
OCCUPATIONAL SAFETY AND HEALTH SERVICE

THE EPIDEMIOLOGY OF MESOTHELIOMA IN HISTORICAL CONTEXT

J.C. McDONALD, A.D. McDONALD

Emeritus Professor Corbett McDonald M.D. F.R.C.P.

Professor McDonald was born in Belfast in 1918 and graduated in medicine from St. Mary's Hospital, London, in 1942. After four years in the army, mainly in Italy, and after five years postgraduate training in epidemiology at London and Harvard, he entered the British Public Health Laboratory Service, where he was Director of epidemiological research with special interest in respiratory virus infections.



In 1964 he was appointed to the Chair of a new Department of Epidemiology at McGill University, Montreal, and in 1976 moved back to direct the Institute of Occupational Health in London. In 1981, Professor McDonald returned to McGill to establish a new School of Occupational Health but in 1986 he was invited back to establish a new Department of Clinical Epidemiology at the Royal Brompton National Heart and Lung Institute. He continues to work part-time in both continents.

Over the years his research has focused on respiratory disease, in particular the health effects of asbestos and crystalline silica. He is Emeritus Professor of epidemiology at McGill University and of occupational medicine in London. He is the author of some 250 scientific papers and has recently edited a comprehensive book entitled *The Epidemiology of Occupational Diseases*.

Emeritus Professor Alison McDonald M.D. F.F.C.M.

Alison McDonald was born near London in 1917 and graduated in medicine from the Royal Free Hospital Medical School, London, in 1941. After working in general practice during the war, she undertook postgraduate training in epidemiology and public health at London and Harvard. Her principal appointments have been as Senior Lecturer in Pediatrics at Guys (1964-68), Professor of Epidemiology at McGill (1964-78), Professor of Epidemiology at St. Mary's Hospital, London, (1978-81) and Emeritus Professor, London, since 1981. She returned to Montreal to head a Quebec government research team on the health effects of work in pregnancy (1981-1987).



During the period 1952-64, her studies of very low birth weight children provided definitive information on the incidence of cerebral palsy and a wide range of development defects. Equally definitive were the results of her enormous study of 100,000 pregnancies in Montreal, 1981-87, on the risks of occupational exposures in pregnancy.

Her numerous studies of asbestos workers since 1964 showed the large differences in risk of lung cancer and mesothelioma related to fibre type and industrial process. She was the first to demonstrate the role of fibrous tremolite in these diseases, and recently that mesothelioma attributed to chrysotile is probably due to tremolite contamination.

Programme

AUCKLAND, THURSDAY 29 JANUARY 1998

- 1 Clinically based surveillance of occupational diseases in the United Kingdom.
Auckland Hospital Medical Science Lecture, Auckland Hospital, Auckland.

- 2 Surveillance systems for occupational disease and epidemiology of mesothelioma:
historical and recent.
A combined meeting of the Australasian Faculty of Occupational Medicine and the
Australasian Society of Occupational Medicine, sponsored by the National Asbestos
Medical Panel.
Environmedix, 654 Manukau Rd, Auckland.

Contents

McDonald J.C. and McDonald A.D. The epidemiology of mesothelioma in historical context. (Reprinted with permission from <i>The European Respiratory Journal</i> 1996: 9, 1932-1942)	Pages 3-14 *
The New Zealand Asbestos Registers	Pages 15-19

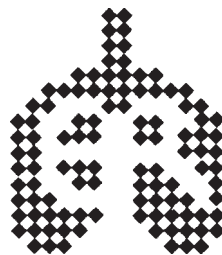
* NOTE TO WEB SITE USERS

Unfortunately, an electronic version of this paper is not available and could not be included in this document . However, a printed copy of the document is available from the Centre for National Support, Occupational Safety and Health Service.

The epidemiology of mesothelioma in historical context

J.C.McDonald, A.D. McDonald

THE
EUROPEAN
RESPIRATORY
JOURNAL



OFFICIAL JOURNAL OF THE
EUROPEAN RESPIRATORY SOCIETY

1996: 9,1932-1942

The New Zealand Asbestos Registers

The National Asbestos Registers were established in March 1992 in line with the recommendations made to the Minister of Labour, by the Asbestos Advisory Committee.

Formation of the Asbestos Advisory Committee

The Asbestos Advisory Committee was established in October 1990 as an ad hoc body to report to the Minister of Labour on issues relating to the health effects and use of asbestos in New Zealand, adequacy of controls and legislation, and clarification of the legal entitlements available for affected workers. This followed increasing public concern about the past and present effects of asbestos on workers, former workers and their families.

Establishment of the National Asbestos Registers

Recommendation 4 of the Report of the Asbestos Advisory Committee¹ to the Minister of Labour advised:

That an asbestos medical register be established for people who have been significantly exposed to asbestos. OSH should be the organisation responsible for establishing, maintaining and funding the medical register.

The medical register should be in two parts:

Part 1 - Those notified as having been exposed to asbestos;

Part 2 - Those notified as having an asbestos-related disease.

The system should allow movement of the name of a registered person from part 1 to part 2 of the register when indicated.

Notifications to part 1 of the medical register were to be made by those who felt that they had been exposed to asbestos, or by people acting on their behalf (and following consultation) such as an employer, union official, relative or friend.

Notification to part 2 of the medical register would be done by medical practitioners.

A Notifiable Occupational Disease System (NODS) was established in 1992 and asbestos registers have been incorporated in that scheme. This was in accordance with recommendation 5 of the Asbestos Advisory Committee.

THE ASBESTOS EXPOSURE REGISTER

The Occupational Safety and Health Service of the Department of Labour (OSH), in association with Electricorp Production, undertook an extensive advertising campaign in March and April 1992. Advertisements were published in all of the major newspapers, and several trade magazines.

The interest generated as a result of this campaign has ensured a high response rate for the exposure register. Notifications have been made by individuals, trade unions, occupational health nurses, doctors, the Asbestos Diseases Association of New Zealand and by some larger companies.

Notifications are directed either to branch offices of OSH or directly to the Registrar.

In recommendation 4, the committee had envisaged that people wishing to be recorded on the asbestos exposure register would have their exposure assessed at an OSH branch. Only those people who were judged as having had "significant exposure" would then be recorded on this register. However, the huge response from those individuals who had been exposed made it impractical to screen registrants in this fashion.

Once a person has notified OSH that they have been exposed to asbestos, an asbestos exposure registration form is sent. The registration form collects information about the individual, their work exposure

to asbestos and the state of their respiratory health.

When the form has been completed and returned to the Registrar, the details are recorded on a database. The individual is then sent a copy of a special edition of the magazine *Safeguard*, which is dedicated to asbestos and its associated health problems. If the person indicates that they have a family doctor, the doctor is informed that their patient has been included on the asbestos exposure register, and is sent a copy of OSH's booklet *Asbestos Exposure and Disease: Notes for Medical Practitioners*.

The register provides a database of the numbers of people exposed to asbestos through their occupation in New Zealand. OSH is providing information to the people recorded on this register and to their doctors. Through the operation of this register, OSH is hoping to raise the awareness of the possible health effects of asbestos exposure among the general public and the medical profession.

THE ASBESTOS DISEASE REGISTER

A register for those people notified to OSH as having an asbestos-related disease was also established and is operated under the auspices of the National Asbestos Medical Panel.

The establishment of both this register and the panel has been carried out in accordance with recommendations 4, 5, 6 and 7 of the Asbestos Advisory Committee's Report to the Minister of Labour.

Tenders for the National Asbestos Medical Panel were called for in 1991. A tender was accepted on 31 October 1991. The successful tender came from the group listed below:

W. Glass MBChB DIH FFOM FAFOM FAFOM (Hon) FFOM(Hon) (Convenor)

R. Armstrong MBChB (Hons) FRCP FRACP

*R. Beasley MBChB FRACP DM

*J. Crane MBBS FRACP

D. Jones MBBS MRCP FRACP

N. Pearce BSc PhD (Epidemiology)

*Dr Beasley has since retired upon his appointment as Professor of Medicine at the Wellington Clinical School. Dr Crane joined the National Occupational Asthma Panel.

Professor Glass was nominated as the panel's convenor.

The following members were appointed to the National Asbestos Radiological Panel:

Dr Paul White

Dr George Foote

*Dr Graeme Anderson

*Dr Anderson has since retired.

The Registrar from 1991 to 1996 was Mr Craig Eades. Since 1996, it has been Ms Nicola Holden.

The National Asbestos Medical Panel is responsible for verifying all cases of asbestos-related disease. Once a case has been verified by the panel, the personal and medical details of the individual are recorded on a database. The first meeting of the panel was held in February 1992.

All personal information is stored under conditions of strict confidentiality.

Processes for Registering People

Notifications for the register come from two major sources. The first is from doctors whose patients have been diagnosed, or are suspected of having, an asbestos-related disease. The second source of notification is

from the individuals themselves.

As this register has been included as part of the Notifiable Occupational Disease System, most of the notifications from doctors have come on the NODS cards which have been distributed to doctors and occupational health nurses by OSH. Other notifications from doctors have come in the form of letters.

Once a notification has been made to the Registrar, and consent has been gained from the person concerned, relevant medical records and a full occupational history are obtained.

Over the three years since the register began, it has already become clear that it is serving many of the functions predicted. It has raised the awareness of asbestos-related diseases among patients and the health professionals. It has improved the diagnosis of asbestos-related disease at all levels of professional speciality. There has developed a growing awareness by general practitioners, in particular, of work as an important determinant of disease. The result has been an upsurge in voluntary notifications of occupationally-related diseases generally to the National Registration Centre at the Occupational Safety and Health Service of the Department of Labour (OSH).

DATA COLLECTION

The data collected includes a medical history, an occupational history, chest x-ray, CT scan where available, lung function tests, and pathology reports. The procedure is as follows.

On notification being received by the Registrar:

- (a) An occupational health nurse visits the patient and carries out a health interview, a detailed occupational and social (including smoking) history.
- (b) Relevant medical reports are obtained from general practitioners and physicians.
- (c) A recent PA chest x-ray is obtained, and in all cases is read by a radiologist according to ILO (1980) guidelines. CTs are used where available, and on occasions requested.
- (d) Lung function data are obtained from physicians' reports or requested from respiratory laboratories. Where this is not possible, results are obtained from a test carried out by an occupational health nurse, using a portable spirometer.
- (e) Pathology and post-mortem reports are reviewed where available.

DATA ASSESSMENT

The National Asbestos Medical Panel reviews the information obtained, calculates an exposure index (see below) and correlates the medical data.

(a) Exposure index

An exposure index (D) is calculated from the product of years of asbestos *exposure* (A); *intensity* of exposure (according to job category), using a 1-5 grading (B); and *frequency* of exposure, using a 1-3 grading (C). Guidelines for calculating this index are shown below.

A = Total years of exposure in any one job.

B = Job category as follows:

Mining, milling and processing = 5

Boiler/lagging, rail carriages, shipyard, spraying insulation = 4

Asbestos cement products, construction, demolition, removal = 3

Electrical, friction products = 2

Loading, driving, environmental = 1

C = Degree of exposure (unprotected):

Continuous (>50% of work) = 5

Intermittent (20-50% of work) = 2

Minimal (<20% or occasional) = 1

D = A x B x C for each job

Exposure index = sum of all Ds

(b) Medical data

Relevant respiratory symptoms and signs are noted from the medical histories, and lung function data is classified into restrictive, obstructive, mixed or normal. Pathology reports are used to confirm mesotheliomas and classify lung cancers.

CLASSIFICATION OF DIAGNOSTIC CATEGORIES

On the basis of the foregoing, the cases are placed into a primary diagnostic category of:

- Mesothelioma
- Lung cancer
- Asbestosis
- Pleural abnormalities (plaques, diffuse bilateral pleural thickening and effusions).
- Other cancers
- Obstructive lung disease without x-ray changes.

SUMMARY OF REGISTRATIONS 1992-1997

Registrations to the Asbestos Exposure Register number in excess of 13,000.

Registrations to the Asbestos Disease Register number 554 cases and include 96 cases of mesothelioma, 47 cases of lung cancer, 118 cases of asbestosis and 293 cases of pleural abnormalities. An analysis of those figures is provided in the 1996-97 Annual Report of the Asbestos Registers.

APPENDIX: MEMBERS OF THE NATIONAL ASBESTOS MEDICAL PANEL

W. Glass MBChB, DPH, DIH, FFOM, FAFOM, FAFOM(Hon.), FFOM(I) (Convenor)

R. Armstrong MBChB (Hons), FRCP, FRACP

D. Jones MBBS, MRCP (UK), FRACP

N. Pearce BSc, PhD (Epidemiology)

*D. Fishwick MD, MRCP

* Resigned August 1996

* Appointed UK adviser 1997

OSH PUBLICATIONS ON ASBESTOS

A Deadly Dust: 50 years of Asbestos Use in New Zealand. Reprint from *Safeguard* magazine, December 1991.

Safe Work on Asbestos-based Floor Coverings. Leaflet, 1991.

Audit of Floor Sanders and Work Practices Involving Asbestos-backed Vinyl Sheeting in the Christchurch Area. Occasional Paper Series No. 4, 1992.

Recent Advances in Asbestos-Related Disease. Becklake, Margaret, 1994.

Asbestos Exposure and Disease: Notes for Medical Practitioners. Booklet, 1995.

Guidelines for the Management and Removal of Asbestos. Booklet, 1995.

Respiratory Symptoms and Asbestos Dust Exposure. Glass W., Fishwick D., Eades C., Pearce N., Armstrong L. and Jones D. Occupational Health Report Series, No.2, 1997.

Annual Reports of the National Asbestos Registers. 1992-1996/97.