

Alternatives to asbestos

There is no single product in day to day use at work or at home that needs to be made from or contain deadly asbestos – yet over 3000 workplace and home based products contain this poison.

It is possible to eliminate the use of asbestos by redesigning the job or product, or by using another, safer material.

Manufacturers make safer alternative fibre products and can control the fibre size so they cannot be breathed in and do harm. Asbestos fibre is added to cement to increase its elasticity but non-asbestos fibres can be used to do the same job. Alternatively, fibrous cement can be completely replaced by using metal or plastic to form the section.

The Control of Asbestos at Work Regulations Reg. 8 says 'prevention of such exposure (to asbestos) shall be achieved, where it is practicable, by substituting a substance which does not create a risk or creates a lesser risk than that created by asbestos.'

The Control of Substances Hazardous to Health Regulations also make it clear that 'safer substitutes' must be used wherever possible.

Three major UK unions, UCATT, GMB and UNISON are actively encouraging their members not to use asbestos based products – and their members are following this instruction, demanding safer substitutes. Members of other unions should check their union's policy.

Some of the products used in place of asbestos are not entirely risk free.

Asbestos alternatives

Manufactured inorganic fibres (MIF)
The greatest strength of manufactured fibres is that often the diameter of fibre can be made so they are not respirable (breathable).

Ceramic fibre is used mainly as a high temperature insulation material and is usually found insulating furnaces. It is also used for ropes. There is often no control over fibre diameter and most forms can contain fibres that are hazardous. They are a cancer hazard.

Glass fibre is now believed to be as hazardous as chrysotile by many experts, although this is disputed by the industry. Previous research by the London Hazards Centre revealed a cancer risk to the throat.

Many fibreglass products contain fibres of a breathable size. It is used as an insulation product in general construction, roofs and walls and as a

manufacturing product in preformed units, car bodies, sheeting etc. It is a cancer hazard as well as causing skin and eye irritation.

Glass and stone wool products are loose conglomerates of fibres with oils and binders added to maintain the shape of the product and reduce the generation of dusts. They are used mainly for thermal insulation. Both contain a range of fibres which are respirable and are cancer hazards.

Naturally occurring crystalline fibres and other minerals

Wollastonite is a naturally occurring calcium silicate crystalline material. Exposures to this and other similar materials have resulted in respiratory symptoms such as inflammation, fibrosis, pneumoconiosis, lung function alterations, emphysema, pleural calcification, and obstructive airway disease.

Perlite is expanded volcanic rock and is mixed with other mineral fibres and bindings to form insulation board.

Natural organic fibre

Cotton fibres can cause long term ill-health effects which sometimes are diagnosed late. Cotton causes the lung disease byssinosis.

Shredded paper can be used as an insulating wall fill. It can irritate the eye, nose and throat.

Cellulose fibres can also be used for insulation etc. Available evidence shows their cancer stimulating effects to be significantly smaller than those from asbestos. Little is known, however, of the way that cellulose fibres may contribute to other diseases of the respiratory tract.

Manufactured organic fibre

Kevlar (para-aramid) fibre. A recent report to the European Directorate DGIII said: 'The reports of the UK HSE and, most recently, the conclusions of WHO and IARC suggest that para-aramid fibres are likely to pose a lower risk of pulmonary fibrosis, lung cancer and mesothelioma than chrysotile asbestos.' The size of the fibre is easily controlled and it has qualities of toughness and thermal insulation. Not commonly encountered as it has limited, specialist uses.

Polyvinylalcohol (PVA) Fibres do not readily split into finer fibres says the independent research organisation the organisation Environmental Resources Management. It thinks it safe to conclude that PVA fibres, of the

diameters used commercially, are unlikely to pose a significant risk of the diseases which have been associated with durable respirable fibres.

Polystyrene can be used a loose fill insulation or bought in sheets. Will give off toxic fumes when heated.

Substitute hazards

Some asbestos substitutes are also made from fibrous materials and a range of hazards arise from the fact that all fibres can be:

- **breathed in**, contaminating the surfaces of the nose, mouth, throat, larynx or lung. Fibres which are bio-persistent (staying in the body for years without changing) can also travel through the body, they cause damage and cancers wherever they are. It is by this means that asbestos and some glass fibre gets into the lubricated lining between the ribs and the lungs (the mesothelium). Relatively low levels of dust exposure stops the body's defence mechanisms in the nose, throat and lungs operating efficiently, increasing the risk of irritation, infection or allergy.
- **ingested** because they are on food or spittle which is swallowed. Again fibres may damage the sensitive inner surfaces of the oesophagus, stomach and gut causing lesions and cancers.
- **contact hazards** with skin and eyes. This can cause thickening of tissue, and basal cell cancers (a kind of skin cancer) at one end of the ill-health scale and itching and irritation at the other. This prickly skin is especially associated with fibre glass work.

Official Advice

The World Health Organisation (WHO), the International Agency for Research on Cancer (IARC) and the Health and Safety Executive (HSE) have expressed opinions on fibre contamination and make a variety of recommendations:

- As far as possible manufacturers should ensure fibre sizes that are not breathable (non-inspirable), or at least not so small as to get deep into the lung (non-respirable).
- If small-diameter respirable fibres are necessary then they should not

resist the body's clearing mechanisms (be bio-persistent) or exhibit other toxic effects. N.B. regular daily exposure to substances that are not bio-persistent means that the dose is persistent as it constantly is renewed daily in the body even though earlier exposures are dissolving away.

- All fibres that are respirable and bio-persistent must undergo testing for toxicity and for their ability to cause cancers (carcinogenicity).

The UK Hazards Campaign says that exposures to fibres whose health risks have not been completely investigated should be temporarily banned until better data is available and informed decisions can be made on their safe use.

Where asbestos can be substituted

- cement for pipes, guttering, drains etc.
- cement sheeting for roofs and walls
- floor tiles
- pipe lagging
- all forms of thermal insulation ceiling and wall decorative products
- packing products
- gaskets and seals
- vehicle clutch plates
- vehicle brakes linings and pads
- cavity wall insulation
- ironing board hot pads
- insulation in cookers
- parts of night storage heaters
- fire blankets
- and many, many more

References

Fibre alternatives to asbestos in the Nordic countries.
Nordic Council of Ministers. £7.50. HMSO. ISBN 9291205362.

Manufactured mineral fibres (MMF's).
London Hazards Centre factsheet.

Asbestos in the home – Part 1 and Part 2.
London Hazards Centre factsheet.

Asbestos hazards handbook.
London Hazards Centre. £12.00 plus £1.50 p+p (£5.00 plus .50p p+p to community groups, union branches etc.)