

Chapter

1. Asbestos Exposure Assessment, Risk Identification, and Substitutes

Section

C. Epidemiology of ARDs

No./Title

5. Asbestosis mortality in the USA: facts and predictions

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Introduction

Asian context

A strong association between asbestosis mortality and previous asbestos consumption at the national level is demonstrated. This provides a clear message to many Asian countries where asbestos is still used.

Critical appraisal

This paper applies a statistical model previously used in the field of air pollution and health (Am J Epidemiol, 2002). The method is fairly straightforward and clear implications.

Unique keywords

Prediction, asbestosis

Abstract

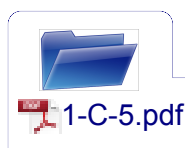
Background: Mortality trends in the USA show that deaths from asbestosis are increasing, while deaths related to other pneumoconiosis are declining.

Objectives: To analyze the association between asbestos consumption and asbestosis mortality trends.

Methods: In an epidemiological time series study, we used a modern computer-intensive local regression method to evaluate the relationship between asbestos consumption per capita (1900-2006) as the predictor variable and number of deaths from asbestosis (1968-2004). The predictor variable was progressively lagged by annual increments from 30 to 60 years and the goodness of fit assessed for each lag period. The model having the smallest Akaike's Information Criteria was used to derive extrapolated estimates of future mortality based on more recent asbestos consumption data.

Results: Asbestos consumption per capita reached a peak in 1951 and gradually declined until 1973, when it started to drop rapidly. In 2006, it was 0.0075 kg/person/year. There were 25,564 deaths from asbestosis over the period 1968-2004. The best-fitting model (adjusted coefficient of determination (R^2) = 99.7%) for 1968-2004 deaths from asbestosis used asbestos consumption per capita 48 years prior (1920-1956) and the log value of asbestos consumption per capita 43 years prior (1925-1961). This model predicts a total of 29,667 deaths (95% CI; 19,629 to 39,705) to occur during 2005-2027 (an average of 1,290 deaths per year).

Conclusions: This study demonstrates a clear association between asbestos consumption and deaths from asbestosis and indicates that asbestosis deaths are not expected to decrease sharply in the next 10-15 years.



Annotation

Fact 1

- There were 25,564 asbestosis deaths recorded over the period 1968-2004 in the USA.

Fact 2

- The model predicted a total of 29,667 asbestosis deaths (95% CI; 19,629 to 39,705) during 2005-2027 in the USA.

Fact 3

- There is a clear association between asbestos consumption and deaths from asbestosis as reported on death certificates.

Fact 4

- Asbestosis deaths are not expected to decrease sharply in the next 10-15 years (note that the paper was published in 2008).

Fact 5

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References