected on 5,365 participants from a representative sample of the U.S. population. Linear regression analysis compares geometric means for participants with and without pulmonary disease. Logistic regression calculates odds of having pulmonary disease comparing participants with the highest and lowest quintiles of urinary arsenic. Two novel methods to adjust for the component of organic arsenic are incorporated into the statistical model

**Results:** Geometric mean concentration of urinary arsenic for participants with versus those without asthma (0.97;95%CI 0.94-1.01), chronic bronchitis (1.00;95%CI 0.98-1.03), and emphysema (1.00;95%CI 0.96-1.04) are not significantly different. Odds of having asthma is 0.77 (95% CI 0.4-1.47) for participants with the highest quintile of urinary arsenic (•17.23 mcg/dl) when compared to the lowest quintile (•3.52 mcg/dl). A significant association is found between increasing urinary arsenic concentration and decreasing age, male gender, and non-“Caucasian race”

**Conclusions:** After controlling for potential confounders and adjusting for organic arsenic exposure, we find no evidence of association between urinary inorganic arsenic and prevalence of asthma, chronic bronchitis or emphysema.