

C.M. 1810030345

UNIVERSITY OF OXFORD

Department of the Regius Professor of Medicine

DEPARTMENT OF HEALTH  
& SOCIAL SECURITY

Cancer Epidemiology and  
Clinical Trials Unit

9 Keble Road  
Oxford  
Tel: Oxford (0865) 53762

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Dr. Paul Kotin  
Vice President  
Health, Safety and Environment  
John-Manville Corporation  
Greenwood Plaza  
Denver, Colorado 80217

**PLAINTIFF'S  
EXHIBIT**  
JM-2142

Dear Dr. Kotin,

Richard Doll has passed me your enquiry on our follow-up of asbestos workers. To deal with your questions in turn:

1) Lung cancer in the absence of asbestosis

| <u>Definition</u>                                     | <u>Lung cancer deaths</u>  |                               | <u>Expected</u> |
|-------------------------------------------------------|----------------------------|-------------------------------|-----------------|
|                                                       | <u>With<br/>Asbestosis</u> | <u>Without<br/>Asbestosis</u> |                 |
| Cohort: 1 Men, 20+years before 1933<br>10+before 1933 | 11                         | 4                             | 1.6             |
| 2 Men, 20+years before 1933<br><10 before 1933        | 6                          | 4                             | 3.1             |
| 3 Men, 20+years, none before<br>1933                  | 6                          | 3                             | 5.6             |
| 4 Men, 10-19 years, none<br>before 1933               | 5                          | 18                            | 12.8            |
| 5 Women, 10+years, none<br>before 1933                | 1                          | 2                             | 0.9             |
| Total:                                                | 29                         | 31                            | 24.0            |

None of the excesses of lung cancer without mention of asbestosis are statistically significant, but there is a suggestion of an excess, particularly in more recent employees (cohorts 4 and 5), so it is possible either that doctors and pathologists are not aware of the continuing risk or that this is a genuine finding. It would thus not be safe to assume that the effect is adequately monitored by merely looking for asbestosis on death certificates. Incidentally neither of the two men who died of lung cancer over 20 years after first exposure, having entered the factory since 1951, had asbestosis certified. (Observed/expected = 2/0.52).

## 2) Cigarette smoking

The only records we examined were those of the six lung cancer deaths in men who entered the factory since 1951; all six were smokers. This information could be obtained from Turner Bros. if you want to pursue it.

## 3) Latent period

We did not examine mesotheliomas separately. The latent periods of the 3 coded cases in our study were 30, 45 and 45 years, but there are some further cases known to the Medical Officer in the factory which were coded as pleural cancer. We shall be looking at this soon, if you are interested in pursuing it. As for lung cancer, it is impossible to give an accurate figure for the minimum latent period, as some cases are obviously incidental. The excess risk is not statistically significant before 20 years, but there may be a slight excess after 15 years:

### Lung cancer deaths in men and women starting work since 1933

| <u>Years since entering factory</u> | <u>Observed</u> | <u>Expected</u> |
|-------------------------------------|-----------------|-----------------|
| 15                                  | 4               | 3.2             |
| 15-20                               | 7               | 4.4             |
| <u>Over 20</u>                      | <u>24</u>       | <u>11.7</u>     |
| <u>Total</u>                        | <u>35</u>       | <u>19.3</u>     |

In this connection, two of the 6 lung cancer deaths in men who started work since 1951 were certified with asbestosis; these deaths occurred 17 and 19 years after first exposure. We have not yet examined the cases of lung cancer with asbestosis in those who entered before 1951.

## 4) Dust levels

Dust levels between 1952 and 1966 were published in the previous report. (Knox et al 1968, Brit. J. Industr. Med., 25, 293-303). 1971 levels appear to be substantially lower than the 1966 figures, but it is not clear how reliable this information is. We propose to attempt to relate mortality to dust levels in subsequent analyses, but as there were no systematic measurements before 1952 this can only be done for those entering since 1951, and the numbers will not be large enough for this purpose for at least 3 or 4 years. The difficulties are obvious - measurement techniques have changed over the years, and men move between areas with very different levels in the course of their employment. Incidentally, it seems likely that dust levels did not change dramatically between 1933 and 1966, which is consistent with the finding that

the excess of lung cancer over 15 years after first exposure in those starting work since 1951 may be as high as in those starting between 1933 and 1950 (observed/expected: 5/1.9 and 26/14.2 respectively). but we need much larger numbers to answer this at all reliably.

I hope this answers your questions.

Yours sincerely,



Julian Peto  
Statistician

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P.S.

I realise on re-reading this that I have not made it clear that we have recorded asbestosis only when it was mentioned on the death certificate. No medical information from Turner Bros., was used. I enclose our report, and the 1968 dust table.

J. P.