Table 1: Dosage and fibre number used in vitro experiments with fibres

<table>
<thead>
<tr>
<th>Reference</th>
<th>Dosage used</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mass</td>
</tr>
<tr>
<td>MMVF10 (2)</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>MMVF11 (2)</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>RCF (2)</td>
<td>30 mg/m³</td>
</tr>
<tr>
<td>Aramid (3)</td>
<td>Not stated</td>
</tr>
<tr>
<td>Chrysotile (2)</td>
<td>10 mg/m³</td>
</tr>
<tr>
<td>Chrysotile</td>
<td>0-18 mg/m³</td>
</tr>
</tbody>
</table>

The experiments carried out

Wagner PGS = Wagner Pathology Grading Scale as follows: Cellulard chencher 1 normal; 2 minimal: macrophage response; 3 mild: inflammation, bronchiolisation. Fibrosis 4 minimal; 5 mild: linking fibrosis; 6 moderate: condensation; 7 severe: marked fibrosis and consolidation; 8 severe: complete obstruction of most airways.

Environmental Health Sciences workshop on fibre toxicology indicates that “A major failing of past experimental studies has been the use of mass as the main dose parameter. Data are needed on fibre comparison by fiber number... Most studies using fibers in vitro have in the past expressed dosage on the basis of fiber mass as opposed to number of fibers per cell, which now appears to be a more valid means of comparison of fiber effects in relation to their potential to cause human disease.”

Without going further into the details of the dosages used and the results reported, these studies indicate that the time has come to revisit the case of chrysotile asbestos, and to compare its health related effects with those of other man made fibers, with fiber number at comparable dosage for comparisons. Some surprises might be revealed from such a comprehensive re-examination of the data. A major international re-evaluation of the case of chrysotile asbestos is in order.

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3 International Labour Office. Safety in the use of mineral and synthetic fibres: Geneva; ILO, 1990. (Occupational Safety and Health Series No 64.)

Pulmonary effects of exposure to fine fiberglass: irregular opacities and small airways obstruction

Sirs,—On behalf of the North American Insulation Manufacturers Association (NAIMA), I am writing to express our concern over the publication of an article by Kilburn et al (1992;49:714-20) that examined a group of fiberglass workers at an appliance manufacturing plant in Cicero, Illinois. The study concluded that “commercial rotary spun fiberglass used for insulating appliances appears to produce human disease that is similar to asbestosis.”

The fact is that the conclusion of Kilburn et al is incorrect; fiberglass has not been found to produce human disease similar to asbestosis. Kilburn et al reached their conclusion despite several factors in their study that point to other culprits. For example, at least 40% of the workers with positive findings had known exposure to asbestos. In fact, the levels of airborne asbestos reported to Kilburn et al by the plant were higher than the levels of glass fibres, and yet were not even considered by Kilburn et al in reaching their conclusion. Further, about 80% of the study participants with positive findings were current or former smokers. Finally, the x ray film and pulmonary changes Kilburn et al reported as abnormal are actually consistent with those that other scientists have reported to be expected in this age and type of population.

NAIMA would like to point out that the findings of Kilburn et al are not consistent with other morbidity studies regarding the health effects of exposure to fiberglass. Recently, Weil of Tulane University Medical School completed a study of over 1250 current workers at five US manufacturing plants. Weil concluded that “...after 10 years of these investigations, we have failed to demonstrate any adverse effect of MMMF [glass fibre] exposure on respiratory health. We have found workers in this industry to be generally healthy, without any detectable evidence of occupationally induced respiratory disease.”

NAIMA joins our European colleagues in support of the existing body of scientific research that finds no cause and effect relation between exposure to fiberglass and lung disease or cancer in humans. Based on the current weight of scientific evidence, NAIMA remains confident that fiberglass products are safe to manufacture and install when the simple instructions outlined on product packages are followed.

Kenneth Mentzer
NAIMA, 44 Canal Center Plaza, Suite 310, Alexandria, VA, USA.

Authors' reply

Sirs,—We appreciate the opportunity to respond to Mentzer. His concern is well founded and NAIMA should be worried about the adverse human health effects of commercial rotary spun fiberglass.1 Controverting the traditional fibre industry position he places the entire causal responsibility for abnormalities in the fiberglass workers on asbestos; not neglecting, of course, the contribution of cigarette smoking. He argues disingenuously that 40% of our workers with