

Health and Safety Executive OC 267/2

Field Operations Division

To

Factory, Agricultural and Quarries Inspectors

FCG Specialist Inspectors (Occ Hygiene)

Senior/Employment Medical Advisers

MAN-MADE MINERAL FIBRES (MMMMF)

Introduction

1. This OC supplements the advice given in 2 recent HSE publications: Guidance Note (GN) EH 46 (Rev) *Man-Made Mineral Fibres* and a Specialist Inspector Report (SIR) Number 27 by Dr A M Phillips entitled *Some Occupational Hygiene Aspects of Man-Made Mineral Fibres and New Technology Fibres* (both in file 267). It also draws attention to current developments on MMMF.

Types of MMMF

2. Details of the various types of MMMF are given in GN EH 46 (Rev). However, some additional information, including the names of some leading manufacturers and the uses made of MMMF, are set out in the Appendix.

Areas of activity requiring special attention by inspectors

Special purpose fibres

3. The new fibre-count maximum exposure limit (MEL) of 2 f/ml, which came into force on 1 January 1991, applies to all MMMF, including special purpose ("superfine") fibres. When the proposed MEL was being discussed by HSC, the TUC argued that 2 f/ml was too high for these special purpose fibres as a number of employers had successfully demonstrated that they could reduce exposures to these fibres to one f/ml or below, in keeping with a former Recommended Limit for these materials. The TUC were thus concerned that with the adoption of a MEL of 2 f/ml, users of special purpose fibres might now relax their standards of control.

4. To secure the TUC's agreement to the proposed MEL they were given an assurance by HSE that where it is demonstrated that it is reasonably practicable to reduce exposure to special purpose MMMF to one f/ml or below, eg, as in the manufacture of special papers, then employers would be required to maintain or improve on these exposure levels. Inspectors should be aware of this commitment given to the TUC.

Furnace wrecking

5. Guidance Note EH 46 (Rev) para 28, and Table 2 of SIR No 27 give some examples of typical workplace exposures encountered during the dismantling of ceramic fibres from furnaces. Whilst dust levels of between 5-10 mg/m³ are cited, inspectors should be aware that furnace wrecking can produce exceptionally high dust levels which may well exceed 100 mg/m³ on an 8-hour time-weighted average basis, though such dust will also contain significant quantities of extraneous material, as well as ceramic fibres.

6. Aluminosilicate ceramic fibre is used extensively in high-temperature furnace linings where it is replacing traditional firebrick linings as standard refractory insulants. However, reported studies have shown that this material divitrifies relatively quickly at temperatures above 1100°C to form cristobalite, a crystalline form of silica, and mullite. The formation and subsequent release of cristobalite dust during furnace wrecking is a matter of particular concern because of the known danger of contracting silicosis from inhalation of free silica dust. Consequently, when examining furnace wrecking activities, and particularly where aluminosilicate ceramic fibre is being removed, inspectors should pay particular attention to the suitability of the respiratory protective equipment (RPE) being used to carry out the work. This should comprise a very high standard of RPE, and not equipment that would be operating close to the limit of its efficiency. Inspectors should also pay particular regard to the measures taken to reduce the spread of contamination when monitoring these activities.

Loft insulation

7. In the past, there has been some concern about the possible risk to householders arising from the presence of MMMF loft insulation, usually in the form of mineral wool. In 1987, the DoE undertook work to collect data to establish the extent of householders' exposure to MMMF from this source, and it then asked the Department of Health's Committee on the Carcinogenicity in Food, Consumer Products and the Environment (COC) to review the evidence. On completion of the COC's work, the Secretary of State for the Environment made a statement in the House of Commons and issued a Press Release dated 1 December 1987 recording the COC's assessment of the risk to health from MMMF loft insulation, DIY installation and subsequent disturbance. As a result of the COC's work, the DoE Press Release was able to reassure householders that they need not be concerned about the presence of MMMF in their lofts, about installing it themselves or about doing DIY work in lofts insulated with MMMF. However, it recommended use of an appropriate mask for installation work, ie one conforming to BS 6016 or BS 2091 (see para 15), and the use of gloves when handling the material to avoid skin irritation.

8. More recently, the HSE has undertaken studies to determine fibre levels arising from the presence of MMMF loft insulation in UK dwellings. The results from these studies have also been assessed by the COC who again concluded that the MMMF in the lofts of dwellings presented no significant hazard to householders.

9. Inspectors are reminded that during 1988/89, SPNs were made to contractors installing MMMF loft insulation to promote observance of the (then) gravimetric Control Limit, and to monitor dust levels produced by the work. The results of the exercise and implications for inspectors are set out in OC 267/1.

Labelling of MMMF

10. Those MMMF products which are "substances" within the meaning of the Classification Packaging and Labelling of Dangerous Substances Regulations 1984(CPL) will require labels to indicate the hazard. At present there is no entry for MMMF in the UK Authorised and Approved List and therefore a manufacturer will have to label according to CPL reg.5(5) by considering the

characteristic properties of the substance. Some trade associations have agreed labels with their members for certain products. For example, the European Ceramic Fibres Association (ECFIA) propose a label which includes the following phrases:

"Possible risk of irreversible effects, harmful by inhalation, may be irritating to skin, eyes and the respiratory system".

11. The European Commission has proposed a classification and label for MMMF which, if agreed, would result in an entry in the UK Authorised and Approved List. The proposal includes the classification of MMMF within a specific size range as a category 3 carcinogen with the phrase "possible risk of irreversible effects" on the label. This proposal is due to be discussed in 1991 and national measures are unlikely before late 1992.

12. Inspectors should note that some MMMF products (eg preformed insulation) may be articles to which CPL will not apply.

Approved method

13. HSC has approved the method of measurement and calculation for determining the fibre concentrations of MMMF and this is reproduced in Appendix 1 of GN EH 46 (Rev) (as well as in Appendix 2 of GN EH 40/91 *Occupational Exposure Limits* (file 285)). The Approved Method contains the essential elements of MDHS 59 *Man-made mineral fibre. Airborne number concentration by phase-contrast light microscopy* (file 267) and refers to quality assurance procedures. Whilst a formalised quality control scheme has not yet been developed for MMMF (along the lines of the regular interlaboratory county exchange (RICE) scheme for asbestos), an informal slide-exchange scheme for MMMF is operating for those laboratories which count only MMMF. As an interim measure the larger number of laboratories which count both MMMF and asbestos fibres are relying on the RICE scheme to provide comparable quality control for MMMF counting. These arrangements will be administered by the Institute of Occupational Medicine, Edinburgh. Inspectors will be kept informed of further developments on this matter.

Current research

14. A number of animal studies are currently being conducted, particularly with ceramic fibres, in the hope that they will help to increase knowledge of any possible adverse health effects that could arise in humans from exposure to MMMF. However, final results from these research projects are unlikely to be available for some time, and so it is too early to predict or assess any policy implications that these may hold. Further information will be given to inspectors as and when it becomes available.

References to British Standards

15. Para 7 BS 6016: 1980 *Specification for filtering facepiece dust respirators*.

Para 7 BS 2019: 1969 *Specification for respirators for protection against harmful dusts, gases and scheduled agricultural chemicals*.

Cancellation and annotation of instructions

16. FIC 294/16(Rev) - cancel and destroy.

17. OC 267/1 - note "See OC 267/2".

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ASI headings

Insulation: mineral fibres: occupational exposure.

APPENDIX(para 2)

MAN-MADE MINERAL FIBRES

TYPE	NAME	SOURCE	SOME USES
Glass	Fibreglass	Fibreglass Corp	Reinforced plastics and cements
	Glass Wool	Pilkington Bros	Heat resistant textiles
	Glass Roving		insulation
Mineral wools	Cont Filament		
	Rock Wool	Pilkington Bros	Thermal insulation
	Slag Wool	Rock Wool Fibreglass Corp Manville Corp	
Ceramic fibres	Safil	Carborundum Darchem	High temp insulation
	Fibrefrax	Fibreglass Corp	- power stations
	Triton	Manville Corp	- furnace linings
	Refrasil	ICI	- gas turbines
	Zircar	Dupont	
Refractory fibres	Cerachem	Carborundum etc	
	Boron Nitride/ Carbide	Carborundum Kennecott	Limited specialist use
	Silicon Nitride/	Nipon Carbon	

	Carbide	Sumitomo	
		Corning Glass	
Special purpose	Refrasil	Whatman Paper Ltd	Manufacture of
"superfine"	Microquartz	Manville Corp	special papers, eg
fibres	Min - K		filter papers