A CASE-CONTROL STUDY OF MESOTHELIOMA AND EXPOSURE TO BIOGENIC SILICA FIBERS

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The authors conducted the first study to test the hypothesized association between biogenic silica fiber (BSF) exposure and malignant mesothelioma. BSFs are respirable, non-crystalline silica fibers originating from the mechanical breakdown of plants (e.g., sugarcane and rice). We measured exposures to BSF among workers in the Hawaii sugarcane industry. Harvest tractor drivers have the greatest average exposure (0.089 fibers/cc), other field workers have lower average exposures (0.016 fibers/cc), while the remaining sugarcane workers have almost no exposure to these fibers (<0.001 fibers/cc). Cases and category-matched cancer controls were identified through the Hawaii Tumor Registry for the years 1960-1987. Employment in the Hawaiian sugarcane industry was determined from union records, death certificates, and a population census conducted in 1942-43. The authors controlled for occupational asbestos exposure and sampled for both BSF and asbestos to document exposure in the sugarcane industry. A total of 93 cases and 281 controls were included in the analysis. Seven cases and nineteen controls had been sugarcane workers (Odds Ratio [OR]=1.1, 95% Confidence Interval [CI] 0.4, 3.8). Mesothelioma was associated with exposure to asbestos (OR=2.2, 95% CI 1.2, 4.2). The findings suggest that BSF exposure in the Hawaiian sugarcane industry is not likely to pose as a risk for malignant mesothelioma.

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The research recommendations are not to be considered as final statements of NIOSH policy or of any agency or individual who was involved. They are intended to be used in advancing the knowledge needed for worker protection.

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