

The Impact of Asbestos on Mortality in Belgium

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Introduction

Asbestos has been used extensively in various industries around the world due to a unique combination of qualities. However, fatal diseases occur decades after inhaling fibers (Jamrozik, De Klerk, and Musk 2011).

A recent study from the World Health Organization indicates a significant rise in mesothelioma deaths worldwide (Delgermaa et al. 2011). Primarily caused by asbestos exposure (Wagner, Sleggs, and Marchand 1960; Kishimoto et al. 2010), this tumor develops in the protective linings that cover the lungs, abdomen and heart. Because even low levels of exposure can be fatal, mesothelioma is a sensitive indicator for the impact of asbestos on mortality (Hillerdal 1999)

Although Belgium was once a major international supplier of asbestos products, asbestos-related diseases have been scarcely researched. Until recently, Belgian cause-specific mortality data had not been provided to the WHO for several years. Previous studies for Belgium rely mainly on biomedical data (Moulin et al. 1988; Dumortier et al. 2003) or on claims for compensation (Vande Weyer 1981; Asbestfonds/Fonds amiante 2012; Vande Weyer 1973). Selection bias, differences in diagnostic criteria and low civil awareness of compensation measures make the reliability of these data sources questionable.

Consumption data does suggest that the general population has been heavily exposed (Virta 2006). One of Europe's biggest asbestos groups, Eternit, was located in Belgium. During the 1960s and 1970s Belgium had one of the highest consumption levels per capita in the world (Nawrot et al. 2007). Following an extensive period of legislative attempts to reduce health risks, the use and transaction of all types of asbestos were finally banned in 2001. Nevertheless, asbestos remains a major public health concern. Due to the long latency periods, the true impact of asbestos only becomes apparent decades after exposure.

This paper aims to improve the understanding of the impact of asbestos in an international perspective by providing a descriptive analysis of mesothelioma mortality in Belgium and comparing the results with other countries. Particular attention will be paid to the relation with the asbestos industry.

Method

Cause-specific mortality data for Belgium are obtained from the WHO Mortality Database (1969-1997) and from the Scientific Institute of Public Health (1987-2008). Mesothelioma is defined using the International Classification of Diseases coding system (ICD-8 163.0; ICD-9 163 and ICD-10 C45). The data was analyzed using a range of demographic measures, i.a. the age-adjusted mortality rates.

Finally, a comprehensive review of academic literature, government documents and news articles has been performed in order to locate Belgian asbestos industries.

Results

In the period 1969-2008 a total of 3148 Belgians died from mesothelioma (2394 males; 754 females). The annual number of deaths has increased from 22 deaths in 1969 to 218 in 2008.

When comparing our results with the WHO study (Delgermaa et al. 2011), Belgian mesothelioma mortality is among the highest in the world (cfr. Table 1). With almost 9 deaths per million population, Belgium follows countries with high asbestos burdens: United Kingdom (AAMR 17.8), Australia (AAMR 16.5) and Italy (AAMR 10.3).

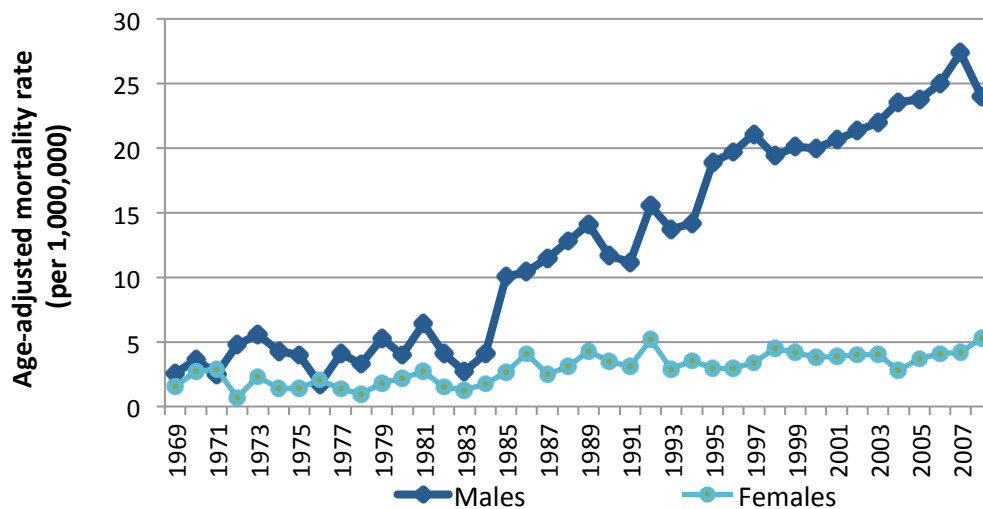
Table 1: Mesothelioma deaths reported to the World Health Organization compared to Belgian mesothelioma deaths (1994-2008).^{a,b,c}

Country	Number of deaths	AAMR (per million)	M:F ratio
United Kingdom	13 517	17.8	5.7:1
Australia	3 747	16.5	5.4:1
Italy	3 706	10.3	2.4:1
Belgium	1 803	8.9	5.6:1
France	6 608	7.6	3.4:1
Germany	9 569	6.8	3.2:1
South Africa	2 322	6.7	3.3:1
Netherlands	5141	6.4	4.0:1
United States of America	17 062	5.0	4.2:1

^a Table adapted from (Delgermaa et al. 2011) with authors calculations. ^b AAMR: age-adjusted mortality rate; M:F ratio: male to female ratio ^c World standard population 2000

As in many other developed countries, Belgian asbestos-related mortality seems to have increased over time. Figure 1 shows the development of mesothelioma mortality rates during the period 1969-2008 for Belgian males and females. Over a period of 40 years, male AAMRs have increased nearly tenfold, with a sharp increase in the mid-1980s. Furthermore, an important gender difference has appeared in our results. In 2008 the AAMR for mesothelioma was approximately 4,5 times higher for men. The comparison in table 1 shows that the gap between men and women is internationally also among the highest. The large gap points to the importance of occupational related mortality.

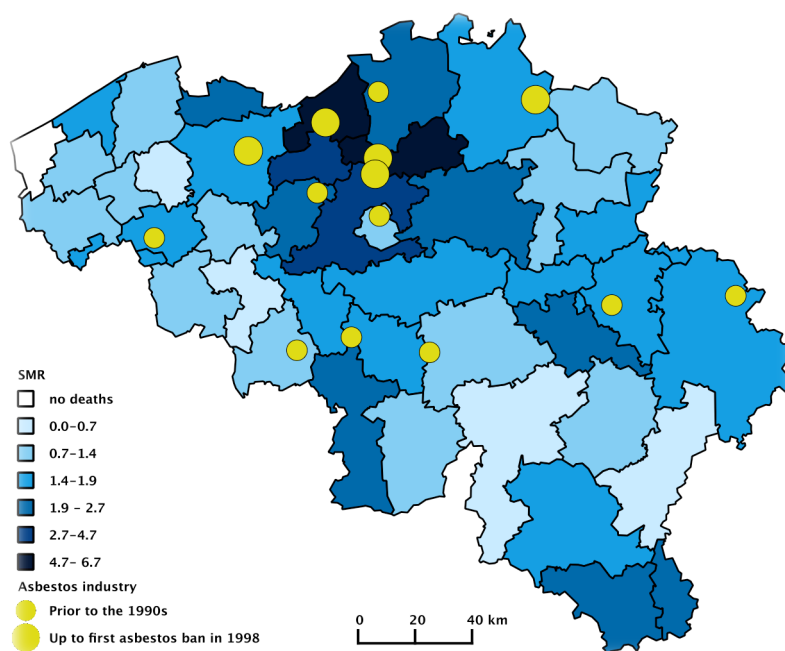
Figure 1: Time trend in age-adjusted mesothelioma mortality rate, by gender, Belgium, 1969-2008.^{a,b}



^a Mortality data for 1985, 2000- 2004 was linearly interpolated. ^b Reference: European population.

Finally, the geographical distribution of mesothelioma mortality rates seems to corroborate occupational influences. Mesothelioma deaths are mostly concentrated in specific geographic areas. Looking more closely at district level, the evolution and the dispersion of asbestos-related death within these areas varies profoundly. These geographic patterns at district level can be related to production facilities.

Figure 2: Standardized Mortality Ratio, males, by district, Belgium, 2004-2008.^{a,b}



^a Reference: Belgian Population. ^b Categories: Natural Breaks Jenks

The Impact of Asbestos on Mortality in Belgium – Extended Abstract

In conclusion, this study provides a descriptive analysis of Belgian mesothelioma mortality in order to improve our understanding of asbestos health hazards. The magnitude and progress of Belgian mesothelioma mortality has long been underestimated. Belgium has one of the highest mesothelioma mortality rates in the world. With a progressive increase of male mesothelioma deaths in the mid-1980s, large differences in mortality between sexes are apparent. Our findings strongly suggest an important impact of asbestos industries. Mesothelioma deaths are mostly concentrated in specific geographic areas related to former asbestos industries. With asbestos production shifting to developing countries, a global ban on asbestos is imperative to prevent further occupational and environmental exposure worldwide.

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