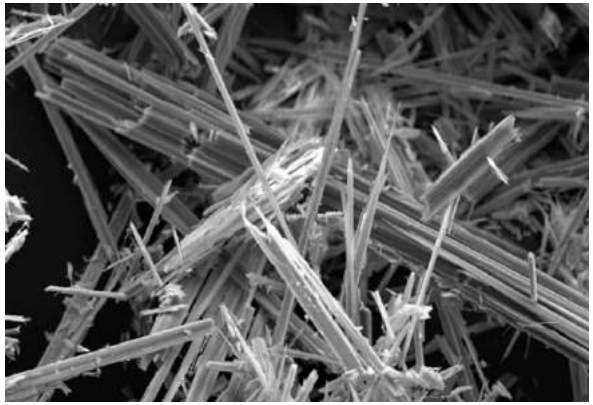
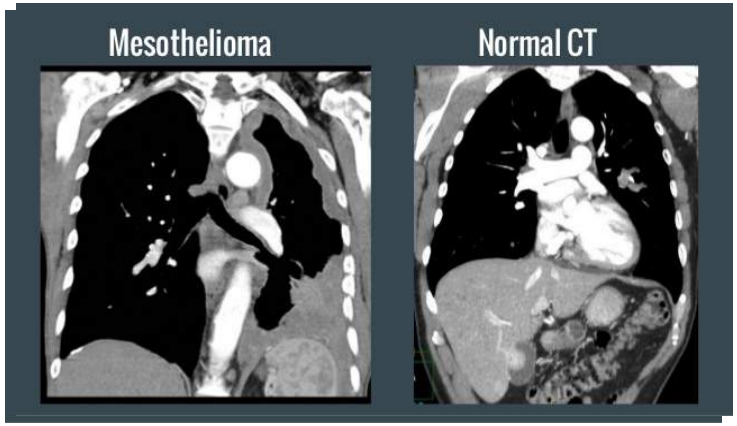
Asbestos:
The cost of Putting Profit before Principles

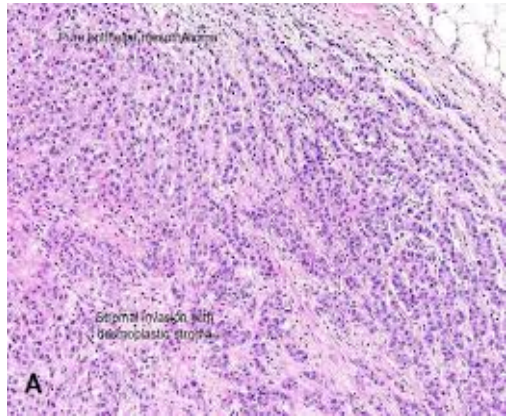
Gil Barbezat

University Club

5 April 2019







Overview

- Types of asbestos
- History: Ancient and Industrial
- Uses
- Health hazards
  - ARDs: asbestosis, lung cancer, mesothelioma
  - Attempts to deal with risks
  - Denial, obfuscation and skulduggery
- Litigation and its effects
- Current consequences

Types of Fibre

- **Serpentine - curly**
  - **Chrysotile (90%)**

- **Amphibole – needle like**
  - **Amosite (Brown)**
  - **Crocidilite (Blue)**
  - **Tremolite**
  - **Anthophyllite**
  - **Actinolyte**

Asbestos: Greek ‘unquenchable or inextinguishable’

- Stone age, 750 000 yrs ago; dating of fibres
- 2 500 BC Finland - blended pots, cooking utensils
- 200 BC Egyptian burial shrouds
  Persians, Greeks, and Romans
  Charlemaigne: Tablecloths, napkin cleaning in fire


Greek Slaves Mining

- Ist C, Pliny the Elder: Slave miners died young. Lung disease noted
- Marco Polo: Told asbestos “salamander wool”

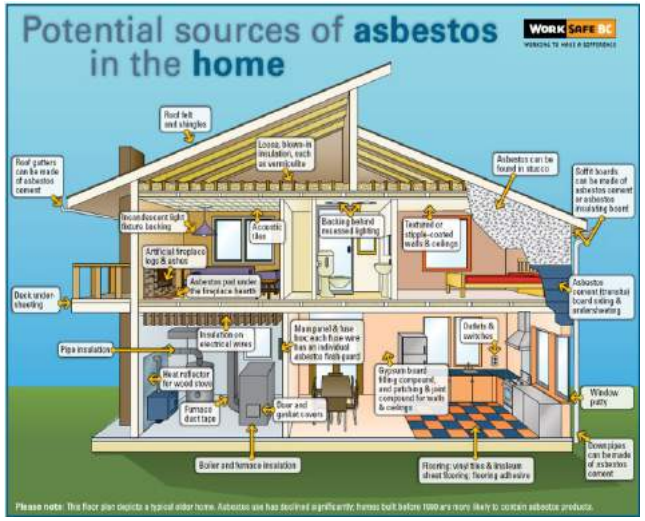
International Interest

- **Mining**
  - **1847 Canada, Quebec**
  - **1823 USA NY, ‘99 Vermont**
  - **1876 Northern Italy**
  - **1880s Russia, Urals**
  - **1893 South Africa, NW Cape**

- **Factories**
  - **UK 1888 (since 1862) Manufacturing**
  - **USA 1858 Johns-Manville Co, increased 1899**
  - **Germany 1870 Manufacturing**

“Miracle Material” > 3000 products

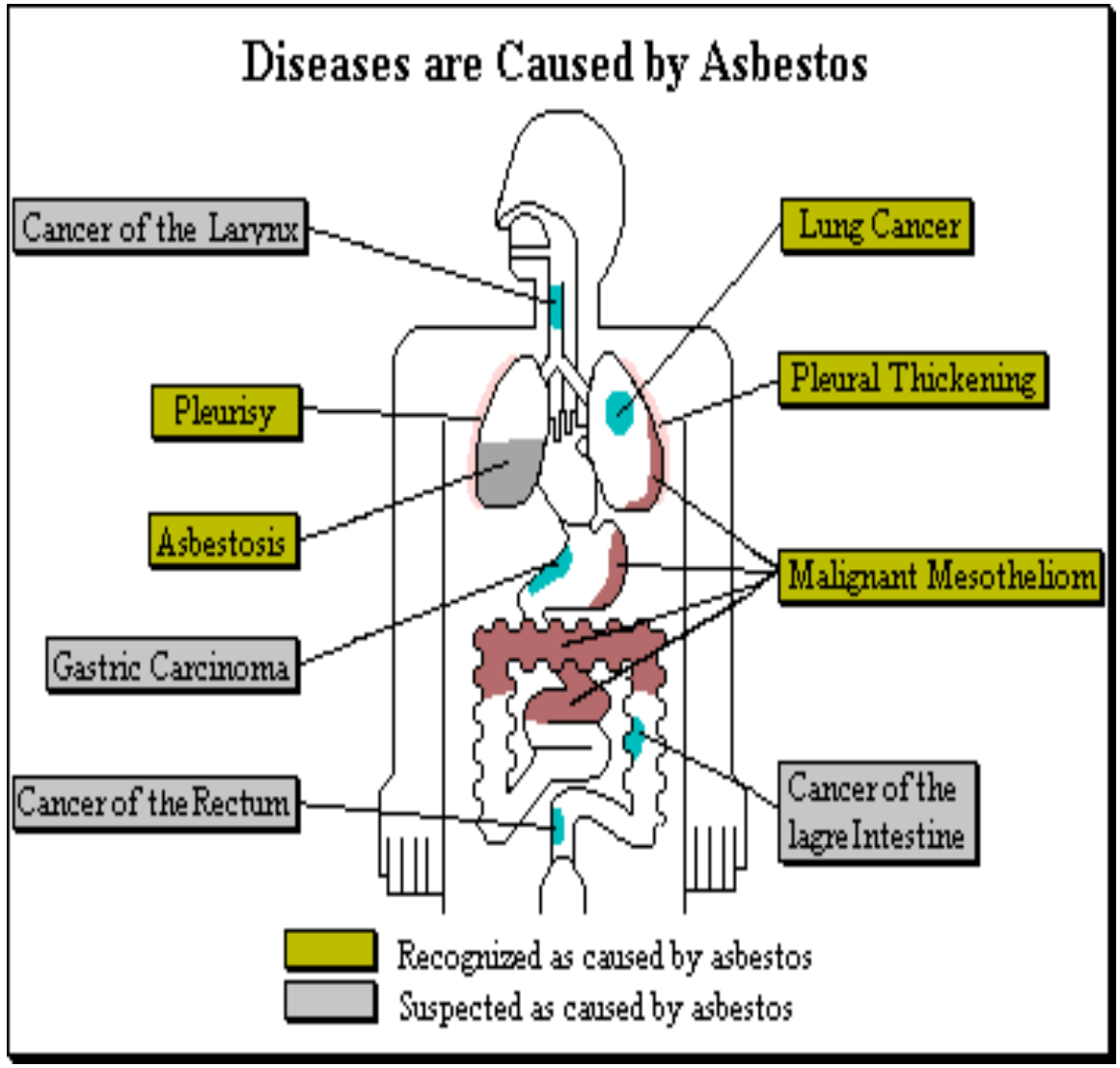
- Insulation – wiring, buildings, pipes
- Woven fabrics, nets
- Motors – gaskets, breaks
- Ceilings, floorings
- Concrete bricks
- War – e.g. aircraft carrier decks



- 2011 - about >50% UK houses still had asbestos
- Note asbestos in NY at 9/11 and CHC earthquakes

Recognition of Health Hazards - Diseases

- **Asbestosis**
- **Pleural: plaques**
  thickening
  effusions
- **Lung Cancer**
- **Mesothelioma**



Health Hazards

1. When did first solid body of evidence emerge?

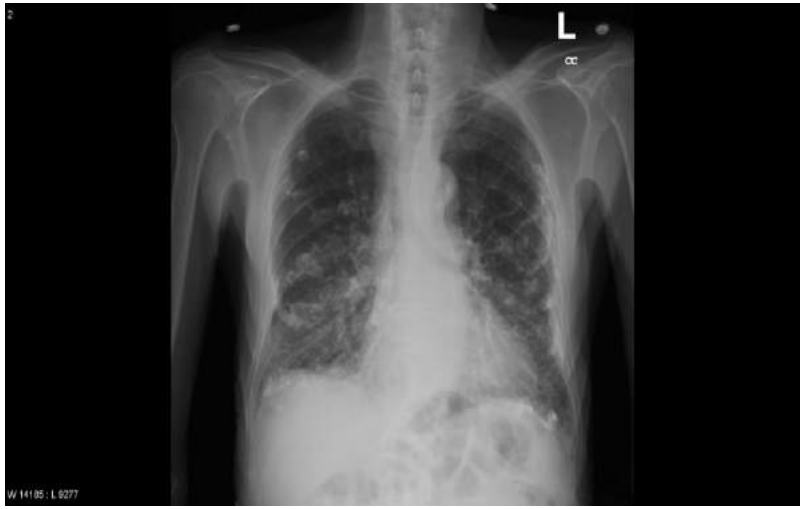
2. When did this evidence enter the known realm of “best available medical science”?

NB Consensus does not imply universal agreement

Commercial filter applied to interpretations

Isolated observations

- **1899 high mortality in asbestos workers**
- **1906 Deaths in asbestos workers**



- **1918 Insurance companies first decline to cover asbestos workers**
- **1922 Respirators used for asbestos in US Navy**

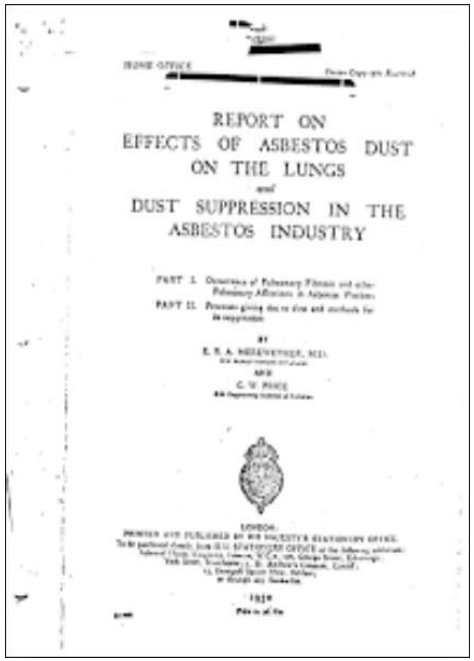
Dr W E Cooke: Lancashire Pathologist - 1924

- **Autopsy on young woman textile worker (Nellie Kershaw) said to have had 'asbestos poisoning' 2 years prior; also had TB**

- **"Mineral particles in the lungs originated from asbestos and were, beyond reasonable doubt, the primary cause of the fibrosis of the lungs and therefore of death."**

Br med J; 1924, 2, 147

First Epidemiological Study


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

- **Prolonged duration of exposure to ‘asbestos dust’ at high concentrations produced “definite occupational risk among asbestos workers as a class”**

Merewether E, Price C. Report on effect of asbestos dust on the lungs and dust suppression in the asbestos industry. London: HMSO: 1930

First claims lodged 1929
Questions and Queries arise:

- What is ‘prolonged exposure’?

- What is a ‘high concentration’ of asb dust?

- How can this be differentiated from:
  - silicosis (also common in those environments)?
  - TB (much commoner in those populations)?
  - effects of cigarette smoking (rising incidence)?

Toxicity Gains Recognition

- **1930 Fatalities Report "for internal use only"**
- **1932 US Bureau of Mines "Dangerous dust"**
- **1933 Met-Life Insurance: 29% workers in one company: settled with strict conditions**
- **Lung cancer with asbestos: KM Lynch WA Smith**

Am J Cancer 1935; 24: 56

Suppression of ‘Toxic Information’
How is this now well known?

- Clear evidence from Court Records during claims and bankruptcy, especially in 1980s

- Johns Manville 1858

- Raybestos-Manhattan (Raymark) 1902

- Obscured by multiple name changes over time

Cancer links

- **Isolated case lung cancer reports since 1935**

  Lynch and Smith, Am J Cancer; 24; 56

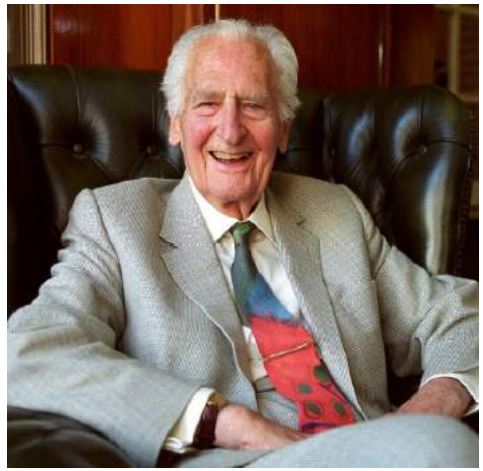
- **Pleural cancers in Germany (Wedler 1943)**

- **Canadian report of mesothelioma 1952**

- **Classic publication from Doll 1955**

Doll's Classic Publication

- **105 Coroners' Autopsies in Employees from Rochdale textile plant (1935 – 1952)**
  - **Asbestosis: n = 75, 15 with LC**
  - **No Asbestosis: n = 30, 3 with LC**



- **Asbestos workers employed 20 yrs or > had 10 times risk of lung cancer than age matched population at large; latency important**

R Doll, Br J Ind Med **1955**; 12: 81

J Christopher Wagner (1923 - 2000)

- 1951: SA med graduate (Wits)

  post WW2 service

- 1954 Asbestos Research Fellow,

  Pneumoconiosis Research Unit

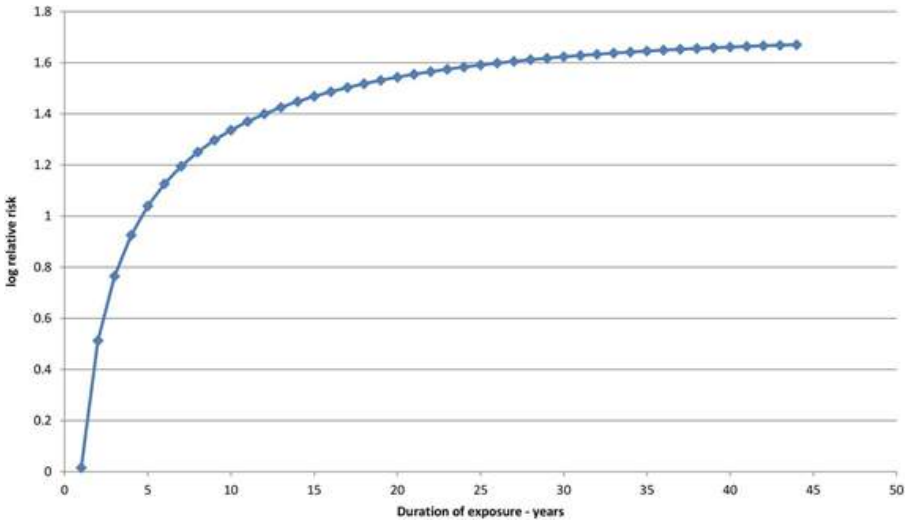
- Asbestos mines in NW Cape – blue (crocidilite)

  1959 Paper at International Pneumoconiosis Conference, JHB: Asbestosis, Mesothelioma

Classic Publication - 1960

- **33 cases: 22 M, 11 F**

  Ages 31 – 68
- **Pleural mesothelioma**
- **32 exposed to asbestos**
- **Rarely seen elsewhere**



Brit. J. industr. Med., 1960, **17**, 260.

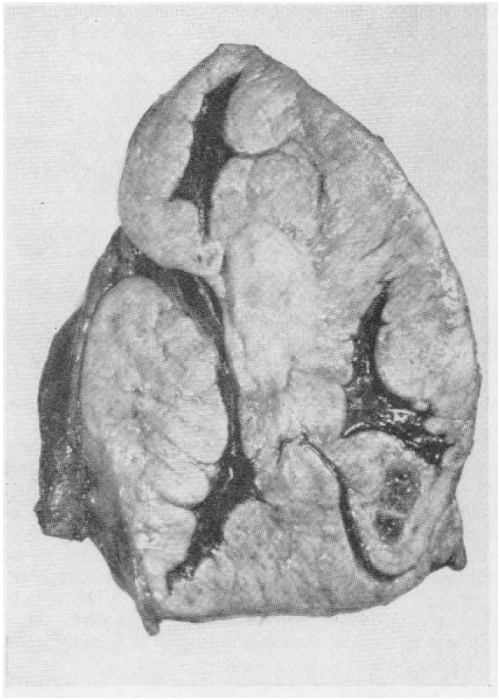
DIFFUSE PLEURAL MESOTHELIOMA AND ASBESTOS EXPOSURE IN THE NORTH WESTERN CAPE PROVINCE

BY

J. C. WAGNER, C. A. SLEGGS, and PAUL MARCHAND

From the Pathology Division, Pneumoconiosis Research Unit of the Council for Scientific and Industrial Research, Johannesburg, West End Hospital, Kimberley, and the Department of Thoracic Surgery, University of the Witwatersrand and Johannesburg General Hospital

(RECEIVED FOR PUBLICATION APRIL 24, 1960)



Distinguished Research Career

- **Hounded out of SA – death threats!**

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MESOTHELIOMAS IN RATS FOLLOWING INOCULATION WITH ASBESTOS

J. C. WAGNER AND G. BERRY

From the Medical Research Council's Pneumoconiosis Research Unit, Llandough Hospital, Penarth, Glamorgan

Received for publication March 19, 1969

EPIDEMIOLOGICAL studies in man suggest that the risk of mesothelioma of the pleura and peritoneum is related to past exposure to asbestos dust, and that there may be differences with the type of fibre (Gilson, 1966). As these pleural mesotheliomas can be induced in animals by intra-pleural injection of the asbestos (Wagner, 1962; Smith *et al.*, 1965; Roe *et al.*, 1967) animal experiments may help to establish factors influencing the occurrence of these tumours, such as the type of fibre, the mechanism of access to the pleura and peritoneal surfaces, and the importance of particle size.

A large scale intra-pleural injection experiment in specific pathogen-free and standard animals was started in November 1962. A preliminary report on the tumours arising in the SPF rats was given by Wagner in 1965. This included detailed descriptions of the material, methods and histological findings. At the Second International Congress on the Biological Effects of Asbestos held in Dresden in 1968, the results of both experiments were presented. In this paper, the statistical basis of these experiments and the results, are considered.

MATERIAL

Six hundred specific pathogen-free (SPF) rats of the Wistar strain, were given to us by the Imperial Chemical Industries, Pharmaceutical Division at Alderley Edge, Cheshire. A similar number of Standard rats were purchased from an accredited dealer. SPF rats were chosen to ensure long survival of the animals, as, in the original experiment using Standard rats, bronchiectasis had been common. It was, however, considered necessary to use Standard rats as well in this experiment, as it was not known whether SPF rats would react to the intra-pleural injections, and it was not possible in a 4 year experiment to risk a negative result.

The following dusts were used:

1. *Amosite* asbestos dust—prepared from pure fibre obtained from a mine in the Transvaal.
2. *Chrysotile* asbestos dust—a super fine grade obtained from a Canadian mine.
3. *Crocidolite* asbestos dust—prepared from a virgin fibre obtained from a mine in the North West Cape; Harington (1962, 1965) assessed the oil content by cyclohexane extraction.
4. *Extracted Crocidolite*—a similar sample to (3) from which Harington had removed oils by repeated reflux extraction in cyclohexane until there was no evidence of fluorescence in the solvent by UV light.

- **1962 – 1988 Pneumoconiosis Research Unit, Wales**

  Rats: mesotheliomas with all types asbestos

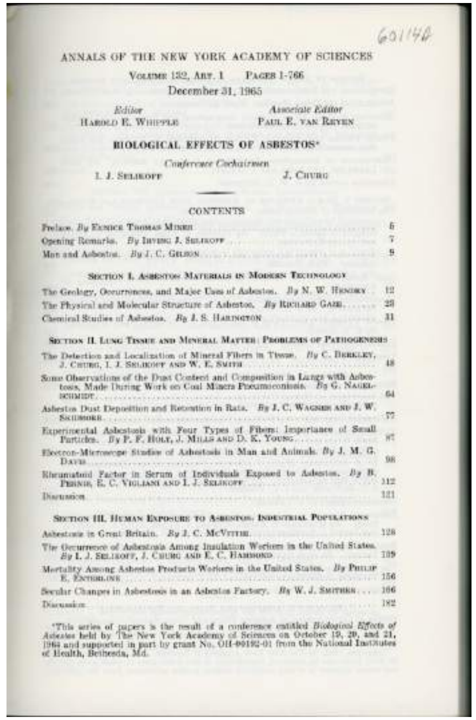
  Br J Cancer 1969: 23; 567

  Strong international links

- **1962 JFK appoints Scientific Advisory Committee**

NY Acad Sci Conference, NY, 1964

- **Physicians, Scientists, Industrialists: 40 delegates, 8 countries**



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ANNALS OF THE NEW YORK ACADEMY OF SCIENCES

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December 31, 1965

Editor HAROLD E. WHIPPLE

Associate Editor PAUL E. VAN REYEN

BIOLOGICAL EFFECTS OF ASBESTOS*

Conference Cochairmen

I. J. SELIKOFF J. CHURG

CONTENTS

*This series of papers is the result of a conference entitled *Biological Effects of Asbestos* held by The New York Academy of Sciences on October 19, 20, and 21, 1964 and supported in part by grant No. OH-00192-01 from the National Institutes of Health, Bethesda, Md.

- **Biological Effects of Asbestos: Report Recommendations of Working Group on Asbestos and Cancer. 765 pages.**

  Co-chairs: I J Selikoff, J Churg

  Annals NY Acad Sci 1965 v132 art1

- **“Everything known to date” published here**

Progress

- **1970 EPA: Asbestos first substance regulated; found in potable water all over USA**
- **1971 Clean Air Act**
- **1976 Toxic Substances Act**
- **WHO introduces regulations**

Progress, but:

- **Regulation in UK:** **Licensing 1983**

  Partial ban 1985 ->

  Product Safety 1985 ->

  At Workplace 1987 ->

  Banned 1999

- **1989: US EPA bans most asbestos products**

  - 1991 overturned by Appeal Court

“Elephantine Mess” for Jurists

- **1967 First successful Personal Injury Claim**

  Lawsuits proliferate in late 1960s, early 1970s

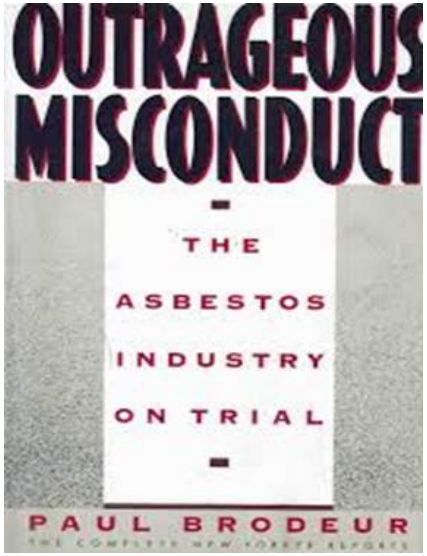
  Bankruptcies 1980s

- **“Mass tort litigation emerges when an event or series of related events allegedly injure a large number of people ....., giving rise to a large number of cases”**

Report on Mass Tort 1999

Indefensible Industry on Trial

- 1980: 15 000 claims against 300 companies: Manville Trust value $3 billion: depleted in 2 yrs



- By 1990s 100 000 cases pending:

  750 000 cases on record

- "Tort System emerged as the uniquely effective and indispensable means of exposing the asbestos conspiracy, providing compensation for victims and defeating future malfeasance"

End of Company Combat?

Johns Manville 1858

Bankruptcy 1982

Revived 1988

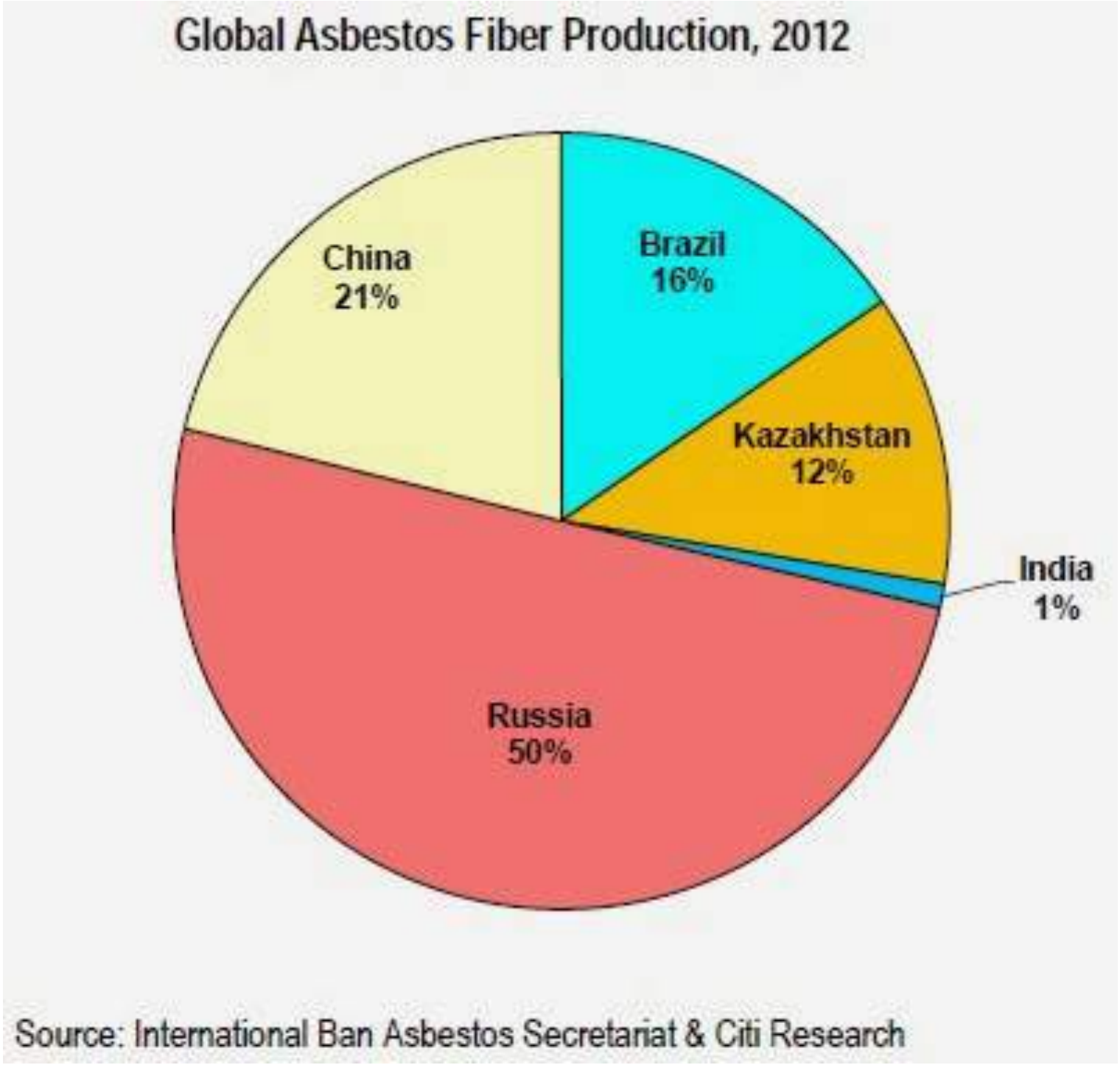
Raybestos-Manhattan (Raymark) 1902

Bankruptcy 1989

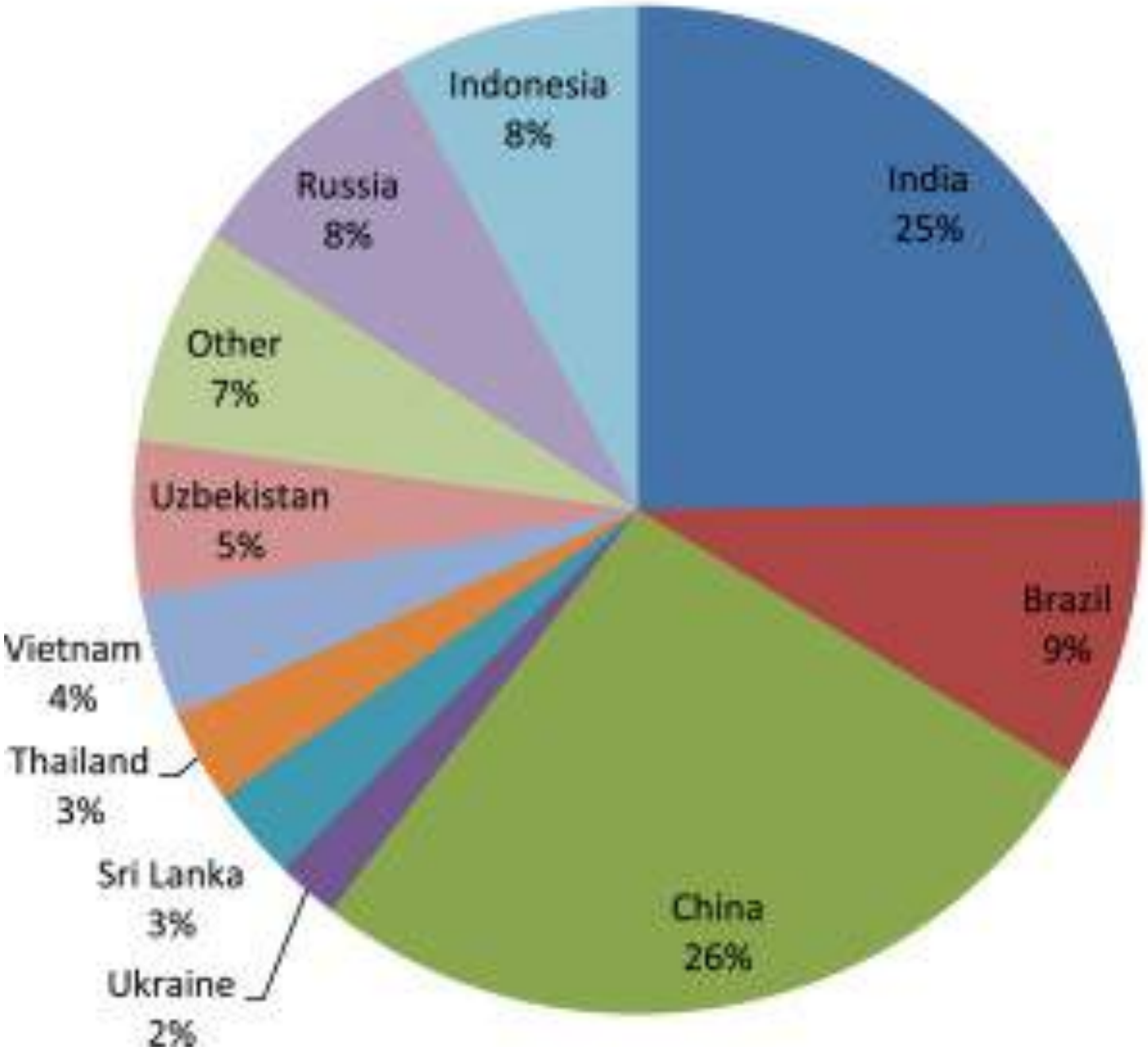
Revived 2000

Multiple name changes

Evidence clear from Court Records


Global Asbestos Fiber Production, 2012
China
21%
Brazil
16%
Kazakhstan
12%
India
1%
Russia
50%
Source: International Ban Asbestos Secretariat & Citi Research

Global Asbestos Fiber Consumption, 2012



Deaths Continue

- **255 000 Deaths/yr**

- **2 030 000 tons consumed annually**

  Every 20 tons kills 1 person

Int J Environ Res Pub Hlth 2018: 15; 1000

Furuya S et al

What about New Zealand?

- First imported in 1930s

  Small quantity mined in Takaka

- Raw asbestos imports banned 1984

- All asbestos products banned 1 Oct 2016

- Expected deaths to reach 12 000

  Rise until 2030 - 2040

Trump makes asbestos great again

- **EPA under Trump relaxes asbestos controls: "Carcinogenicity a mafia conspiracy"**

- **US imports up 2 000%; Russia biggest exporter**

- **Pallets state "Approved by the 45th President of the United States"**

- **"Donald is on our side"**

Sydney Franklin, 6 Aug 2018

The Architects' Newspaper

The Final Irony!