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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

Book review editor: R L Maynard

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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

seem to lean more on popularly accepted views than on hard proof. Recent work has shown that air pollutants can increase the response of the airways to allergens; the key question is to what extent does this occur at ambient levels of pollution. This is harder to answer but if not mentioned the reader is left with the impression that the effect is of known importance.

The chapters dealing with solutions are helpful. Much useful information has been collected and tabulated. This will be an important source for students, especially as the "grey literature" in this area can be difficult to trace.

Costs and benefits are considered but not in great depth. For comparatively wealthy countries, air pollution is a soluble problem, for poor countries this may not be the case for some years yet. Given that industrial countries are inevitably in competition with one another it is not easy to see that rich countries will wish to help the less fortunate to enjoy a clean industrial revolution. Sadly, the old administrative adage "costs lie where they fall" seems to apply on a global scale.

In conclusion, this is a useful and inexpensive book which deals with an important problem. The more advanced reader will wish to follow up some of the author's points in the original literature—if he does so then he will find the picture is less clear cut than presented in *Smog Alert*.

R L MAYNARD

Environmental Hazards and Human Health by RICHARD B PHILP. (Pp 306; price £55.) 1995. Boca Raton, FL: CRC Press. ISBN 1-56670-133-3.

As the author of this title proclaims, it is increasingly necessary for students of environmental sciences to know something of toxicology, and for students of toxicology to know something of the environment; the intention of *Environmental Hazards and Human Health* is to bridge that gap. The chapter titles range from water pollution through radiation hazards to risk analysis and the Gaia concept.

This book is both lively and readable. Its intended aims are ambitious and its content comprehensive, but it somehow falls short of fully meeting its objectives. This may be due to the rather idiosyncratic style and the patchyness of the text. Although it frequently makes interesting reading, the material presented is often sketchy and selective. It also lacks formal referencing. Thus the material sometimes has an anecdotal feel, although balancing this is the author's personal touch and the inclusion of some unusual and useful snippets of material.

It seems to be a prerequisite nowadays to preface any text or chapter on toxicology or pharmacology with a quote from Paracelsus.

This one is no exception, although the quote used is more accurate than usual. It seems ironic that Paracelsus is so often used in this context as the point he was making referred in fact to the homeopathic usage of known poisons. As a general comment, I was not sure that the introductory quotes in this book contributed significantly.

Not surprisingly, perhaps, in a book of this kind covering a very broad range of topics, some sections are lengthy and detailed whereas others seem short and superficial. Moreover, the material sometimes seems rather too simplistic and does not always adequately support the review questions given at the end of each chapter. Indeed, I was not convinced about the appropriateness of these questions or of the case studies provided. Also, it has to be said that the illustrations are not of the highest quality; they are all in black and white and often rather crude in comparison with the superb graphics increasingly commonplace in books of this ilk. In terms of completeness and topicality of its contents, I was surprised not to see PM₁₀ mentioned by name. Nor was there a reference as such to environmental oestrogens and the increasing evidence regarding the endocrine disrupting properties of chemicals, which is currently a very topical issue in terms of both scientific and public interest.

My overriding impression of this book was of a brave, if not wholly successful, attempt to cover all the key issues in this vast subject area. Although perhaps trying to achieve too much, the author nevertheless has produced a reader friendly overview for students needing basic information on a wide range of topics in the environment and health field, and I am sure the book will receive a wide readership. At £55 this hardback book is reasonable value for money.

PAUL HARRISON

Traumatic Stress in Critical Occupations, Recognition, Consequences, and Treatment. By DOUGLAS PATON, JOHN M VIOLANT. (Pp 245.) 1996. Springfield, IL: Charles C Thomas. ISBN 0-398-06577-2.

The poet Ralph Waldo Emerson described the simple reality of the experiences of human beings in traumatic situations when he mused "we boil at different degrees". This book attempts to explore not only each person's reaction to traumatic stressful situations, but also the "complex interactions between the person, the traumatic event, and the social and organisational background against which performance takes place". The emphasis here is on understanding the stress and trauma phenomena and developing an "effective trauma management system". This duality of objectives, highlighting the current theory in the field

and the practical solutions is laudable. Also, by encompassing the phrase "critical occupations", the authors have widened the conventional view of traumatic stress being associated with the emergency services only, extending the construct to the "helping professionals" as well.

The book is divided into eight chapters, the first two of which are concerned with a broad overview of the field and by research considerations on methodology and assessment strategies. The next four chapters explore specific critical occupations such as emergency medical service workers, the police, and disaster relief agencies. Most of these cover not only the research undertaken but also education, prevention, and support approaches. The last two chapters, from my point of view, are the most interesting, as they explore the training and support for emergency responders and future issues in the area of practice and research. The issues of training and preparation, support and demands related to the event, and recovery and the social and organisational influences are assessed in depth. The assessment of occupational trauma is examined in the final chapter, with an emphasis on the need to carry out research which is longitudinal in nature and to explore a range of preventive strategies rarely discussed—for example, screening.

This volume really does make a contribution, both in terms of future research and strategies that organisations might adopt in coping with traumatic stress at work. It is up to date and clarifies many of the methodological and occupational issues currently confronting the field of traumatic stress in an organisational context. It is not a cure all or a simple "do it yourself" guide to corporate post-traumatic stress disorder, but a step in the right direction of an increasing problem among critical occupational groups. What is important for the health of employees in any work environment, as this book reinforces time and time again, is to provide a creative and supportive organisational culture. This can be done if we follow the simple dictat of Kornhauser, over 30 years ago, in his book *The mental health of the industrial worker*: "Mental health is not so much a freedom from specific frustrations as it is an overall balanced relationship to the world, which permits a person to maintain a realistic, positive belief in himself and his purposeful activities. Insofar as his entire job and life situation facilitate and support such feelings of adequacy, inner security, and meaningfulness of his existence, it can be presumed that his mental health will tend to be good. What is important in a negative way is not any single characteristic of his situation but everything that deprives the person of purpose and zest, that leaves him with negative feelings about himself, with anxieties, tensions, a sense of lostness, emptiness, and futility."

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