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Chrysotile Asbestos in the Lungs of Persons in New York City

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When inhaled, chrysotile tends to split into unit fibrils 200 to 400 Angstroms in diameter, invisible with optical microscopy. Further, it is altered chemically and physically in vivo. Therefore, attempts to identify unaltered chrysotile in the core of "asbestos bodies" have many pitfalls, especially when such attempts are limited by optical microscopy. High-magnification electron-microscopic examination of representative small samples of lung unequivocally showed chrysotile asbestos to be present in 24 of 28 consecutive New York city autopsy cases. Our data demonstrate that chrysotile fibers and fibrils are present in the lungs of New York city residents. Similar observations have been made in London. We anticipate that what is now known for New York and London will be found in other cities as well.

Asbestos Bodies: Their Nature and Occurrence.—Soon after the recognition of asbestosis, examination of lung tissue obtained from individuals with this disease demonstrated the presence of coated fibers which were first termed "curious bodies"^{1,2} and, subsequently, "asbestos bodies."³ Since these first individuals had been heavily exposed to asbestos at their work, it was assumed, undoubtedly with good reason, that the central fibrous core of these unusual structures was asbestos.

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When what appeared to be identical structures were next found in lungs of people not known to be occupationally exposed, the "asbestos-core" assumption was applied to these as well. It is of interest that the first description of such nonoccupational bodies in 1929 was made after examination of the lung tissue of a person who had lived across the road from an asbestos plant.⁴

In recent years a number of investigations, starting with the Capetown study of Thomson et al,⁵ have demonstrated the presence of what appear to be "asbestos bodies" in the lungs (both in tissue sections and in expressed tissue fluid) of a large proportion of urban dwellers who had no recorded occupational exposure to asbestos. The percentage of instances in which they are found varies with the technique used in the investigation,⁶ the amount of lung tissue examined, and the diligence and persistence with which they are sought. The percentage of positive findings has been reported to be as high as 97%⁷ or 100%.⁸

The question whether the cores of the "asbestos bodies" observed in these nonoccupationally exposed individuals are necessarily asbestos has been revived. Although "asbestos bodies" occurring in the general population appear morphologically identical to asbestos bodies observed in asbestos workers, this does not guarantee that they necessarily have the same core. For epidemiological studies it would be useful to have unequivocal identification of the fibrous core.⁹ This has not been easily accomplished because of technical factors.¹⁰