Is it time to legislate the Mineral Wool industry more tightly at EU level?

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Introduction

Insulation of the home and of the work place is currently very high on the political agenda. Against a backdrop of rising energy prices and concerns about climate change, there is a general consensus that more, and better, insulation is the way forward.

However, there are concerns over health risks associated with one of the most common materials used in insulation in both commercial premises and private homes, by both professionals and homeowners alike: Man-Made Vitreous Fibres (MMVF).

For a long time asbestos was used as an insulation material. The first evidence of the dangers of working with Asbestos emerged at the Charing Cross Hospital, London, in 1900, when, during the postmortem examination of a young man who had died from pulmonary fibrosis after having worked for 14 years in an asbestos textile factory, Dr. H. Montague Murray discovered asbestos traces in the victim’s lungs. The Inspector of Factories in Britain subsequently included asbestos in a list of harmful industrial substances in 1902.

The Asbestos industry played down the risks, and managed to successfully defend itself for almost a full century. Since Asbestos was banned in most countries during the 1990s, MMVF has effectively emerged as the replacement material.

However, at the time when the Asbestos industry collapsed, MMVF had been classified by the World Health Organisation and the International Agency on the Research on Cancer (IARC) as carcinogenic and hazardous to humans.

The MMVF industry reacted to this situation by altering the composition of their product, which then underwent further tests, and in 2002 was declassified as a carcinogen (although the EU still classifies certain MMVF as a suspected cause of cancer). Indeed, asbestos is a silicate, and MMVF are silicate-based.

Questions are now being raised concerning the integrity of those second tests, which had been conducted in 1995.

Mounting medical evidence points to the health risks associated from handling MMVF, evidence which is being denied by the industry itself.

In this short paper, which is far from exhaustive, we consider the evidence and ask the question, “is it time to legislate the MMVF industry more tightly at EU level?”
Overview of Man-Made Vitreous Fibres (MMVF)

What is MMVF?
Man-made vitreous fibres are non-crystalline, fibrous, inorganic substances (silicates) made primarily from rock, slag, glass, refractory ceramic fibres or other processed minerals: they are often referred to as man-made mineral fibres, mineral fibre, mineral cotton, or, within the industry itself, “mineral wool”. Well known brands include Rockwool and Isover.

What is MMVF / mineral wool used for?
This material is primarily used for insulation, both thermal and acoustic. It can be pumped into the cavities between walls in buildings, or it can be supplied in rolls that can be placed between walls during construction, above ceilings in roof spaces. In the latter form MMVF are often used by consumers.

Why are there concerns about MMVF / mineral wool?
There are concerns, backed up by expert medical opinion, that MMVF / mineral wool is harmful to human health.

These products are known to release airborne, respirable fibres during their production, use and removal. Experimental observations have provided evidence that some types of MMVF are bioactive under certain conditions. An elevated standard mortality ratio for lung cancer has been demonstrated in cohorts of workers exposed to MMVF, especially in the early technological phase of mineral (rock slag) wool production.\(^1\)

The traditional rock (or stone) wool was classified by the International Agency for Research on Cancer (IARC) of the World Health Organisation (WHO) as a possible carcinogenic to humans in 1988. In response to this classification glass and stone wool compositions with increased biosolubility have been developed and commercialised, leading to certain classes of MMVF being declassified as a carcinogen in 2002.

However, there are serious concerns that the tests that led to this declassification were misleading as the products were not tested in the form in which they are commercially used.

Production of MMVF inherently uses organic oil and binder (such as phenolic resin) that is sprayed onto the stone melt directly in the fibre spinning chambers. The primary mat is layered to give the product the required weight per unit, and then passes through an oven, which sets the thickness of the mat and cures the binder. The product is then air-cooled and cut to size before packaging.

MMVF tests conducted in 1995 were carried out on products from which binder had been deliberately removed, and were therefore misleading, thus giving consumers a false sense of security.

Further studies of 2000-2002, which were key to the IARC bodies declassifying certain MMVF as carcinogenic were also conducted without binder or oil, again giving misleading results.
Health implications

Carcinogenicity

As explained above, MMVF was classified as carcinogenic and hazardous to humans in 1988.

The later declassification (following modifications to the product) in 2002 as a carcinogen for certain MMVF materials was based upon testing that failed to examine the product as it is actually sold and used. It was not the commercial version that was tested. The tests were conducted on the material without binder, rendering the tests misleading.

A 2017 study by Wohlleben, Waindok, Daumann, Werle, Drum and Egenolf demonstrated that the average composition of modern stone wool MMVF is different from historic biopersistant MMVF, but to a lesser extent than expected. This study involved the investigation of 23 modern MMVF from Germany, Finland, UK, Denmark, Russia, and China, from 5 different producers, and one pre-1995 rock wool as a control. It found that several of the samples tested were "on or below the borderline" and were at pre-1995 levels.

"I think it's time to take a good look back at what dust and fibres can cause, in addition to the fact that they cause cancer. This data is available, but in our race to find a good substitute for Asbestos, we apparently forgot this somewhere."

Paul Brom, Toxicologist

Wohlleben et al. concluded that the risks associated with modern stone wool as confirmed by in vivo studies of MMVF as marketed (with binder) are such that there is a case for challenging the 2002 declassification.
**Lung disease including COPD**

Chronic Obstructive Pulmonary Disease (COPD) is a serious long term illness which causes inflammation of the air passages and damage to the lung tissue, leading to the flow of air to be restricted.

Examples of COPD include bronchitis and emphysema: smoking is a major cause of COPD but there is evidence that 15% of COPD cases are work-related, due to exposure to dusts and fumes, including dust from MMVF’s such as mineral wool.

Inhalation can lead to pulmonary fibrosis, a chronic disease that cannot be cured and which is accompanied by breathlessness.

Dr. Marjolein Drent, professor of interstitial lung diseases (ild) at the Department of Pharmacology and Toxicology of the Faculty of Health, Medicine and Life Sciences (FHML), Maastricht University, has stated “The effects of the fibres of glass wool and stone wool can be compared to those of asbestos. In the past we did not know asbestos was very dangerous. The results of the effects of fibres in glass wool and mineral wool are only being seen right now, so we must deal with it carefully.

The point is that these substances are harmful, but people do not realise it sufficiently, and that is something we have to worry about. It is too easily accepted that ‘we have a replacement for asbestos’. But the replacement may not be as good as we thought it was at the beginning, there is insufficient attention given to this fact.”

Leading toxologist Paul Borm: “Mineral fibres are basically dangerous, but they are only dangerous if you are exposed to it... you can imagine with such a piece of fibre, if you are sawing, pieces are cut, there is a fair amount of fibre release at the cutting edges.”

Borm also questions the level of protection a person is using and the dose they are exposed to – which are both variable.

“Yes, well, I hope I can go on like this for years, that it is stable and I can delay it as long as possible. Then I can just procrastinate. Otherwise the only option is a lung transplant in order to move forward. But after that your years are numbered of course.”

Henk Batema, former construction worker and pulmonary fibrosis sufferer (lung capacity reduced by 75%)

“People often do not realise that sometimes it is worse than cancer, for some cancers are curable, but this form of pulmonary fibrosis is generally not.”

Dr. Marjolein Drent
Mineral wool is also known to cause skin abnormalities. Slivers of fibre can easily penetrate the skin during handling of the product.

“Protective gear must be worn when installing mineral wool insulation: the tiny slivers will lodge in skin and are small enough to be inhaled.”

Solar365

“MMVF insulation products do still cause skin discomfort. Updated knowledge about people’s experiences of work with such products should influence legislation.”

US National Library of Medicine

Furthermore, there are strong arguments for MMVF to carry health warnings on packaging. At present, health and safety advice is limited to “If possible ventilate the room, use face mask in unventilated room”. This generally appears in small and neutrally coloured print, in the least prominent of places.

MMVF are classified within the European Union (EU) as carcinogen category 2 (suspected human carcinogens), but notes Q and R of EU Regulation 1272/2008 on classification, labelling and packaging of substances and mixtures allow for certain exemptions. Those actors representing the MMVF industry, however, continue to “misrepresent” the facts.

“We do not know of any studies which demonstrate the relationship between these disorders and mineral wool. We are not aware of a link between those.”

Johan Nijkemp, Mineral Wool Association (MWA)

“Directive (97/69EC) provides a means to demonstrate lack of carcinogenic potential and mineral wool meets or exceeds these requirements so is not classified as a carcinogen in EU.”

Mineral Wool Insulation Manufacturers Association
Recommendations

Retesting of MMVF
• There is evidence of the carcinogenic hazards of MMVF, as attested by the WHO and IARC classification in 1988.
• The subsequent declassification in 2002 was based on tests carried out on products that did not accurately represent MMVF as they are used commercially and by consumers.
• There is therefore a clear and urgent need for retesting these products as they are used in practice.

Health & safety legislation
• Unlike on building sites, for example, there is no legal requirement for employers to enforce rules on the use of protective clothing by employees.
• There is also anecdotal evidence that workers in the construction industry are not adequately informed about the potential health hazards of MMVF.
• There is a clear and urgent need for these shortcomings to be addressed, possibly in the form of EU legislation.

Product labelling
• Consumer goods such as alcohol and tobacco are currently subject to strict requirements to inform about potential health risks on product labels. There is a strong argument for MMVF, whether sold through the trade, or to consumers, to carry similar warnings, displayed prominently on all packaging.
References