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ASSOCIATION OF LUNG TISSUE CONTENT OF DIFFERENT MINERAL FIBRE TYPES WITH OCCURRENCE OF MALIGNANT MESOTHELIOMA

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Objectives While dose-response relationships between airborne crocidolite and malignant mesothelioma (MM) have been well established, corresponding relationships for lung tissue burden are less clear. The objective was to examine the association between lung tissue burden of asbestos and other mineral fibres and the occurrence of MM.

Methods Asbestos body (AB) and uncoated mineral fibre analysis was performed on lung tissue from 123 confirmed cases of MM (46 from Wittenoom and 77 from elsewhere) and 294 controls (141 from a series of lung resections for lung cancer and 152 from a series of necropsies where the possibility of industrial disease had been excluded).

Results Levels of crocidolite fibres in tissue correlated well with estimated airborne exposures among former Wittenoom workers. Crocidolite fibres (CF) were the most common, particularly among Wittenoom cases, with median CF 129 million/gram dry and median AB 4728 per gm wet. Non-Wittenoom cases had significantly more AB, CF and mullite, and significantly less chrysotile than controls. To account for correlated levels of exposure, penalised logistic regression analyses were used to show that both CF and ABs were significantly associated with MM. Increased amounts of talc/anthophyllite and mullite increased the odds of MM in non-Wittenoom subjects and the amount of chrysotile, while low, appeared to decrease the odds of MM in all groups.

Conclusions Elevated crocidolite fibres in the lungs were associated with increased risk of MM in dose-dependent fashion without any evidence of a threshold.