TALC NOT CONTAINING ASBESTIFORM FIBRES (Group 3) and TALC CONTAINING ASBESTIFORM FIBRES (Group 1)

A. Evidence for carcinogenicity to humans (*inadequate* for talc not containing asbestiform fibres; *sufficient* for talc containing asbestiform fibres)

Evaluation of the effects of talc is confused by the fact that talc deposits may be contaminated with various other minerals, including carbonates, quartz (see p. 341), serpentines and amphiboles (asbestiform [see p. 106] and nonasbestiform)[1].

Case studies have suggested an association between mesothelioma and exposure to talc containing asbestiform fibres[1].

A proportionate mortality study of miners and millers of talc containing asbestiform tremolite has shown an excess of lung cancer and one case of mesothelioma. Another cohort study of workers mining and milling talc containing tremolite, anthophyllite and serpentine minerals revealed significant excess mortality from lung cancer and from nonmalignant respiratory disease. Mortality from lung cancer increased with latency[1].

Several mortality studies have assessed cancer risk among miners and millers of talc that was reported to contain no more than trace amounts of asbestos. A cohort mortality study of talc miners and millers showed an excess of lung cancer among underground miners but not among millers; a contributory etiological role of radon daughters to the lung cancer risk in miners could not be excluded. The three other studies published suffered from methodological limitations and could not be interpreted[1].

A cohort study of pottery workers exposed to silica and talc showed an excess risk of lung cancer (standardized mortality ratio [SMR], 143; 52 observed, 36.3 expected). Among those exposed to high levels of silica, an SMR of 254 (21 observed, 8.3 expected; $p < 0.05$) occurred among those with exposure to nonfibrous talc in contrast to an SMR of 137 (18 observed, 13.2 expected; $p > 0.05$) among those without talc exposure. Mortality from lung cancer increased with duration of exposure to talc (SMR, 364 for those with $\geqslant$15 years of exposure), but not with duration of exposure to silica[2].

A case-control study has suggested an approximate doubling in relative risk for ovarian cancer among women with perineal use of talc, but the possibility of recall bias cannot be ruled out[1].

B. Evidence for carcinogenicity to animals (*inadequate* for talc not containing asbestiform fibres and for talc containing asbestiform fibres)

Talc of different grades was tested for carcinogenicity in mice, rats and hamsters by various routes of administration, including intraperitoneal, intrathoracic and intrapleural routes. Most of these studies were inadequate. No tumour was induced in rats following either a single intrapleural administration or four intraperitoneal injections of talc, or following administration of talc in the diet. No local tumour developed in mice following a single subcutaneous injection of talc[1].

C. Other relevant data

No data were available on the genetic and related effects of talc in humans.

Talc did not induce dominant lethal mutations or chromosomal aberrations in bone-marrow cells of rats treated *in vivo*, or chromosomal aberrations in human cells *in vitro*. Talc was not mutagenic to yeast or to bacteria in a host-mediated assay[3].

References

[1]*IARC Monographs*, *42*, 185-224, 1987

[2]Thomas, T.L. & Stewart, P.A. (1987) Mortality from lung cancer and respiratory disease among pottery workers exposed to silica and talc. *Am. J. Epidemiol.*, *125*, 35-43

[3]*IARC Monographs*, *Suppl. 6*, 504-505, 1987