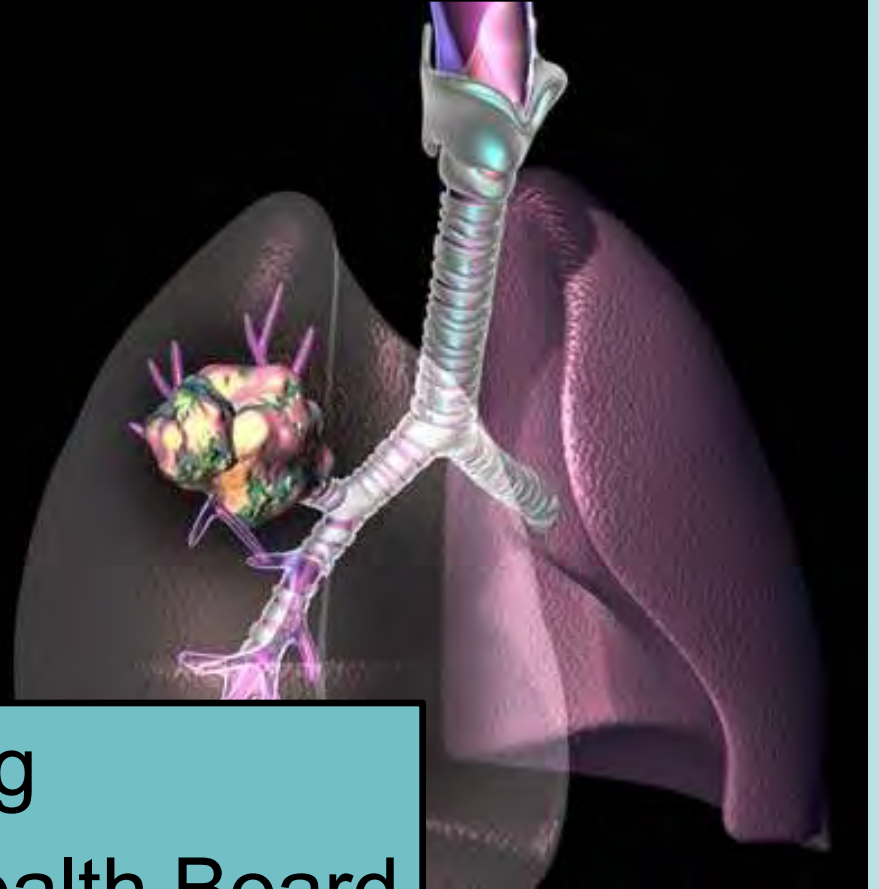
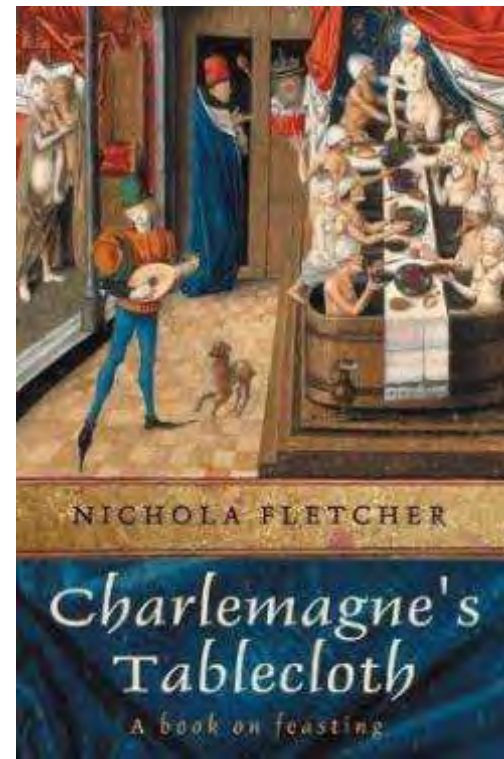


Asbestos : the legacy remains and will still go on



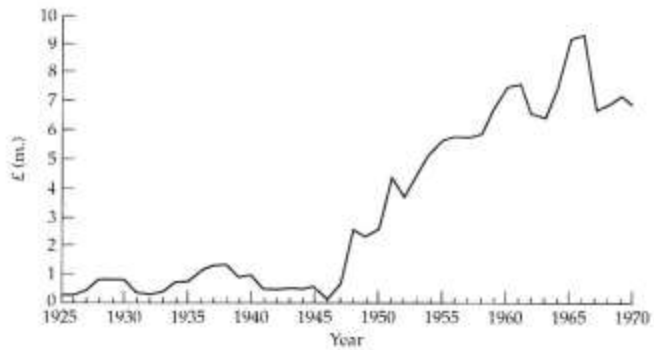
Rob Armstrong
Hawkes' Bay District Health Board

Early uses of asbestos





Samuel Turner (1840 – 1924)



Graph 1.1. Turner & Newall: profits after tax, 1925-70



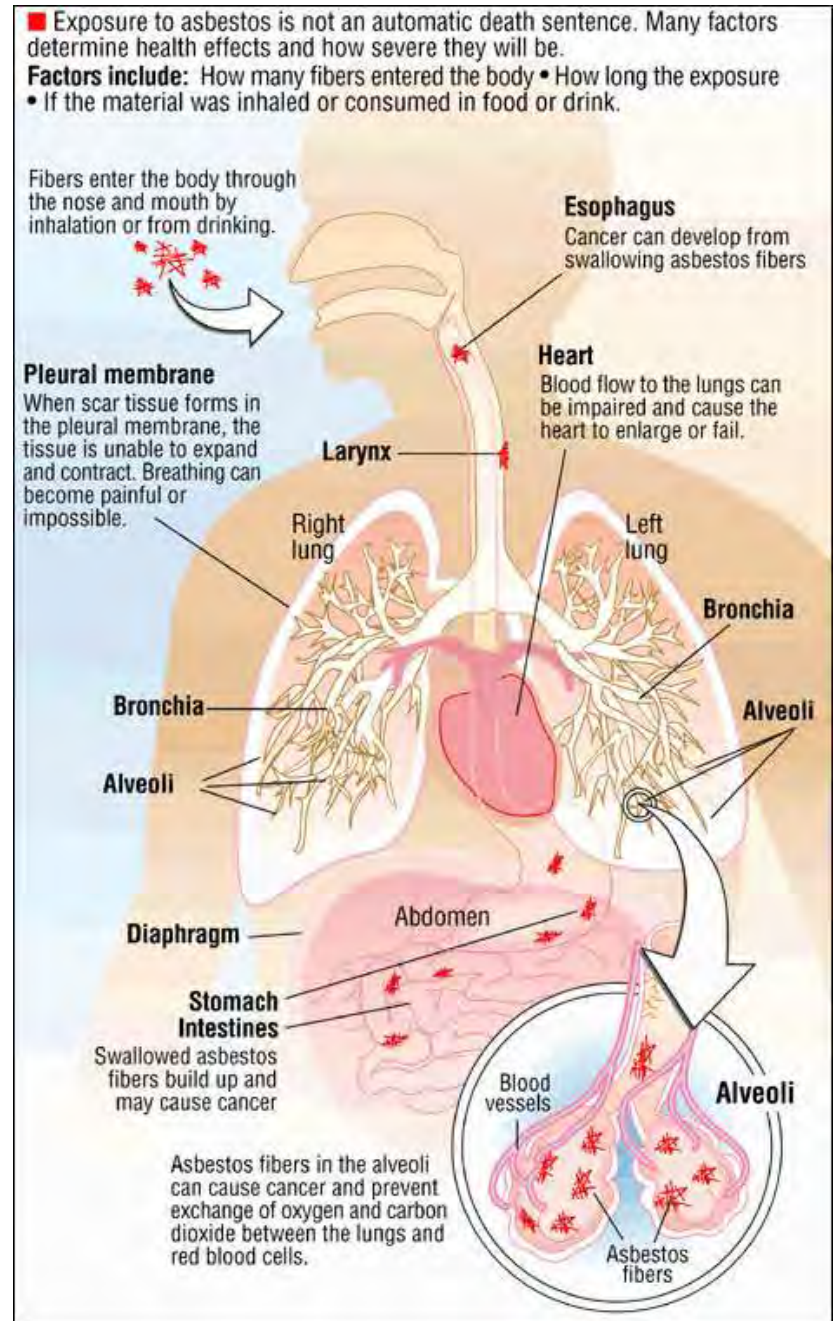


Fibrous tremolite on muscovite

“Asbestos is one of the most marvellous productions of inorganic nature – a physical paradox – that combines the properties of rock and silk, and can be spun into strands that weighed less than an ounce and up to a hundred yards”

R H Jones : Asbestos and Asbestic 1897

So what happens if you breath in some asbestos?





The asbestos related diseases or “ARDs”

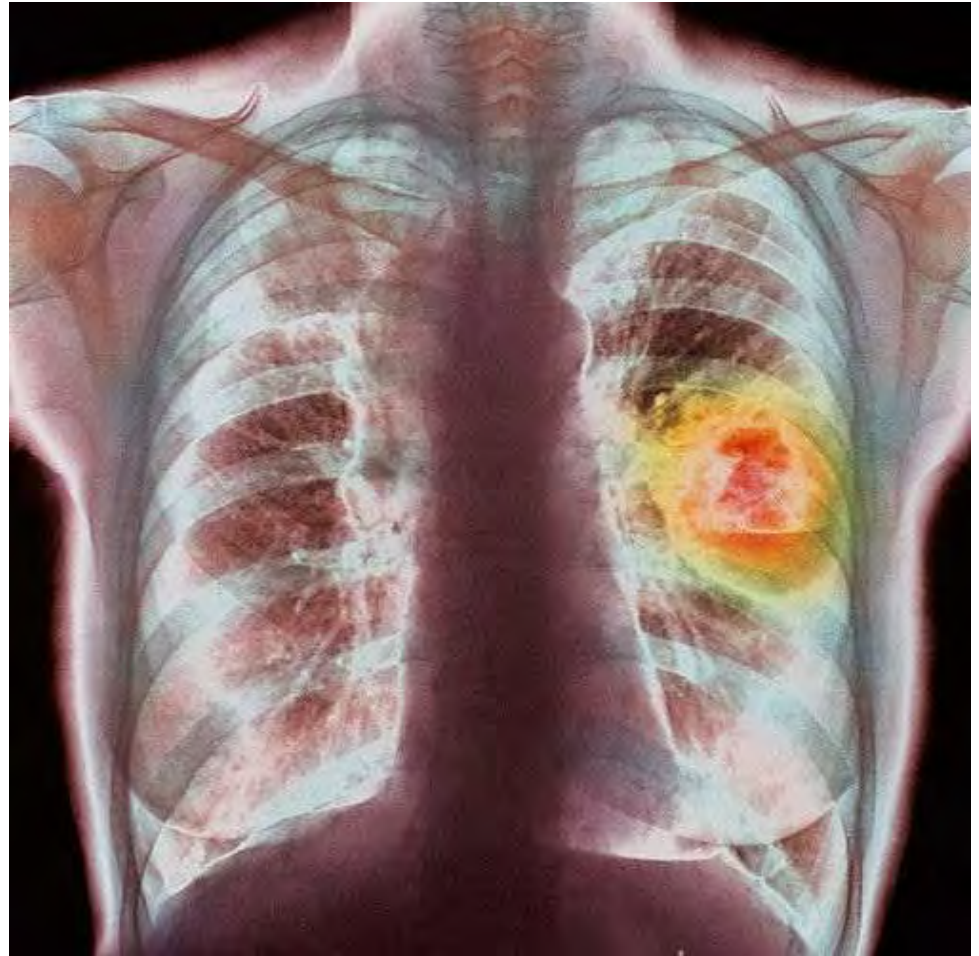
- “Benign” pleural disease : pleural plaque
pleural thickening
pleural effusion
- Pulmonary parenchymal disease : fibrosis (asbestosis)
- Malignant disease : oro-pharyngeal cancer
lung cancer
mesothelioma (pleural or peritoneal cancer)
oesophageal cancer
bowel cancer
bladder cancer
ovarian cancer

Lung Cancer

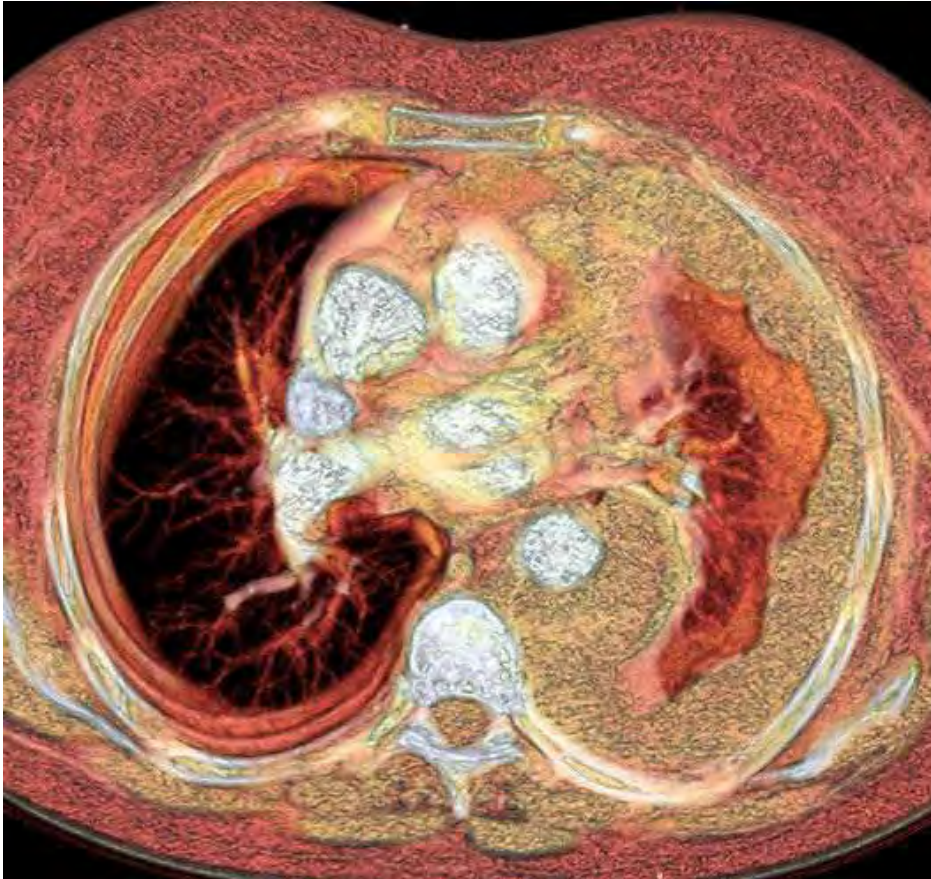
All types of cancer associated with asbestos exposure.

Smokers have a seven times increased risk compared to non-smokers.

Smokers with asbestos exposure have a fifty times greater risk of malignancy.



Mesothelioma



The prime marker of asbestos exposure

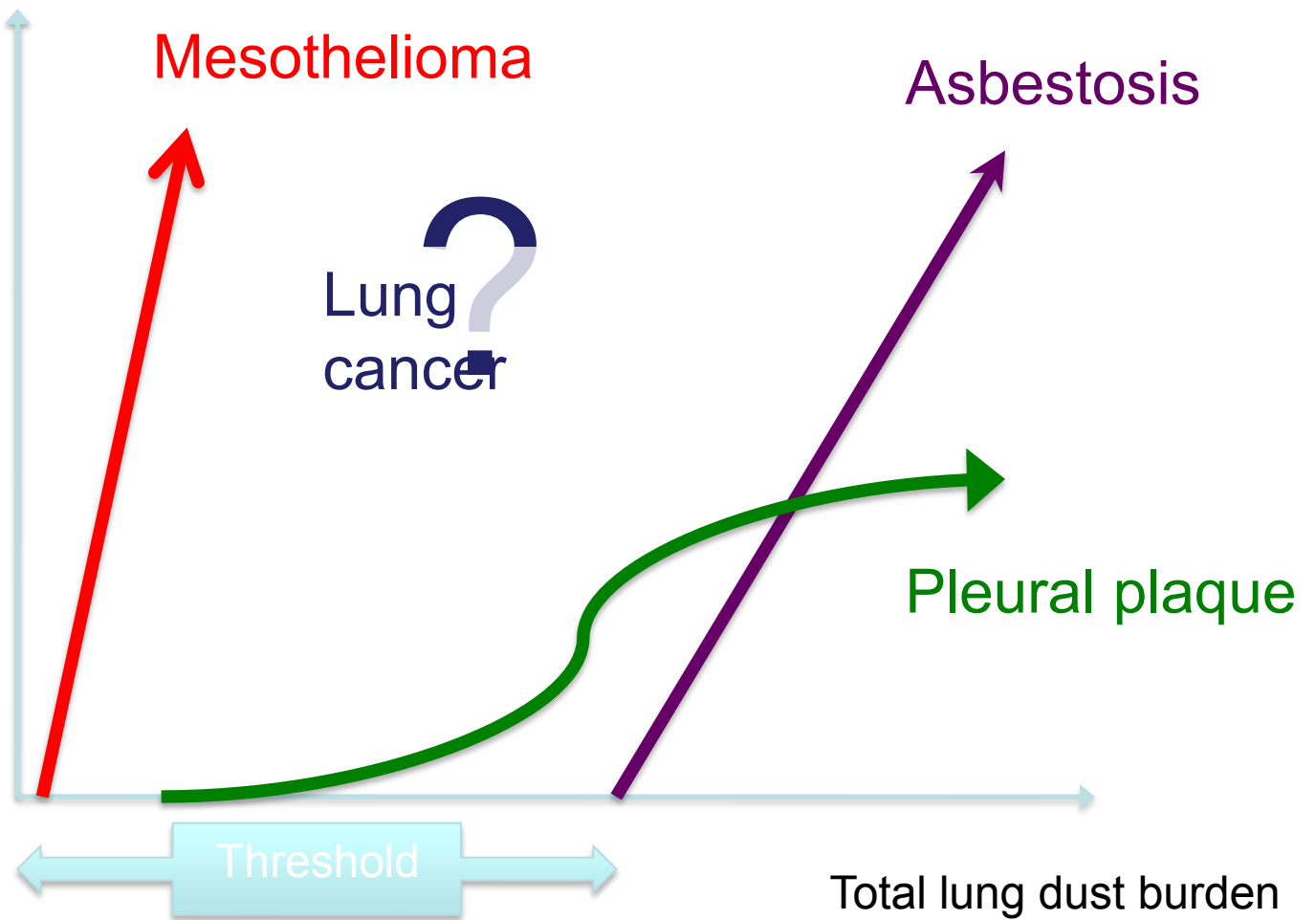
Aggressive disease

Long latency

Poor prognosis

Minimal therapeutic options

Chance of developing the condition



- 30-1

800012

1898 H M Factory Inspectorate report.

REPORT ON EFFECTS OF ASBESTOS DUST ON THE LUNGS *and* DUST SUPPRESSION IN THE ASBESTOS INDUSTRY

- PART I. Occurrence of Pulmonary Fibrosis and other
Pulmonary Affections in Asbestos Workers
PART II. Processes giving rise to dust and methods for
its suppression

BY

E. R. A. MEREWETHER, M.D.
H.M. Medical Inspector of Factories

AND

C. W. PRICE
H.M. Engineering Inspector of Factories



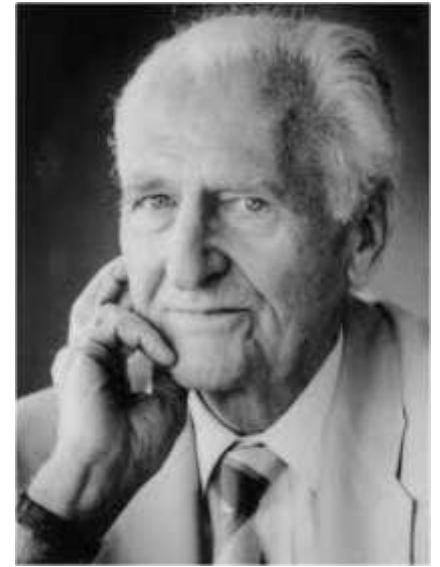
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1930

Price 1s. 3d. Net

(Sir) Richard Doll et al
"Mortality from lung cancer" BJIM 1953



Wagner et al
"Diffuse pleural mesothelioma and asbestos exposure in
the North Western Cape Province" BJIM 1960

Irving Selikoff et al "Asbestos exposure and Neoplasia"
JAMA 1964

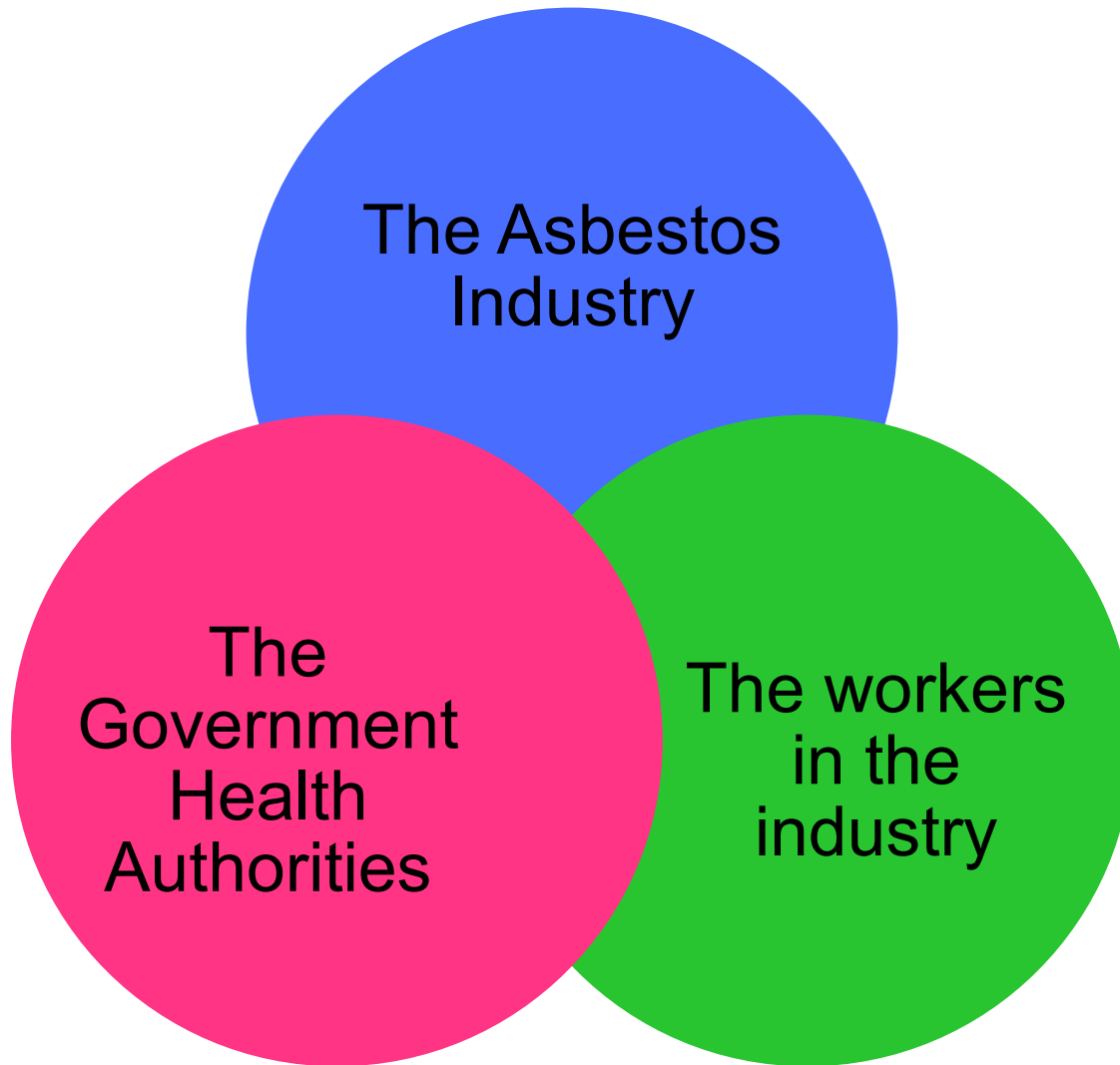


The Lord Denning Judgement 1971



Alice. "A fight for life" BBC 1982





The Asbestos Industry

The
Government
Health
Authorities

The workers
in the
industry

A dark, high-contrast microscopic image of asbestos fibers, showing a dense network of thin, needle-like structures. The fibers are oriented in various directions, creating a complex, web-like pattern. The background is a deep black, which makes the lighter, fibrous structures stand out.

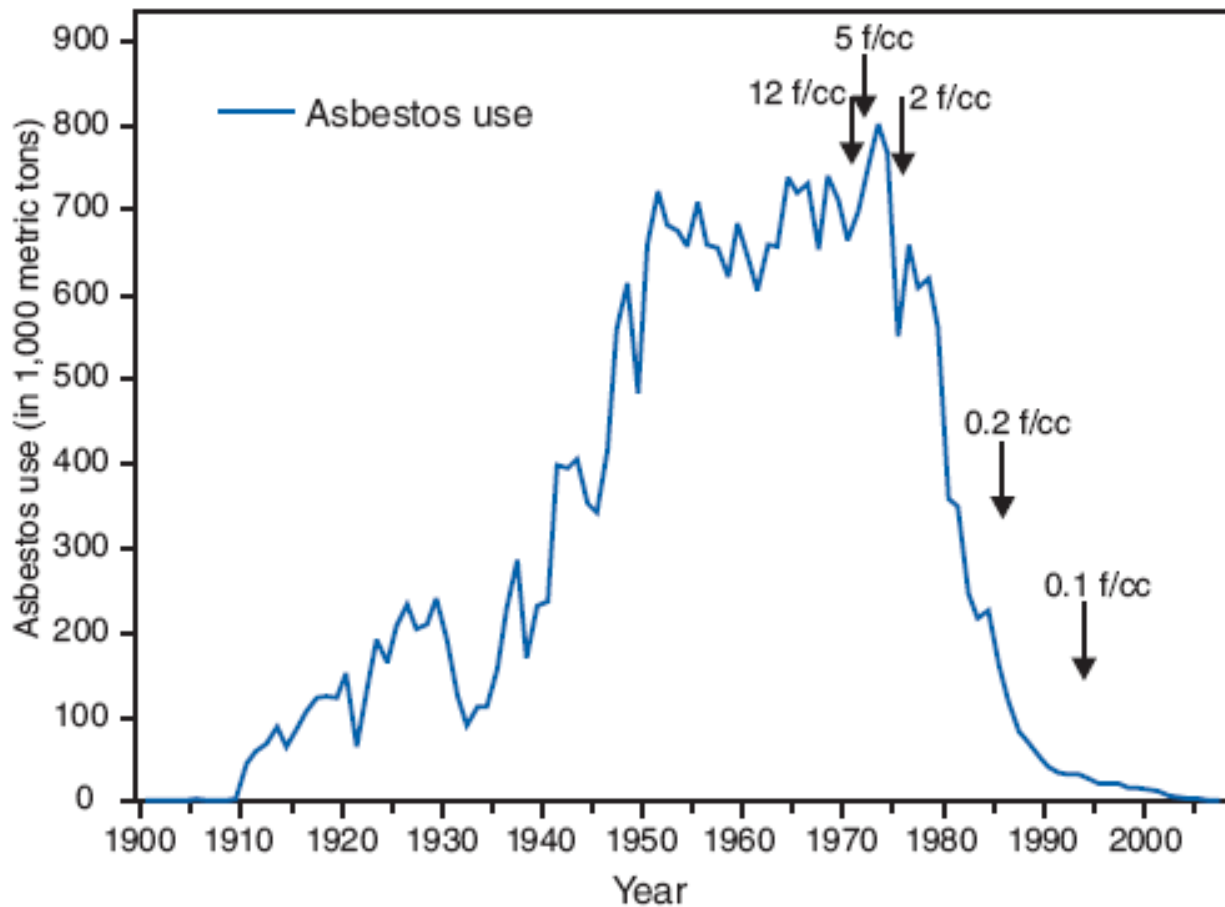
OXFORD

MAGIC MINERAL TO KILLER DUST

TURNER & NEWALL AND THE ASBESTOS HAZARD

GEOFFREY TWEEDALE

FIGURE 1. Asbestos use and permissible exposure limits* --- United States, 1900--2007



World-wide action on controlling asbestos

Brazil : total ban on utilizing asbestos from 2007 BUT is 4th largest exporter of asbestos to developing countries

Canada : still exports asbestos to Asian markets (5th in world)

France : banned all asbestos use in 1997 : called for worldwide ban in 2000

India : no restriction on asbestos use currently : in 2011 Indian Supreme Court refused to countenance any control measures on asbestos

Italy : banned asbestos in 1992 and removed asbestos from all buildings

Japan : delayed banning asbestos until 2004

Unites States : the Environmental Protection Agency has no general ban on the use of asbestos : the Toxic Substances Control Act prohibits certain applications. A senate sub-committee in 2001 turned down an appeal from scientists, doctors and members of the public to ban asbestos.

In 2010, Washington State banned the use of asbestos in vehicle brakes, starting in 2014.



Wittenoom

Mining of blue asbestos began in 1939 and the industry boomed through the 50's and 60's.



James Hardie established an asbestos-cement factory in Penrose in 1938. Production continued until 1987, although from 1983 asbestos was only used in pipes.



Chrysotile was mined in Takaka from 1952-1963

Imported asbestos over the course of 40 years was predominantly Canadian chrysotile, with small amounts of Australian or South African crocidolite

Fletcher's established a factory in Riccarton in 1943 (Durock Industries) which closed in 1974



1951 Dr Garland : annual report to Minister of Health : concerns that proper precautions to minimize dust exposure at Takaka were not being taken

1953 Notification system for occupational disease introduced

1960 Occupational Health Notes (DoH) comments on occurrence of asbestosis and increased incidence of bronchogenic carcinoma

1968 Drs Coplestone and Allingham report a survey of 207 workers : 107 X-rayed, 17 had plaque, 1 had asbestosis

1981 Fibre limits reduced to 1 f/ml for chrysotile, 0.2 f/ml for crocidolite



Kjellstrom and Rennie report on workers at James Hardie : it remains unpublished.

1983

Kier Howard (NZMJ) looks at relative cancer risks from different types asbestos (Review article)

1988

Assoc Prof Glass and OHN interview ex-workers from Fletchers in Mandeville St (unpublished) : 103 workers, 87 investigated, 47 ARD, 12 deaths noted

Hon Bill Birch establishes Asbestos Advisory Panel to monitor and report on all aspects of asbestos use in NZ

1992

National Asbestos Registers established : for exposed personnel and for ARD victims.



Asbestos and other Occupational Lung Diseases in New Zealand: 2012 Annual Report



MINISTRY OF BUSINESS,
INNOVATION & EMPLOYMENT
HĪKINA WHAKATUTUKI

This report reviews 1299 cases that were notified to the National Asbestos Medical Panel between March 1992 and July 2012. They include:

- 232 cases of mesothelioma
- 124 cases of lung cancer
- 294 cases of asbestosis
- 649 cases of pleural abnormalities.

Registrants to the Exposure Register for persons involved in the aftermath of the Feb 2010 quake

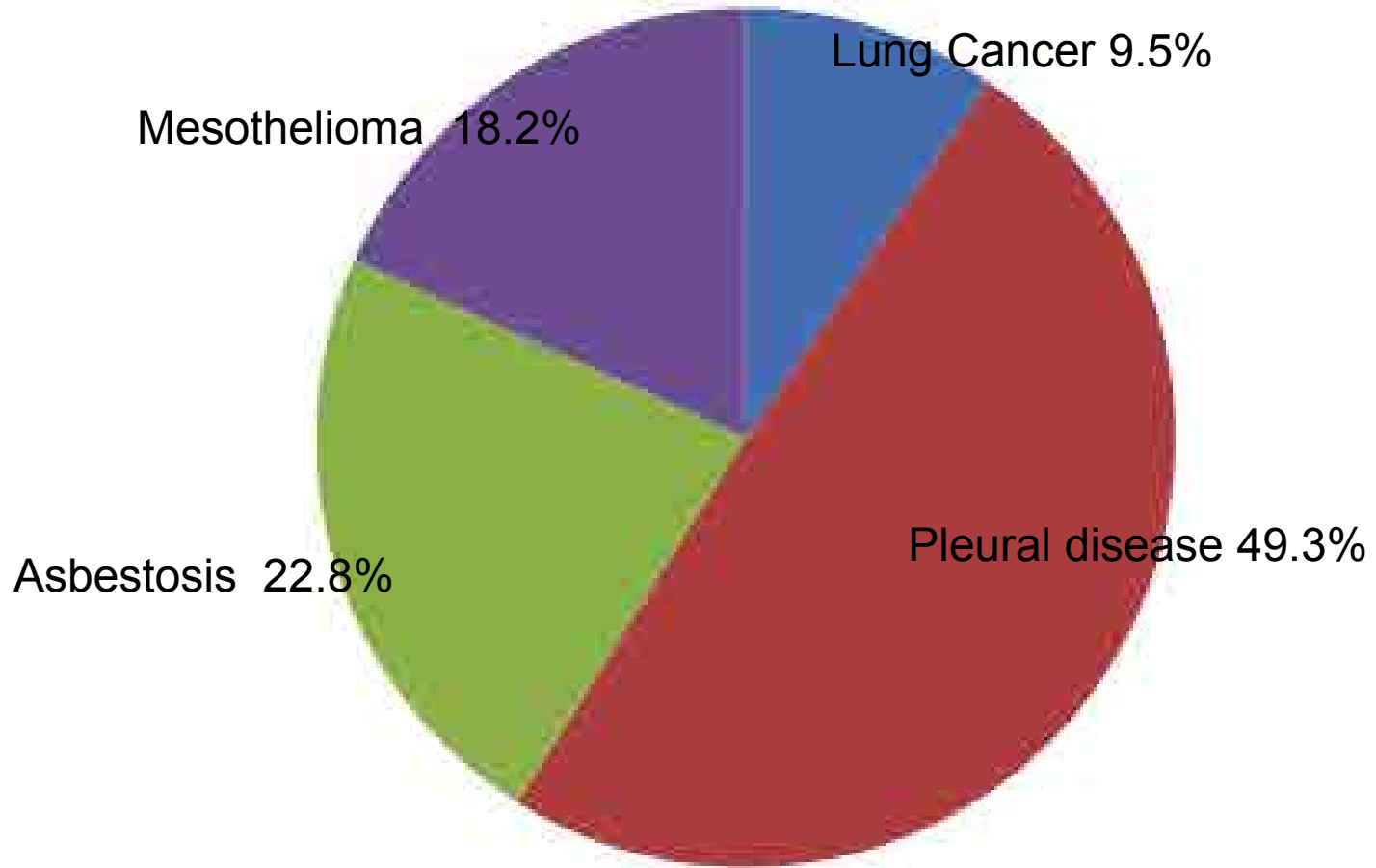
Date	Number of registrations
January to December 2010	14
January to December 2011	61
January to December 2012	47

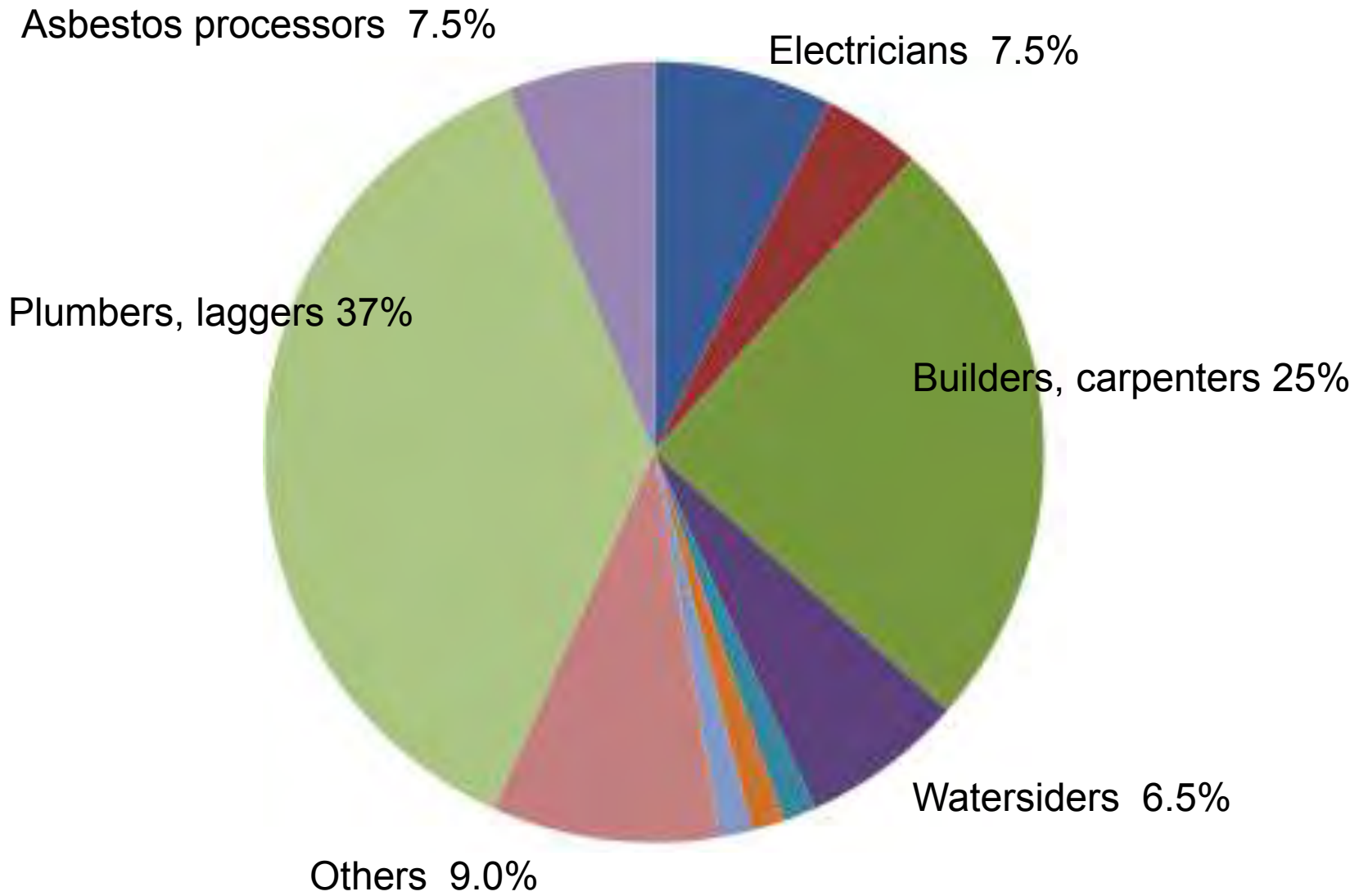
MITRE 10 MEGA



-
1. ASBESTOS CEMENT PRODUCTS
 2. TEXTURED COATINGS
 3. FLOOR TILES, TEXTILES AND COMPOSITES
 4. SPRAYED COATINGS ON WALLS, BEAMS/COLUMNS
 5. ASBESTOS INSULATED BOARD
 6. LAGGING
 7. LOOSE ASBESTOS IN CEILING OR FLOOR CAVITY







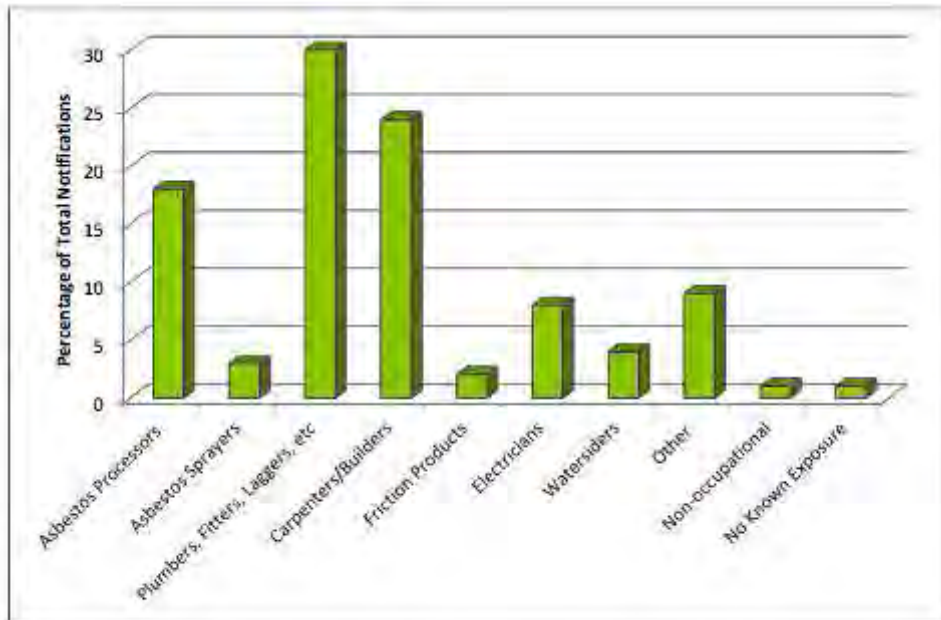


Figure 4: Distribution of mesothelioma by occupation

Mesothelioma - a rare cancer of the pleural membranes on the surface of the lungs - is strongly related to asbestos exposure. The panel reviewed 232 cases of mesothelioma, of which:

- 223 were Caucasian
- 6 were Maori
- 3 were identified as 'Other'
- 217 were males, 15 were females
- the mean age at diagnosis was 67 years (range 35-85)
- the mean number of years since first exposure was 45 (range 12-74)
- the mean exposure index was 178 (range 1-780)
- there were 21 current smokers, 127 ex-smokers and 61 never-smokers (information for 23 cases was unavailable).

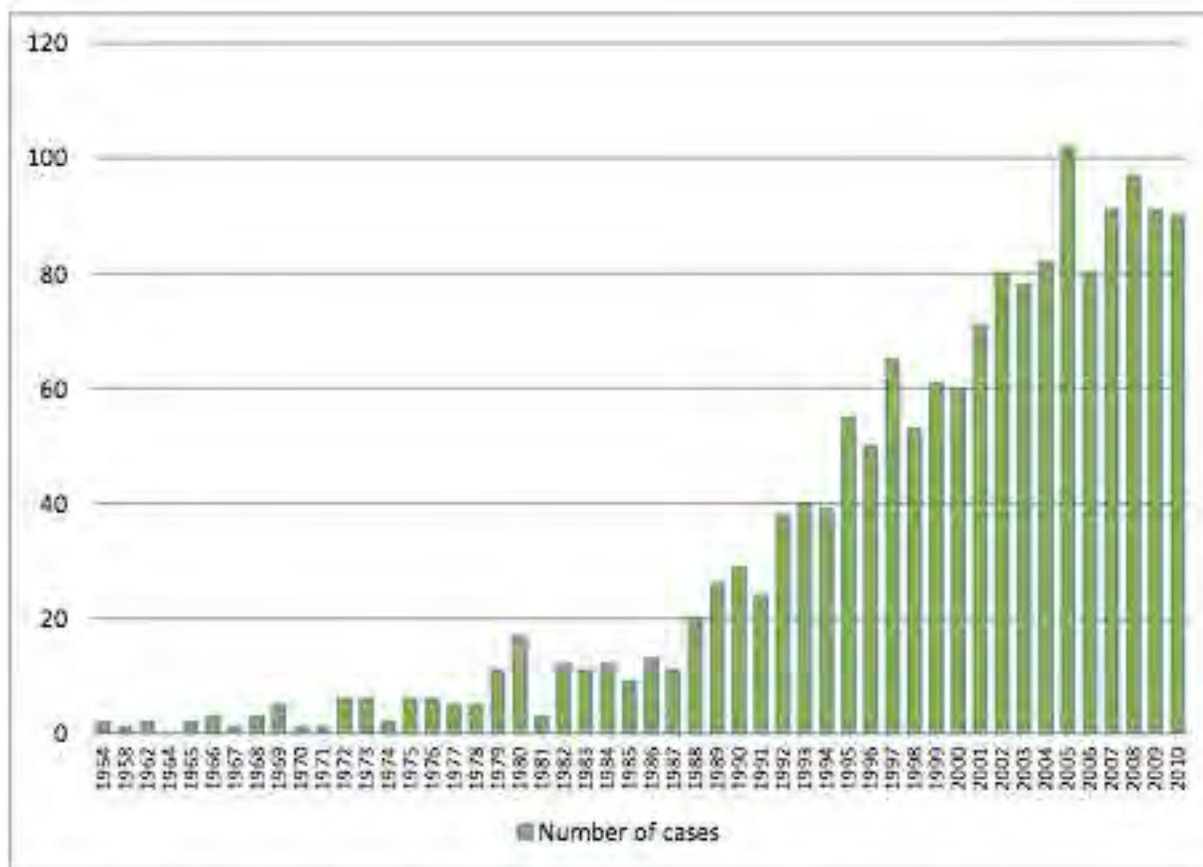


Figure 5: Number of cases of mesothelioma in New Zealand 1954-2010

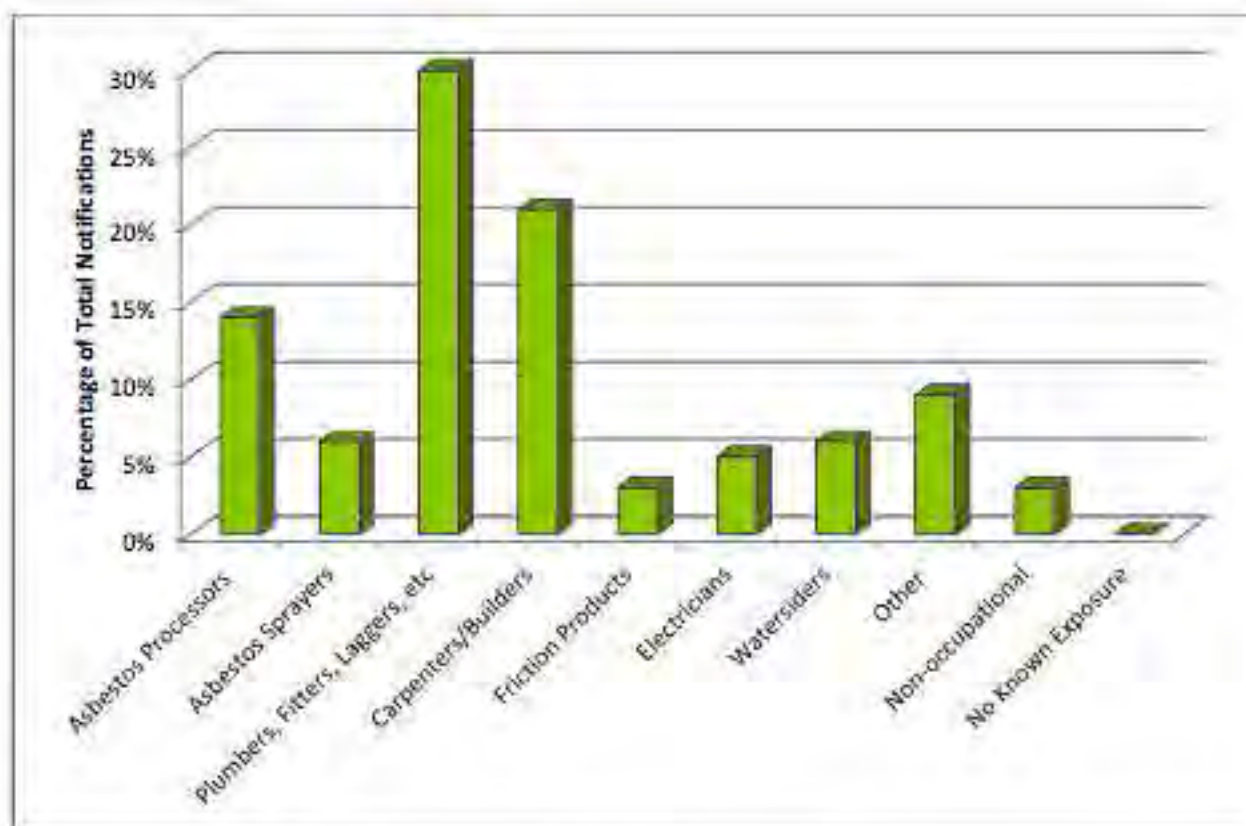


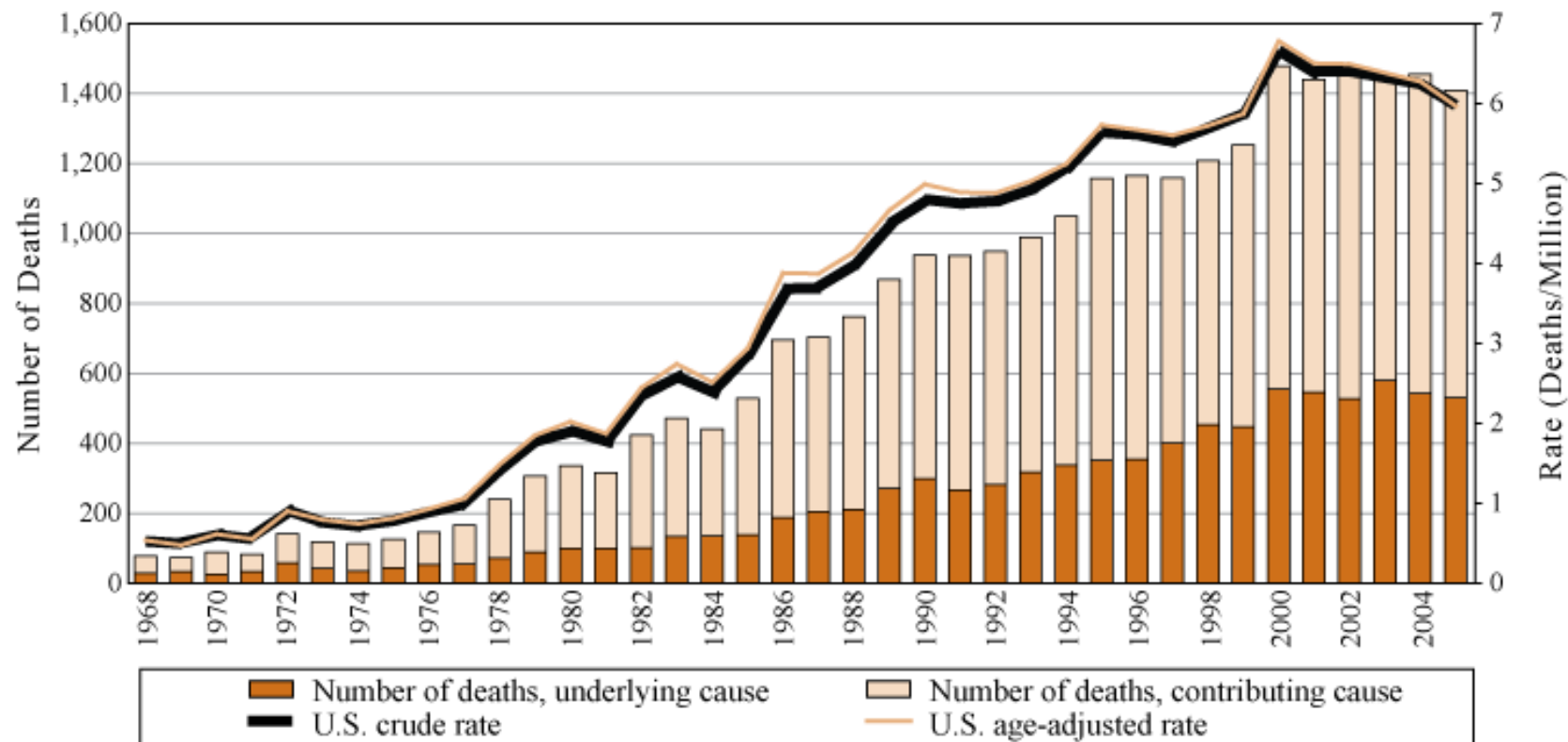
Figure 6: Distribution of lung cancer by occupation

The legacy of asbestos :

1. Long latency to development of disease
2. Residual asbestos in buildings and environment
3. Ongoing use of asbestos in developing nations



Long latency



Asbestosis : US data 1968-2005 for adults 15 years and older

Source : CDC (NIOSH)

Long latency

60,000 MORE TO DIE OF ASBESTOS

Bosses' waiting game could leave a total of 90,000 without justice

by Paddy McGuffin
Home Affairs Reporter

MORE than 60,000 people will die in the future having previously been exposed to asbestos leading to a total death toll of 90,000 by the year 2050, campaigners in Manchester warned yesterday.

The stark warning came as hundreds of families affected by the killer disease attended an event to mark Mesothelioma Awareness Day.

Successive governments, negligent employers and penny-pinching insurers have all conspired to deny justice for the victims of asbestosis.

An estimated 30,000 have died so far from exposure to the deadly fibres and the number of people who will contract the fatal illness is set to increase in coming years.

Mesothelioma is a fatal tumour found mainly in the lung pleura, for which there is no cure. Average life expectancy is approximately 12 months. In 2007 alone 2,167 people died from the disease.

Greater Manchester Asbestos Victims Support Group director Tony Whitston told the Star: "There is an absolute necessity for research to provide better treatment and improved palliative care.

"It is absolutely imperative that resources are found to provide hope for people suffering with this horrific illness.

"It is the most important issue of the day."

Mr Whitston said the new government had a responsibility to act.

"The need hasn't changed but there is a reluctance (by government) to engage positively on this issue," he said.

"We are not optimistic that the new government will be better but today is also about looking to the future and being positive. We have to stay positive for the sake of those who are suffering.

"There needs to be a real change of attitude. These people have been let down for decades by past governments, employers and insurers. It is institutional negligence. There is a moral onus on any government to take responsibility."

Speaking prior to yesterday's event in Manchester, mesothelioma sufferer Cyril Jennings stated: "This shocking disease has had a devastating effect on my family and thousands of other families. Much more should be done to improve care for people who suffer this disease which has been caused by the disgraceful negligence of employers for decades and decades."

According to research from the Health and Safety Executive (HSE) construction workers are worst affected by past exposure to asbestos.

The HSE has estimated that one in 10 carpenters born in the 1940s with more than 10 years of work in the industry will die of mesothelioma.

Despite Britain finally banning the use of asbestos in 2000, global trade in the carcinogen remains strong.

Before the ban, 60 per cent of asbestos in Britain came from Canada. Much of the trade has now moved to the developing world.

In recent years countries such as Angola, Argentina, India, Mexico, Nigeria and Thailand have all recorded increased use of asbestos products.

On Thursday construction union Ucatst staged a demonstration against Canada's continued exportation of asbestos at the country's embassy in London.

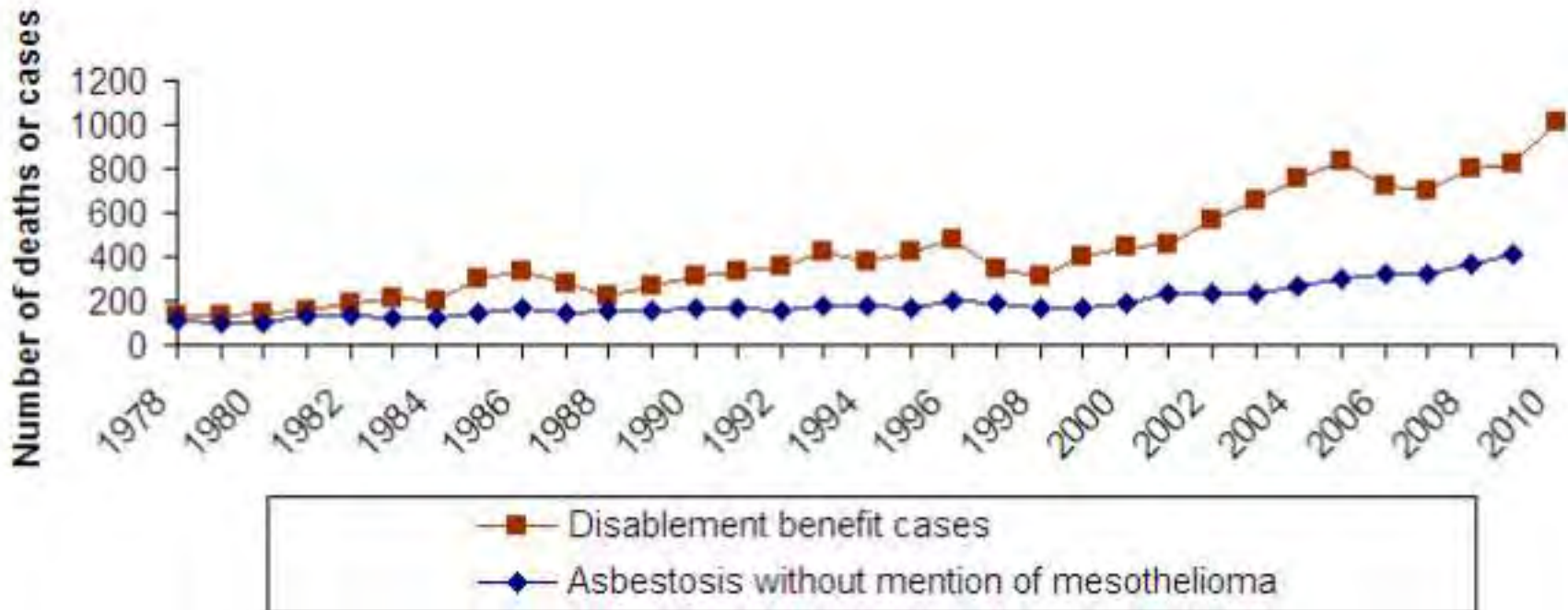
Ucatst leader Alan Ritchie said: "It is disgraceful that Canada continues to wilfully produce and export a deadly substance.

"It is essential that nationally and internationally unions and other sympathetic groups create the pressure on Canada to end this lethal trade once for all."

paddym@peoples-press.com

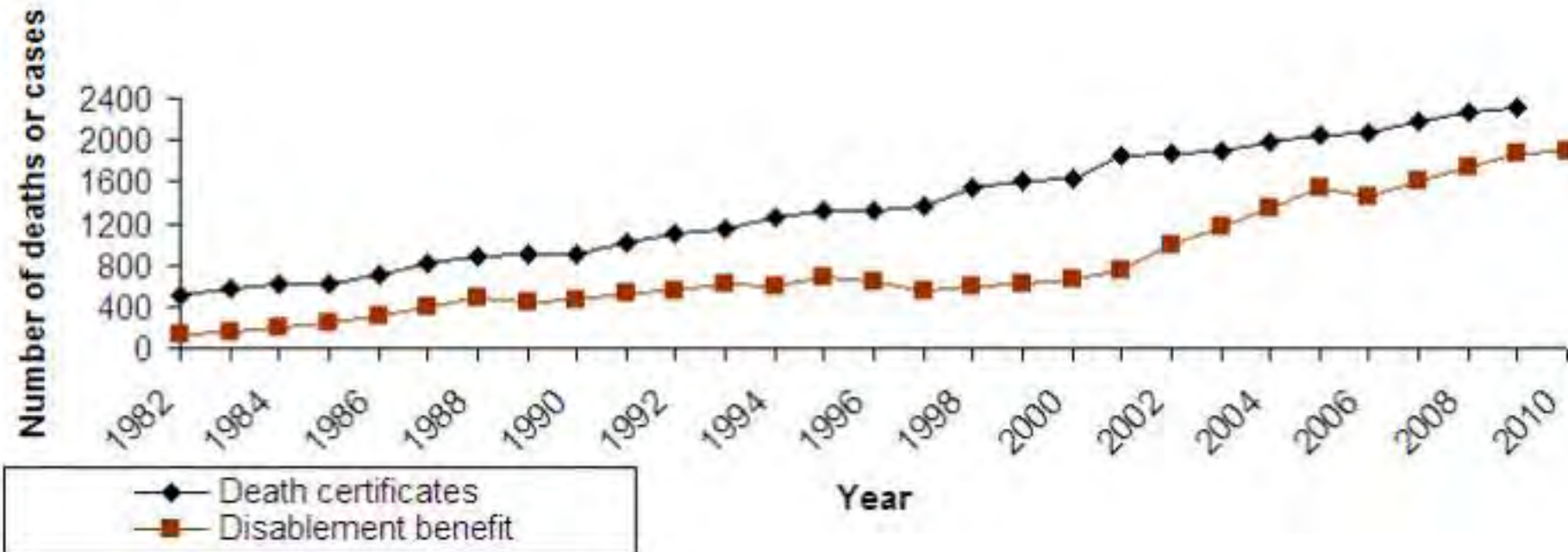


Asbestosis deaths and disablement benefit cases 1978-2010



- In 2009 there were 411 deaths where asbestosis is likely to have contributed as a cause compared with 109 in 1978.
- There were 189 deaths in 2009 where asbestosis was specifically recorded as the underlying cause of death.
- Numbers of newly assessed cases for Industrial Injuries Disablement Benefit have increased more rapidly than asbestosis deaths in recent years.
- The number of newly assessed cases for 2010 was 1 015.

Mesothelioma deaths and disablement benefit cases 1982-2010



- Over 80% of deaths were among men.
- Men who worked in the building industry when asbestos was still being used widely are now among those most at risk of mesothelioma.
- Most deaths among women are likely to be due to a range of non-occupational asbestos exposures.
- The worst case predictions for males are that annual deaths will increase to a peak of about 2,100 in about the year 2016.
- Female deaths are likely to peak after this but at a much lower level.

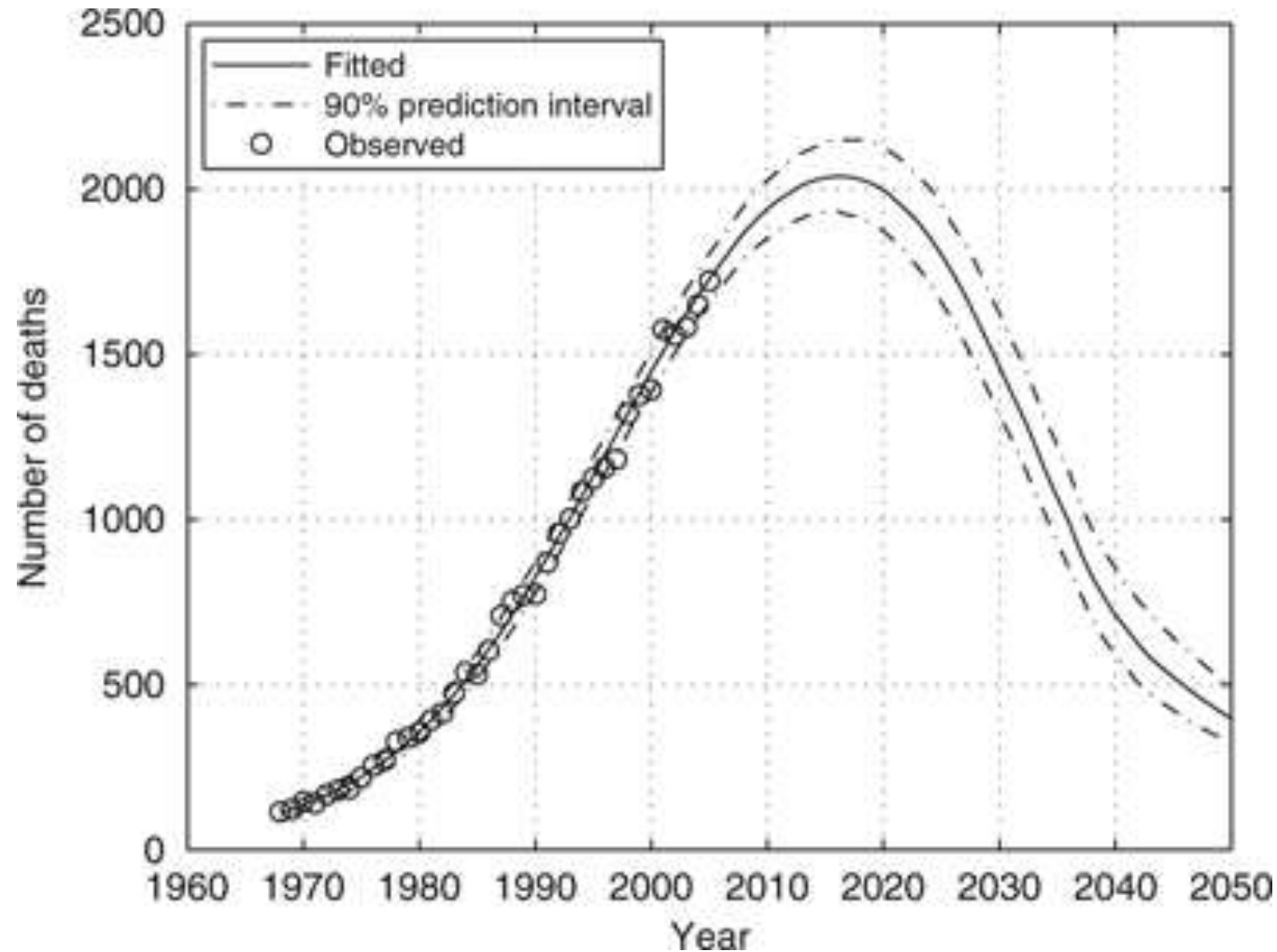
Asbestos-related lung cancer

The overall scale of asbestos related lung cancer deaths has to be estimated because it is difficult to tell these cancers apart from those due to smoking.

The latest information shows:

- There are probably about as many asbestos-related lung cancer deaths each year as there are mesothelioma deaths.
- This implies there are currently about 2 000 deaths each year in Great Britain due to asbestos-related lung cancer.
- The ratio of lung cancers to mesotheliomas is expected to fall over time suggesting less than one asbestos related lung cancer per mesothelioma in the future.

Projection of mesothelioma mortality in Britain using Bayesian methods
E Tan, N Warren, A J Darnton and J T Hodgson



From the 1870s until 1956, Armley (West Yorkshire) was home to the J W Roberts (subsequently T & N) asbestos mattress and boiler lining factory.

The factory (red rectangle) exposed local residents (yellow pentagon) to asbestos fibres and resulted in a mesothelioma cancer cluster which persists to this day

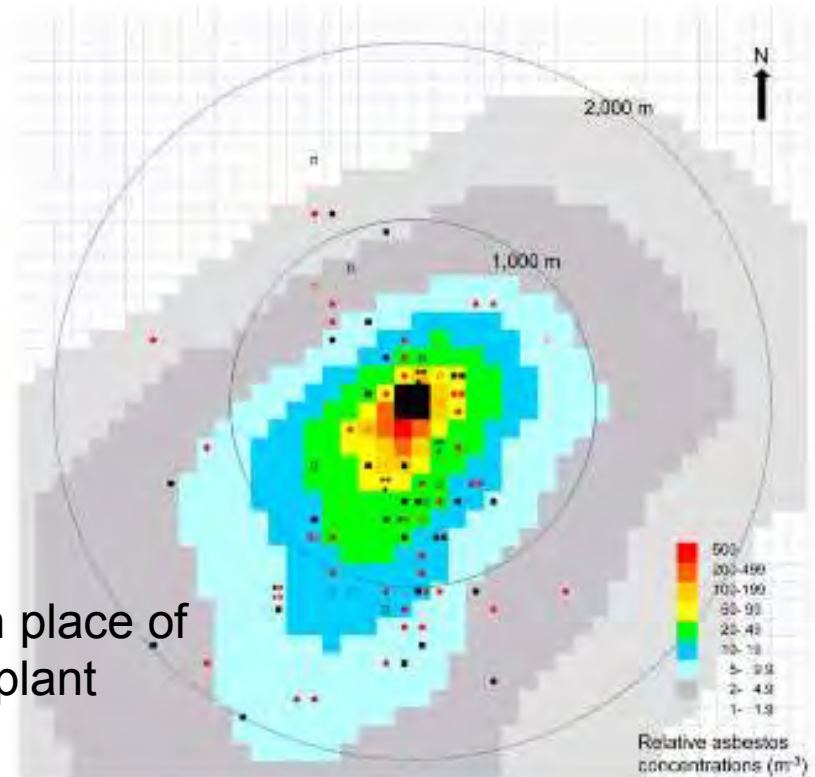


Kubota Shock of 2005

Japanese Asbestos Scandal



Asbestos scandal rocked Japanese society; asbestos affected not only workers but also residents who had lived near an asbestos plant



Distribution of asbestos contamination with place of residence for 96 mesothelioma victims. ■:plant

Courtesy Prof Ken Takahashi

Residual asbestos in buildings and environment

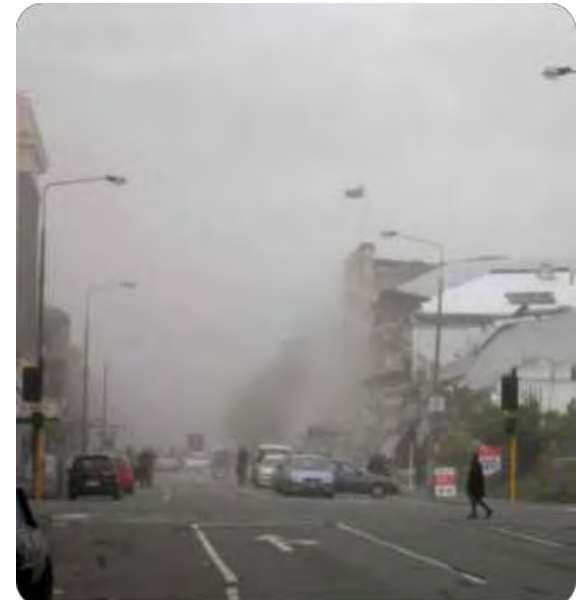


11 September 2001 : 1,000 tons of asbestos





Christchurch 22 February 2011

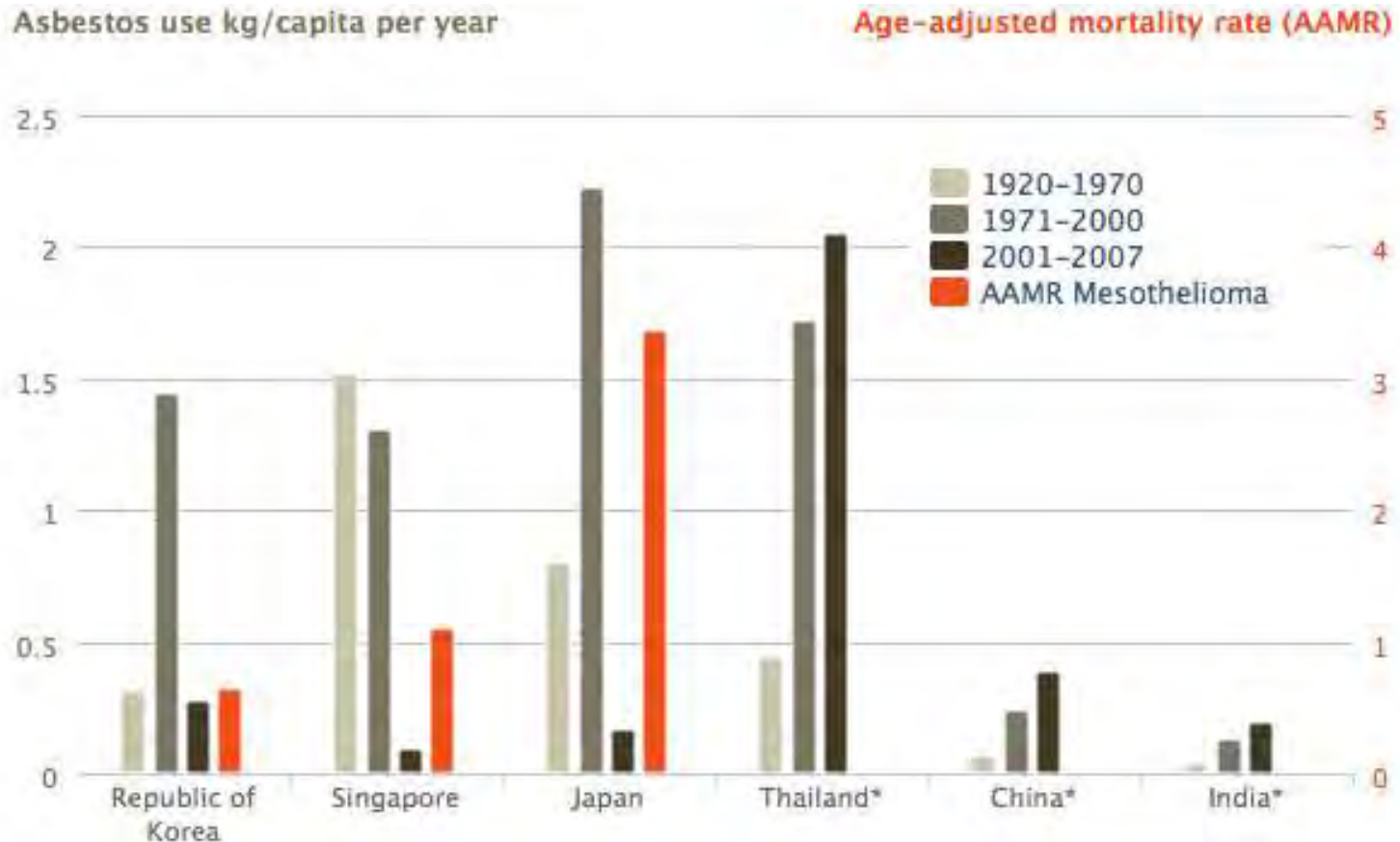


Asia's emerging asbestos epidemic

Syed Aljunid

United Nations University

5.10.2011



The clearest warning yet on ARDs in Asia.
Data availability still a hindrance on the two most populous nations.



Fact sheet No.343, July 2010

Elimination of Asbestos-Related Diseases

- About 125 million people in the world are exposed estimates, more than **107,000** people die each year from ARDs
- All forms of asbestos are carcinogenic to humans, and may cause mesothelioma and cancer of the lung, **larynx and ovary**.

newly added ARDs

upgraded from 90,000

Asbestos use among Asian countries (kg per capita per year)

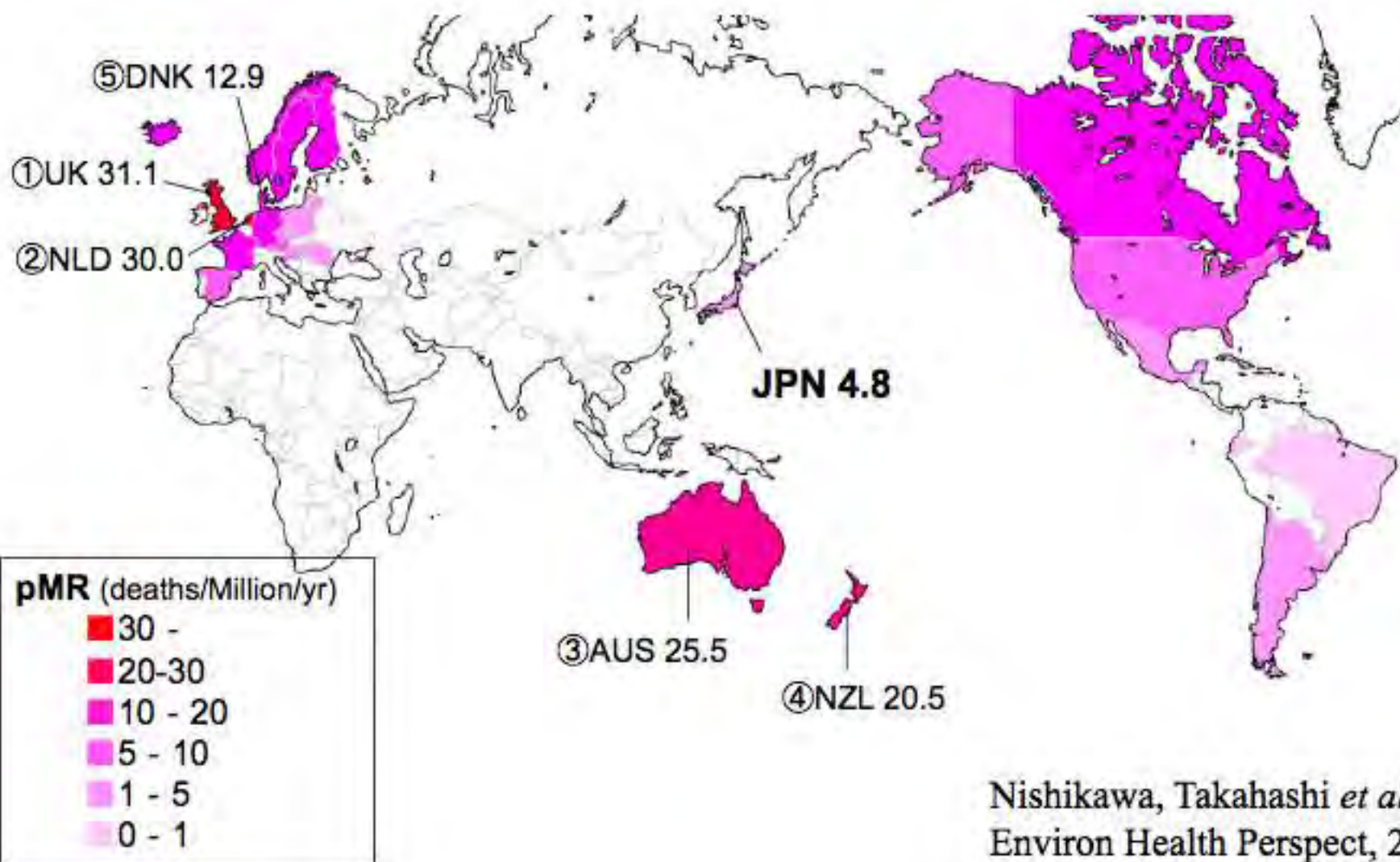
(■) >1.0, (■) 0.1 to 1.0, (■) <0.1, (□) data not available.

1971-2000



Pleural Mesothelioma

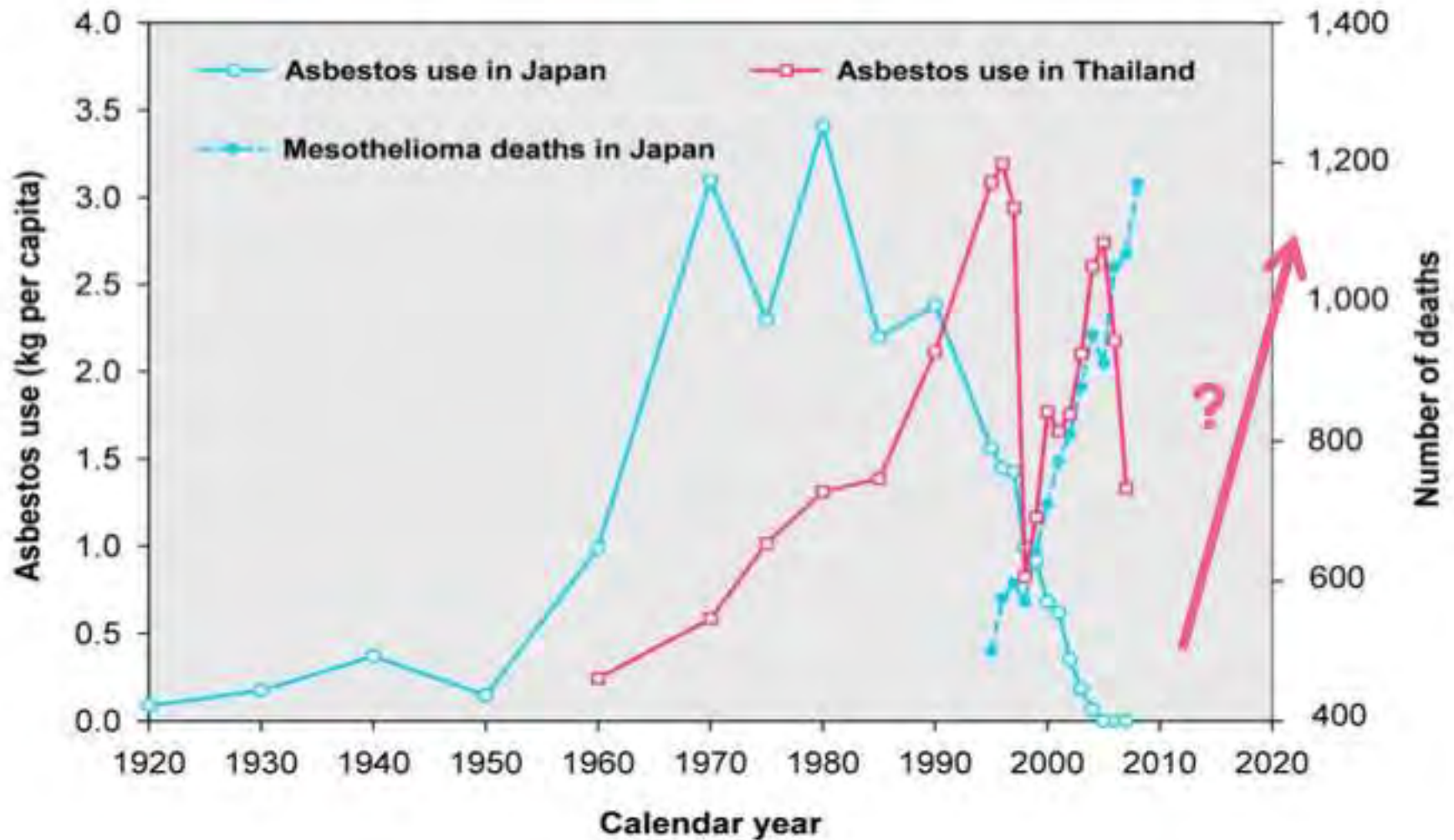
Period Mortality Rate (1996-2005) : pMR (deaths/Million/yr)



Nishikawa, Takahashi *et al.*
Environ Health Perspect, 2008

The National Story on Asbestos

Déjà vu?



The threat from deadly asbestos

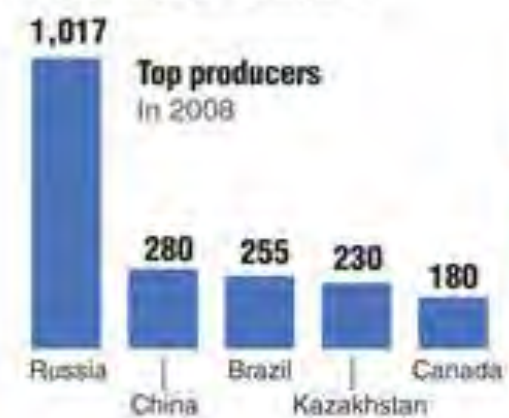
Asbestos, once a prized building material, is now banned or restricted in 52 countries because it causes cancer. Its use in developing nations, however, is growing thanks to a multinational lobbying campaign.

Where banned or restricted



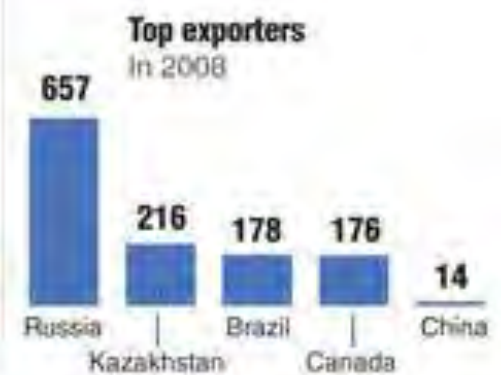
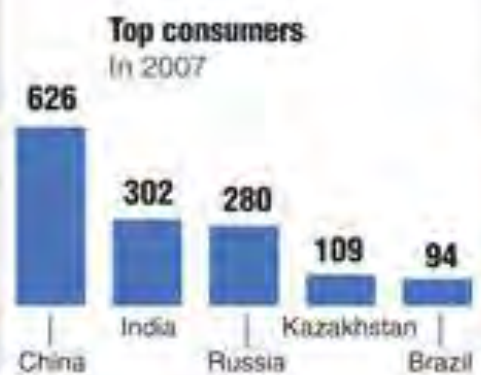
Who deals in asbestos

In thousands of metric tons



Health effects

- 100,000 workers die from asbestos-related disease each year
- Thousands more die from environmental exposure



ORIGINAL ARTICLE

A 37-year observation of mortality in Chinese chrysotile asbestos workers

Xiaorong Wang,¹ Eiji Yano,² Hong Qiu,¹ Ignatius Yu,¹ Midori N Courtice,¹ L A Tse,¹ Sihao Lin,¹ Mianzhen Wang³

The Chongqing plant opened in 1939 and expanded rapidly between 1958-1996 using up to 6,000 tonnes of asbestos annually.

Only chrysotile from the Sichuan mines was used : analysis of samples in 2000 was unable to detect any tremolite contamination.

This is a 37 year retrospective cohort study in which asbestos workers mortality data was compared to a reference group of workers in an electronics factory established at the same time in that city.

ORIGINAL ARTICLE

A 37-year observation of mortality in Chinese chrysotile asbestos workers

Xiaorong Wang,¹ Eiji Yano,² Hong Qiu,¹ Ignatius Yu,¹ Midori N Courtice,¹ L A Tse,¹ Sihao Lin,¹ Mianzhen Wang³

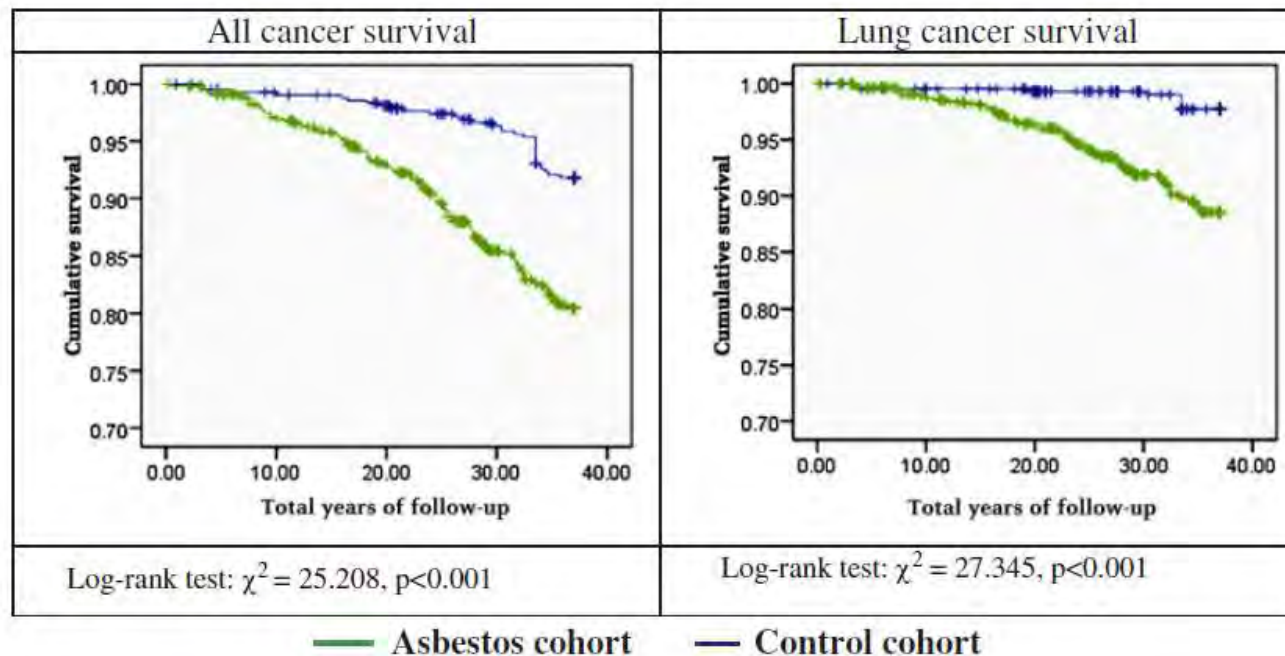


Fig 1 Kaplan-Meier curves for cumulative survival from all cancers and lung cancer in asbestos workers and controls



The asbestos disease epidemic: here today, here tomorrow

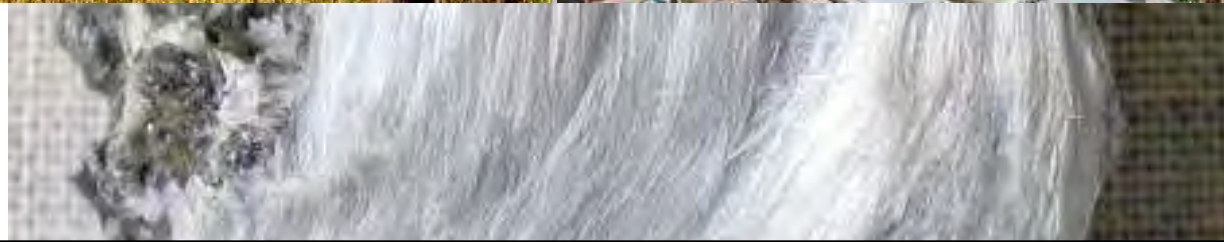
Paul Cullinan and Neil Pearce

The findings from the Chingquong study show a more than three-fold increase in the risk of death from lung cancer (and also non-malignant respiratory disease) in the asbestos workers after statistical control for smoking.

There was clear evidence of an exposure-response relationship in both smokers and non-smokers.

This argues against the “amphibole hypothesis” as the asbestos was pure chrysotile.

The asbestos disease epidemic is not over : it has simply moved to other nations, and occupational health workers all over the world have an obligation to ensure it does not repeat itself.



Can the use of asbestos ever be controlled to the extent that it is safe in mining, processing and in subsequent placement in the environment, where it will be safe for future generations?





**Asbestos: elimination of asbestos-related diseases
Fact sheet N° 343 July 2010**

Key facts:

About 125 million people in the world are exposed to asbestos at the workplace.

According to WHO estimates, more than 107 000 people die each year from asbestos-related lung cancer, mesothelioma and asbestosis resulting from occupational exposure.