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Lung cancer in asbestos cement workers in Denmark

Editor—This paper¹ is a tribute to Edith Raffn and Elsebeth Lynge who have been involved in all three analyses of mortality and cancer morbidity in this Danish asbestos cement worker population, and to Johannes Clemmesen, father of their Cancer Register. The history of studies of asbestos workers tends to follow a pattern. When the health of the population studied is found to be pluperfect or its excess mortality not significant, there has been a tendency to leave well alone. (The astute epidemiologist, after conducting a preliminary analysis that seems to show that asbestos exposure was good for you, would decline to proceed further until he had verified the integrity of the population. But that is another story).

The attraction of studying asbestos cement workers (and for that matter asbestos textile workers) was the possibility of being able to evaluate the toxicity of chrysotile. In the event, when excess cancer mortality was found, it would be recalled that for a period there may have been exposure to amphibole.

This population of Danish asbestos cement workers overall, had the potential for mixed chrysotile and amphibole exposure, but it does include a subset of workers employed exclusively before the introduction of amphibole. Could the authors inform us whether analysis of this valuable group casts any light on the hazards of exposure purely to chrysotile asbestos?

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- 1 Raffn E, Villadsen E, Engholm G, Lynge E. Lung cancer in asbestos cement workers in Denmark. *Occup Environ Med* 1996;53:399-402.

Authors' reply—The cohort of asbestos cement workers from Denmark includes 7887 men and 576 women employed between 1928 and 1984.¹

During the years 1928-40 chrysotile only was used in asbestos cement production. No asbestos was used during the war years

Incidence of lung cancer in Danish asbestos cement workers employed during periods where chrysotile only was used

Group	Number of cases of lung cancer		
	Obs	Exp	SIR (95% CI)
Employed 1929-44:			
Men	12	6.48	1.9 (0.96-3.2)
Workers:			
Asbestos cement	8	4.04	2.0 (0.9-3.9)
Cement only	2	1.55	1.3 (0.1-4.7)
Maintenance	2	0.66	3.0 (0.3-10.9)
Salaried employees	0	0.23	—(—)
Women	0	0.18	—(—)
Employed 1980-4:			
Men	0	0.24	—(—)
Women	0	0.05	—(—)

1941-4. During the years 1945-79 chrysotile primary (= 88% of all asbestos used); but for all years also a small amount of amosite (= 11%), and for 1950 to 1969 some crocidolite (= 1%) were used. During the years 1980-4 again chrysotile only was used.

As reported,¹ from 1943 to 1990 a total of 223 lung cancer cases were diagnosed among the male cohort members (standardised incidence ratio (SIR) 1.7; 95% confidence interval (95% CI) 1.5-2.0).

We have now also tabulated the lung cancer incidence for people employed only during the years where chrysotile only was used at the factory. This involves 163 people who started employment between 1928 and 1940 and ended employment before 1945; and 262 people who started employment between 1980 and 1984. We have taken advantage also of the fact that specific job titles were recorded for the early employ-

ment period.

There were a total of 12 lung cancer cases; all among men employed 1928-44. This gave an increased SIR of borderline significance (SIR 1.9; 95% CI 0.96-3.2). The excess number of cases came from workers employed in the asbestos cement production and in the maintenance.

The numbers are thus small, but the data clearly indicate that the excess lung cancer risk found for the total cohort was found also for the subgroup exposed exclusively to chrysotile.

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- 1 Raffn E, Villadsen E, Engholm G, Lynge E. Lung cancer in asbestos cement workers in Denmark. *Occup Environ Med* 1996;53:399-402.

BOOK REVIEWS

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Smog Alert: Managing Urban Air Quality. By DEREK ELSOM. (Pp 226; £13.95.) 1996. 120 Pentonville Road, London N1 9BR: Earthscan. ISBN 185383-1921.

Smog Alert: Managing Urban Air Quality is a useful introductory book on urban air pollution. The style is apocalyptic and the author delights in providing, especially in the early chapters, details of appalling population

growth and worsening air quality in the rapidly expanding cities of the countries in transition from an agricultural to an industrial economy. The author has provided extensive footnote references, which I like, to the "grey literature" but almost no references to the original scientific literature. This is by contrast with his book *Atmospheric Pollution: A Global Problem* which provides detailed referencing. The author has included a wide range of government reports in his footnotes: again, I like this, but use of the secondary literature alone makes it difficult to check statements made in the text.

Does the book provide a balanced account? Looking closely at those areas with which I am familiar, I am afraid that it does not. For example, the section dealing with asthma and air pollution leaves the impression that the worldwide, rising tide of asthma is caused by air pollution. A secondary source not quoted by the author is the *Department of Health Report on Asthma and Outdoor Air Pollution*. This report made clear, by a detailed examination of the primary literature, that links between air pollution and the prevalence of asthma were far from established. This point has also been made in a recent report of an *International Programme of Chemical Safety Workshop on Environmental Chemicals and Respiratory Hypersensitisation*. The prevalence of asthma is increasing in the United Kingdom and yet the trend in pollution levels in the United Kingdom urban areas has not been dramatically upward during the past 10 or so years. Other sections of the book also