

The UCI Chao Family Comprehensive Cancer Center
Biostatistics Shared Resource Seminar Series
Statistical Issues in Clinical and Basic Science Research

Cancer Risks in Shipyard Workers Exposed to Asbestos

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The naval shipyard industry historically employed a large number of workers both nationally and globally. Previous studies of naval shipyard workers contributed to establishing the link between asbestos exposure and specific cancer types (lung cancer and mesothelioma). In addition, studies have shown suggestive associations between asbestos and other cancers, such as colorectal cancer. However, due to the inconsistency of the data in the literature, the relationship between asbestos exposure and other health outcomes has yet to be established. The purpose of the study is to examine the Long Beach Naval Shipyard (LBNS) in order to assess the association between occupational agents and health outcomes experienced by the workers employed between 1978 and 1985. This cohort consists of 13,924 workers employed in the LBNS between 1978 and 1985. To determine causes of death as well as cancer incidence, the cohort was linked with the California cancer registry and death statistical master files. Workers were assigned into three different asbestos exposure groups; low, intermediate, and high. The overall and cancer-specific age-standardized mortality ratio was calculated to compare causes of death experienced by LBNS shipyard workers to the general population of California. In addition, the cancer-specific age-standardized incidence ratio for male LBNS shipyard workers was calculated to compare cancer experienced by workers in the shipyard to the general population. We are particularly interested in lung cancer and mesothelioma as well as colorectal cancer. Finally, Cox's proportional hazard was utilized to determine the association between asbestos exposure and cancer risks. Our findings excess incidence of cancers in the cohort including lung cancer, colorectal cancer, and mesothelioma. Compared to the general population, there was at least a 10-fold excess incidence of mesothelioma in the shipyard workers. A dose-response trend across the three asbestos exposure groups was evident. However, there was no statistically significant association between asbestos level and lung cancer, colorectal cancer or mesothelioma. In conclusion, our findings suggest that employment in the shipyard increase the risks of various types of cancers.