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# White Asbestos: It's Still a Killer!

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In recent months, it appears that some commentators on asbestos are claiming that the UK is over reacting to the risks associated with exposure to chrysotile (white) asbestos.

In this report, the GMB reviews the scientific information and concludes that white asbestos is still a killer in the real world that people live. However, the difficulty that faces the GMB and other organisations in relation to asbestos, is just how much evidence do we need to show? If we consider all the organisations that have discussed this issue, they all point in the same direction:

***White asbestos is still a killer!***

## How much science is needed to prove a killer?

Chrysotile asbestos is one of the most studied substances in the world of occupational health. Yet some claim it is not really a risk to health, when properly controlled. Unfortunately, it is the question of controls that has concerned the GMB the most.

In the UK, 'controls' specific to asbestos has applied since 1931. This has not stopped around 4,000 people a year dying from asbestos related diseases. Appendix 1 shows how long it has taken to get the controls on asbestos we currently have. Nevertheless it is clear that people need to be reminded of some key information about chrysotile.

The key reports and papers that relate to chrysotile asbestos are referred to next.

## United Nations

On 21 February, 2002 a news release was issued by the United Nations Environment Programme (UNEP) which stated:

“A committee of government-appointed experts has concluded that three widely-used pesticides and all forms of asbestos should be added to an international list of chemicals subject to trade controls.”

“The Committee’s (the Interim Chemical Review Committee/ ICRC) review of asbestos was triggered by bans in Australia, Chile and the EU (under the Convention a review is initiated when two countries in two different regions ban or severely restrict a chemical; the monocrotophos review was triggered by bans in Australia and Hungary).”

ICRC Chairman Reiner Arndt of Germany said:

“This decision of the Committee is another big step towards eliminating the risks associated with asbestos and its products. Even in countries like mine, where these products have been banned for a long time, they remain a major problem when decontaminating buildings and paying the huge costs of treating people with serious diseases caused by asbestos.”

The ICRC recommendation is now sent to the Intergovernmental Negotiating Committee of the Rotterdam Convention on the Prior Informed Consent (IPC) Procedure for certain Hazardous Chemicals and Pesticides in International Trade which will meet in Bonn from 30 September to 4 October, 2002.

The Rotterdam Convention has been signed by 72 governments (plus the EC) and has thus far been ratified by 18 countries; it will enter into force 90 days after the 50th ratification. In the interim governments have agreed to apply the prior informed consent provisions of the Convention on a voluntary basis.”

## Collegium Ramazzini

The Collegium Ramazzini is an academy with a closed number of 180 members from 30 different countries in the 5 continents. It is named after the the acknowledged founder of occupational health and safety, Bernardo Ramazzini. The purpose of the Collegium is, in general, to safeguard life on the planet and human health and, more specifically, its purpose is:

“to be that of a bridge between the world of scientific discovery and those social and political centres which must act on these discoveries to conserve life and prevent disease.”

In May, 1999 the Collegium issued a: *‘Call for an International Ban on Asbestos.’* This call stated that:

“To eliminate the burden of disease and death that is caused worldwide by exposure to asbestos, The Collegium Ramazzini calls for an immediate ban on all mining and use of asbestos. To be effective, the ban must be international in scope and must be enforced in every country in the world.”

The document stated:

“All forms of asbestos cause asbestosis... lung cancer and malignant mesothelioma (IPCS,1988; Dement, Brown, Okun, 1994). Asbestos has been declared a proven human carcinogen by the U.S. Environmental Protection Agency (EPA) and by the International Agency for Research on Cancer of the World Health Organization (EPA, 1986; IARC, 1987). Early indications that chrysotile might be less dangerous than other forms of asbestos have not held up (UNEP, ILO, WHO 1998). The preponderance of scientific evidence to date demonstrates that chrysotile too causes cancer, including lung cancer and mesothelioma (Smith, Wright, 1996; Stayner, Dankovic, Lemen, 1996). Canadian chrysotile that is amphibole-free still is associated with mesotheliomas (Frank, Dodson, Williams, 1998).”

### **International Programme on Chemical Safety**

The International Programme on Chemical Safety (IPCS) published ***Environmental Health Criteria 203 Chrysotile Asbestos*** in 1998 under the joint sponsorship of the United Nations Environment Programme, the ILO and the WHO. It was produced within the framework of the Inter-Organization Programme for the Sound Management of Chemicals. Section 10, pages 144 & 145, of this report said:

“a) Exposure to chrysotile asbestos poses increased risks for asbestosis, lung cancer and mesothelioma in a dose-dependent manner. No threshold has been identified for carcinogenic risks.

b) Where safer substitute materials for chrysotile are available, they should be considered for use.

c) Some asbestos-containing products pose particular concern and chrysotile use in these circumstances is not recommended. These uses include friable products with high exposure potential. Construction materials are of particular concern for several reasons.”

### **French Report on Chrysotile**

A report by INSERM, the French Medical Research Council, commissioned by the Labour Relations Service and the French Health Directorate was entitled: *Effects on Health of the Main Types of Exposure to Asbestos* (June, 1996). In the English version, the passages in bold were marked in bold in the original French document: The report concluded:

“It has now been clearly **established** that:

- all asbestos fibres are carcinogenic, whatever their geological origin;
- the “whole life” risks of lung cancer and mesothelioma are all the greater when the exposure is high, starts early and last a long time;
- the risk of lung cancer is higher for long and fine fibres whether these are amphibole fibres or fibres known commercially as “chrysotile”,
- and the risk of mesothelioma is higher for amphibole fibres than for fibres known commercially as “chrysotile”.

Section 3.1.2 states:

“The group of experts wishes to recall certain data concerning several problems arising from the management of the risks associated with exposure to asbestos.

1. In respect of the **banning of asbestos**, it should be remembered that this is a carcinogen and that, in accordance with European law, **any carcinogen must be removed whenever it is technically possible to do so**. Where this measure does not appear to be technically feasible, every effort must be made to reduce the levels of exposure to the lowest values which it is technically possible to achieve...

2. In respect of the **carcinogenicity of the fibres known commercially as “chrysotile”**, it must be emphasised:

- the **mortality from lung cancer** arising from exposure to asbestos fibres is as high in the populations exposed to the fibres known commercially as “chrysotile” as it is in those with combined exposure or exposure to amphiboles alone;
- the exposure to asbestos fibres known commercially as “chrysotile” is also the cause of an **indisputable increase in mortality from mesothelioma** (although it is well established that the risks of mesothelioma are higher for exposure to amphiboles or to mixtures of amphiboles and chrysotile than for exposure solely to the fibres known commercially as “chrysotile”...

### **Health and Safety Executive Report**

The Institute for Environment and Health (IEH) was commissioned by the Health and Safety Executive to produce a report: *Chrysotile and Its Substitutes: A Critical Evaluation* in April, 1998. This report noted:

“The continued use of chrysotile in asbestos-cement products is not justifiable in the face of available and technically adequate substitutes. Likewise, there

seems to be no justification for the continued residual use of chrysotile in friction materials.”

### **World Trade Organisation**

In 2001, the World Trade Organisation adjudicated on an asbestos dispute between France and Canada. In 1997, France had banned chrysotile and Canada officially complained to the WTO that this was not allowed under trade rules. Having established the scientific evidence, the WTO stated that France’s ban was justifiable. The WTO that chrysotile is an established carcinogen; there is no safe threshold of exposure; and ‘controlled use’ was not an effective alternative to a national ban.

The decision was significant because the WTO is very resistant to any ban on anything. Their whole constitution is based on free trade. So to have them saying that in practice ‘controlled use’ of chrysotile was not effective and they supported a ban can only mean that the scientific evidence supporting such a ban was very persuasive.

### **Scientific Papers**

***Chrysotile Asbestos is the Main Cause of Pleural Mesothelioma*** by Allan H. Smith and Catherine C. Wright appeared in the American Journal of Industrial Medicine 30:252-266 (1996). It concluded:

“Reported data do not support widely quoted views regarding the relative inertness of chrysotile fibers in mesothelioma causation. In fact, examination of all pertinent studies makes it clear that chrysotile asbestos is similar in potency to amphibole asbestos. Since asbestos is the major cause of mesothelioma, and chrysotile constitutes 95% of all asbestos use world wide, it can be concluded that chrysotile asbestos is the main cause of pleural mesothelioma in humans.”

***Relative Risk of Mesothelioma Among Railroad Machinists Exposed to Chrysotile*** by Thomas F. Mancuso was in the American Journal of Industrial Medicine 13:639-657 (1988).

“This study challenges the assertion of low relative risk of chrysotile in the causation of mesothelioma... The focus of the study is on mesothelioma among railway machinists employed in the steam locomotive era who were exposed to chrysotile... The findings demonstrated an extremely high relative risk for machinists exposed to chrysotile for the induction of mesothelioma in the individual year of hire cohorts. A similar observation was noted for other crafts hired in the same time period. One mesothelioma occurred for every 13 machinists hired in the succeeding years (1920-1929) and constituted 34% of all cancer deaths. It is concluded that chrysotile is far more hazardous in the induction of mesotheliomas and that the asbestos cancer risk in the steam locomotive eras was much higher than had been previously estimated.”

***Cancer Mortality among Workers Exposed to Amphibole-free Chrysotile Asbestos*** by Eiji Yano, Zhi-Ming Wang, Xiao-Rong Wang, Mian-Zheng Wang and Ya-Jia Lan was in the American Journal of Epidemiology (2001;154:538-43). The authors found that:

“These results suggest that heavy exposure to pure chrysotile asbestos alone, with negligible amphibole concentration, can cause lung cancer and malignant mesothelioma in exposed workers.”

### **Alternatives to Asbestos**

In 1986, the Health and Safety Executive published a *report Alternatives to asbestos products: A review*. It was produced on the recommendation from the Advisory Committee on Asbestos and identified the technical alternatives to asbestos available at the time of the Report. It was concluded that:

‘Provided that the user is prepared to accept the cost penalties ..... substitutes are now available for the majority of applications.’

The Report went on to detail product by product, the alternatives that were available to asbestos. The contact details of 662 companies that could supply or manufacture the alternatives were listed. In other words, in 1986, there was a comprehensive list of alternatives – substitutes - to asbestos and companies that could supply them. A key word here is costs.

In terms of UK law, the terms ‘reasonably practicable’ and ‘practicable’ have significant differences in their legal definition. With ‘reasonably practicable’ an employer is required to balance the costs of eliminating or reducing a risk with the improvement in protection. So, if a relatively small reduction in risk is associated with a huge cost, it is not likely to ‘reasonably practicable’. ie the cost is disproportionate to the benefit.

When ‘practicable’ is considered, it is not equated with cost but with technical feasibility. If something is ‘practicable’ it is technically possible to do but may be expensive. For example, most machinery guarding requirements are determined by what is ‘practicable’.

With asbestos substitution, these terms are important. The Control of Asbestos at Work Regulations 1987 contain the following requirement:

‘Where any employees may be exposed to asbestos in any manufacturing process or in the installation of any product, prevention of such exposure shall be achieved, where it is practicable, by substituting for asbestos a substance which, under the conditions of its use, does not create a risk to the health of his employees or creates a lesser risk than that created by asbestos.’

As stated at the beginning of this section, the HSE had produced a document showing that substitutes were available for the ‘majority’ of asbestos applications although these may cost more. It is also made clear that in the Regulations that the

substitutes should a reduced risk when compared to the risk of exposure to asbestos. So the substitute does not need to be harmless but at least it should be less harmful than asbestos, in use.

Despite the legal position, little pressure was applied to ensure employers in the UK obeyed this law. However, as the information concerning asbestos was being reviewed in the early 1990s, this failure became clearer. When the European Union started looking at asbestos to extend the bans on blue and brown asbestos to white, they considered the health effects of white asbestos in comparison to the most commonly used substitutes. The following report was produced.

**Comparative Hazards of Chrysotile Asbestos and Its Substitutes:** A European Perspective, Paul T.C. Harrison, Leonard S. Levy, Graham Patrick, Geoffrey H. Pigott and Lewis L. Smith where the authors concluded:

"that chrysotile asbestos is intrinsically more hazardous than p-aramid, PVA, or cellulose fibers and that its continued use in asbestos-cement products and friction materials is not justifiable in the face of available technically adequate substitutes"

When considering the practicality of alternatives to asbestos, it is critical to see how the materials behave in practice. Airborne Polyvinyl Alcohol (PVA) and Cellulose fibres were measured in Fibre-Cement factories in 7 European countries.<sup>1</sup> The authors concluded:

'that handling of PVA fibres as well as the machining of PVA and cellulose fibre containing cement products in the fibre-cement factories surveyed have a low potential to release fibres with critical fibrous (WHO) dimensions.'

When asbestos breaks down, fibres are released and some are small enough to go deep into the lung. In the study referred to, the authors argue that when the materials are machined, larger particles are given off which are unlikely to be small enough to enter the lungs. This is not to argue that PVA or cellulose are safe. However, it is clear that when compared to white asbestos, these alternative fibres are less hazardous.

Under European Health and Safety Directives, the UK has to comply with the provisions of the Directives. This is done by transposing the requirements of the respective Directive, into UK law. Under the Carcinogens Directive (90/394/EEC) the following was required of all Member States:

'The employer shall reduce the use of a carcinogen at the place of work, in particular by replacing it, in so far as is technically possible, by a substance, preparation or process which, under its conditions of use, is not dangerous or is less dangerous to worker's health or safety, as the case may be.'

White asbestos is a defined class 1 carcinogen and has been for some time.

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<sup>1</sup> *Airborne Polyvinyl Alcohol (PVA) and Cellulose Fibre Levels in Seven European Countries:* Raeve, Van Cleemput and Benoit: Ann occupational Hygiene Vol 45, No 8

In an article *Whiter than White?* The author John Bridle offers his considered views that most authorities have misunderstood the risks associated with exposure to white asbestos. In part of his article, he states:

'The HSE points out that white asbestos is a class one carcinogen. At first glance this seems to be conclusive proof of its danger to health. However, under EU guidelines, a product only has to have a potential to cause cancer to be given this status.'

The EU criteria for a class one carcinogen are:

'Category 1

Substances known to be carcinogenic to man. There is sufficient evidence to establish a casual association between human exposure to a substance and the development of cancer.'

This means that there needs to be clear evidence that exposure to the substance causes cancer. In the case of chrysotile this is beyond dispute.

The people who have lobbied the hardest in support of using white asbestos for many years are the Canadian asbestos industry. When Tony Blair became Prime Minister in May 1997, he assured the Canadian Prime Minister that the UK would not introduce a ban on chrysotile unless scientific information supported this.

As a result of the Prime Minister's assurance, a Canadian delegation met with representatives of the Health and Safety Executive. At a meeting held on the 30<sup>th</sup> September 1997 all present at the meeting agreed:

'Sufficient exposure to commercial Canadian chrysotile can be a cause of the three asbestos diseases – asbestosis, lung cancer and mesothelioma.'

Given that asbestos products have been banned since November 1999, the exposure to white asbestos that is likely in the future comes mainly from buildings. ie asbestos already in place. So, how strict will be the control measures that need to be applied to keep exposure to a minimum in the future. In the main, exposure is likely to be greatest in demolition work, building renovation, building maintenance – including gas service engineers, heating and ventilation engineers etc and asbestos insulation removal workers

In February 2001, the Government held a conference *Turning Concern into Action*. It was held because of the appalling accident record of the Construction Industry. Historically when the HSE have held 'blitzes' of construction sites, they have found at least 25% of the sites were in such dangerous conditions that prohibition orders were issued immediately. It is highly unlikely that the strict control measures that should apply to asbestos will be applied in a sector with this kind of history.

The HSE have estimated that building workers exposed to 0.1 fibres per millilitre of white asbestos over a working life could result in one death in 5,000 exposed.



However, they do indicate that it could be as high one in 750 workers. This is a major risk and is very real to those who are likely to be exposed to white asbestos.

## **Conclusion**

White asbestos causes all three asbestos related diseases. Supporters of chrysotile argue that the risk is overstated and that when properly controlled, there is little risk. However, imagining that adequate controls will apply in practice in the construction industry is a naïve hope rather than a realistic proposition. Legally, the UK is bound by the Directives on Carcinogens and that means chrysotile is no longer used in building products. It must remain so.

There is plenty of evidence linking the real risk of contracting asbestos related diseases with exposure to white asbestos. As the list in Appendix 1 shows, it is about time that those who have promoted asbestos keep their collective mouths shut. It would help everybody if they turned their minds to how to stop exposure to all remaining asbestos in the future.

## **APPENDIX 1**

### **Key facts in the history of asbestos use**

Blue (crocidolite), Brown (amosite) and White (chrysotile) Asbestos can all cause asbestosis, lung cancer and mesothelioma.

- Asbestos was found in Finnish pottery around 2500 BC.
- Ancient Greeks used asbestos in temple candlewicks.
- The Romans used asbestos in cloth – shrouds.
- Late 1890s – first reports of concern about the health of asbestos workers.
- 1927 - The term 'Asbestosis' first used – in the British Medical Journal.
- 1927 - Forerunner of the GMB advises member to submit claim for asbestosis
- 1930 - Merewether Report – asbestosis formally recognised.
- 1931 - Asbestos Regulations in the UK.
- 1955 - Link between asbestos and lung cancer established by Sir Richard Doll.
- 1960 - Link between blue asbestos and mesothelioma established by Dr J C Wagner.
- 1966 – Voluntary ban on importation of blue asbestos.
- 1968 – Occupational exposure limit for blue asbestos.
- 1969 - New Asbestos Regulations in the UK.
- 1970 – Use of blue asbestos virtually stopped.
- 1971 – Sprayed coatings virtually stopped.

- 1983 – Asbestos (Licensing) Regulations.
- 1985 – The importation, supply and use of all blue and brown asbestos and the supply and use of white asbestos for insulation was prohibited.
- 1985 – Installation of asbestos insulation board stopped.
- 1987 – Control of Asbestos at Work Regulations.
- 1992 – Some uses of white asbestos prohibited.
- 1992 – Installation of asbestos containing decorative plasters virtually stopped.
- 1995 – Recognition that building workers – plumbers, carpenters and electricians – are now the largest high risk group.
- 1997 – Asbestos thought to be in around 3,000 different products.
- 1998 – Council of Europe adopt report recommending that all forms of asbestos are banned in the 40 Member States.
- 1998 – Health and Safety Commission propose to amend Asbestos Regulations.
- 1999 – All building material use of chrysotile prohibited in the UK, as with most other uses. Asbestos cement use virtually disappears.
- 2002 - Health and Safety Commission propose to amend Asbestos Regulations to include a specific duty for employers and those in control of buildings to manage asbestos.
- 2002 – Future asbestos claims are estimated to cost over £140 billion.
- 2005 – White asbestos will be prohibited across all Member States. (Blue and brown are already banned.)

'In 1943 a lung diseases expert, Dr Leroy Gardner of America's Saranac laboratory, conducted experiments with mice and long fibre asbestos. In one test, 81 per cent of the mice developed cancer. T&N [Turner and Newall] papers reveal how the asbestos companies who paid for the research deleted references to cancer in his final report ....'

Mail on Sunday 3<sup>rd</sup> October 1993

'Between 1931 and 1948, £87,938 was paid out to 140 asbestosis victims under the internal scheme [Turners and Newall]; in the same period, nearly £7 million was distributed to shareholders.'

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