

*Studies of Mineral content and Particle
Size Distribution in the Lungs of Asbestos
Textile Workers.*

J. Beattie & J. F. Knox

*Inhaled Particles and Vapors. - C. N. Davies
#224 February. P 419*

STUDIES OF MINERAL CONTENT AND PARTICLE SIZE DISTRIBUTION IN THE LUNGS OF ASBESTOS TEXTILE WORKERS

A03097

J. BEATTIE and J. F. KNOX

Queens' College, Cambridge and Turner Brothers Asbestos Co. Ltd., Rochdale, Lancs.

Abstract—The mineral content of the lung parenchyma, the lung hilar region, and the pleural tissues has been determined in lungs from 50 workers in the asbestos textile industry. Of these, 27 cases have been reported previously and the results in 23 new cases are now added to the series.

The exposure time varied from 3 months to 46 years and the time interval from last exposure to death was from less than one year to 25 years. With lengthened exposure time there was an increase in the mineral content though there was considerable variability in individual cases.

The severity of the asbestotic lesion found at autopsy was not related to the mineral content but to the sum of the exposure and survival time.

The particle size distribution of the incombustible and acid insoluble residues in the lung of these cases was also determined.

The number of particles with lengths in excess of 36μ was considerable up to the end of the eighth year since last exposure and later fell.

In cases of severe asbestosis there was a significant fall in the number of fibres exceeding 15μ in length. The number of fibres, whose length was less than 15μ increased in cases of moderate and severe asbestosis.

It is considered that these findings point to the liberation of a fibrogenic agent from the break down of asbestosis bodies under conditions unfavourable to its disposal.

In 1954 we reported the results of a study of lung material from 27 subjects who had been exposed to asbestos dust in the asbestos textile industry for varying periods of time. The present paper records the results obtained on a further group of 23 subjects who had worked in the same factory. The purpose of the studies was to determine (1) the relation of the mineral content of the lungs of persons exposed to asbestos dust to the development of the fibrotic condition of the lungs known as asbestosis, (2) the lengths of the asbestos fibres which had been retained in the lungs.

We have included the detailed findings of the first group of 27 subjects which we have recorded already (KNOX and BEATTIE, 1954) with the details of the latter group of 23 subjects in our several tables. The discussion of the results therefore is based on the full group of 50. We studied lungs from a small group of subjects who had never been exposed to asbestos dust but had lived most of their lives in the same industrial area as the main group.

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