before the experiment as fibrous (spicules) but not asbestiform, ultimately produced mesothelioma in 70% of the animals." The investigators themselves did not say this "fibrous" tremolite was non-asbestiform! They then went on to write that "these findings could indicate that the cleavage fragments of tremolite have little carcinogenicity, but that their recognition and separation will need carefully considered criteria." Such criteria exist. It is perhaps germane that over 60% of those attending this meeting were claimants' lawyers or their retinue, many of whom earn between $1 and $20 million a year on a contingency basis. Moreover, it also came to light that the sum of $40 000 from the claimants' lawyers' litigation escrow account found its way into the coffers of the organisers of the conference, thereby ensuring that the organisers were in a position to invite those scientists who shared their viewpoint.[11] Certain of the investigators at the conference had been receiving payment from plaintiff's lawyers for the express purpose of screening asbestos exposed workers and then directing any worker with alleged asbestosis to the lawyer's paralegal who was in attendance and who would then offer the lawyer's services on a contingency basis.

Finally, your correspondent is under the impression that we used the word "tergiversate" as an alternative "to use subterfuges". The Oxford English Dictionary, which we trust needs no reference, gives five alternative meanings of which "to use subterfuge" is the fifth. "Tergiversate" is derived from tergum or back, and vertere to turn; hence, to turn one's back. We were implying that the US Occupational Safety and Health Administration was turning its back on scientific evidence, but perhaps Case is correct and in reality they are resorting to subterfuge.

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On talc, tremolite, and tergiversation

Sir,—Reger and Morgan (1990;**47**: 505–7) addressed an important issue regarding the health effects of the mineral tremolite asbestos. Just what is tremolite asbestos?

The definition of asbestos used by the United States Occupational Safety and Health Administration (OSHA) is one that OSHA made up itself. At the time, little notice was given to the change due to OSHA not specifically indicating its intention to redefine asbestos. The OSHA has argued, with the support of its research advisory group, the National Institute for Occupational Safety and Health (NIOSH), that it had always intended to include elongated cleavage fragments of three of the five regulated amphibole asbestos minerals under the asbestos standard. Recently OSHA has proposed removing non-asbestos tremolite, actinolite, and anthophyllite from the standard. The rationale and limitations of this argument have been described by Reger and Morgan elsewhere.[1]

By redefining asbestos, OSHA/NIOSH broke with mineralogical science. Their definition became known as the federal definition. Elongated cleavage fragments, using both the methodology and definition required by OSHA statute, became known as federal asbestos fibres or federal fibres. Perhaps it should have been referred to as the OSHA/NIOSH definition because other federal agencies in the United States (Environmental Protection Agency, Consumer Products Safety Commission, and the Mine Safety and Health Administration) either do not follow this definition or have not adopted it. Mineralogical science does not even define these elongated cleavage fragments as fibres. The company mining and producing tremolitic talc, referred to by Case, found that their tremolitic talc, using the OSHA definition, contained tremolite asbestos rather than the cleavage fragments that their mineralogists said were present. This helps explain their keen interest in definitions.

The most significant determination, for the health hazard evaluation of a tremolite specimen, is if, by mineralogical criteria, the specimen is asbestos. Exposure to tremolite in this form should be rigorously controlled as one would control exposure to any other amphibole asbestos mineral.[2 3] If the tremolite specimen is found by mineralogical criteria to be non-asbestos, by careful analysis using transmission electron microscopy the specimen will be found to contain a few hundred ppm elongated cleavage fragments. Some may have similar lengths and widths as asbestos fibres. Populations of elongated cleavage fragments will have a greater variation in diameter as a function of length than asbestos, tending to have lower aspect ratios. Those visible using a phase contrast microscope (at a magnification sufficient to provide resolution of $\sim 0{\cdot}5$ μm) that are >5 μm in length and possess a 3:1 aspect ratio are "OSHA/NIOSH asbestos fibres." Mineralogically these "fibres" are *not* asbestos and we support the conclusions of Reger and Morgan that no data exist to show that non-asbestos tremolite possesses the same pathogenic properties as asbestos. In fact, the biological data available support the significance of the mineralogical distinction.

With the methodology used by OSHA to monitor the occupational environment, phase contrast microscopy, the analyst cannot readily dis-

tinguish individual amphibole asbestos fibres/fibrils from elongated cleavage fragments. Without having data to justify their inclusion, and changing the name of the standard to indicate their presence, OSHA should not regulate non-asbestos tremolite in the same manner as asbestos.

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NOTICES

XIIIth International Colloquium for the Prevention of Occupational Accidents and Diseases in the Construction Industry, Palais des Congrès, Mont des Arts, Brussels, 16–18 September 1991

The Colloquium is organised under the patronage of the ILO, the ISSA, the EC Commission, the Economie Union Benelux, and of employers' and workers' organisations.

The general theme of the colloquium is safety and health throughout the planning and construction process. This is sub-divided into theme I: from the design office to the building site; theme II: maintenance of the works; and theme III: a new approach to work. Technical visits and a full social programme will be available. The official languages are English, French, Dutch, German, and Spanish.

For further information contact the Comité National d'Action pour la Sécurité et l'Hygiène dans la Construction-CNAC: Boulevard Poincaré 70, B-1070 Bruxelles. Tel: (32.2) 523 40 93.

6th International Meeting on Low Frequency Noise and Vibration, Leiden, The Netherlands, 4–6 September 1991

The 6th International Meeting on Low Frequency Noise and Vibration is to be held in The Netherlands, at the Witte Singel Doelencomplex, Leiden. The meeting is sponsored by the *Journal of Low Frequency Noise and Vibration*. The topics of the Conference will be those of the sponsoring journal, namely, sources of infrasound, low frequency noise and vibration, including hand-arm and whole-body vibration; detection, measurement and analysis; propagation of infrasound and low frequency noise in the atmosphere; propagation of vibration in the ground and in structures; perception of infrasound, low frequency noise and vibration; vibration caused by noise, radiation of noise from vibrating structures; low frequency noise and vibration control; problems and solutions; technical applications of infrasound and low frequency noise.

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