

Chapter

1. Asbestos Exposure Assessment, Risk Identification, and Substitutes

Section

C. Epidemiology of ARDs

No./Title

**22. Increased risk of lung cancer mortality among residents near asbestos product manufacturing plant**

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**Introduction**

Asian context

A paper reporting elevated risk of lung cancer associated with neighborhood asbestos exposure in Hashima, Japan.

Critical appraisal

The authors concluded that neighborhood asbestos exposure can increase the risk of lung cancer mortality in men and probably in women.

Unique keywords

Lung cancer, neighborhood exposure

Abstract



We investigated whether individuals exposed to asbestos by living near an asbestos-manufacturing facility experienced increased lung cancer mortality. We studied a neighborhood around such a plant in the central Japanese city of Hashima. From 1943 to 1991 this plant produced insulation and packing material using amosite- and chrysotile-type asbestos fibers. The study group was comprised of 577 households. We obtained demographic information by a questionnaire and determined the underlying cause of death for deceased household members from death certificates. Using hourly meteorological data from local observatories, we estimated relative asbestos concentrations in the plant's vicinity, determined the quartile boundaries, and designated each study subject's quartile of ambient exposure. Finally, we calculated standardized mortality ratios to evaluate the association of residential asbestos with lung cancer risk. Our findings strongly suggest that neighborhood asbestos exposure can increase the risk of lung cancer mortality in men and probably in women.

## Annotation

### Fact 1

- The standardized mortality ratio (SMR) among male residents living near an asbestos manufacturing plant was 2.15 (95% CI; 1.35-3.25) for lung and tracheal cancer and 8.63 (95% CI; 1.04-31.2) for malignant neoplasm of the central nervous system.

### Fact 2

- The highest asbestos exposure group (asbestos concentrations; 211.2 to 1,586.8 m<sup>-3</sup>) incurred high risk of lung cancer mortality at SMR=3.31 (1.51-6.28) for men and SMR=4.70 (1.28-12.0) for women.

### Fact 3

- When occupational exposure to asbestos is precluded, the aforementioned risks still remained but were lessened to SMR=2.94 (1.27-5.79) for men and SMR=3.52 (0.73-10.3) for women.

### Fact 4

- When occupational exposure to asbestos and silica is precluded, the aforementioned risks still remained but were lessened to SMR=2.57 (95% CI; 1.03-5.30) for men and SMR=3.52 (95% CI; 0.73-10.3) for women.

### Fact 5

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## References