Opinion on presentation by Ms. S. Selevan at the APHA Convention 20.10.77. entitled "Mortality and Environmental Assessment of Vermont Talc Mines and Mills"

1. It is always difficult to give an authorative opinion on the transcript of a paper presented verbally at a meeting. Slight inaccuracies in transcription, the impossibility of knowing what the speaker was pointing to when referring to slides, and lack of details of methods, criteria and findings contribute to the difficulties. Notwithstanding these problems I venture the following comments.

2. Mortality from all and particular causes among 405 talc miners, millers and miscellaneously exposed workers was compared with that for the State of Vermont as a whole and for the USA retrospectively. It is not clear how many of the 405 were miners, how many were millers or how many were miscellaneously exposed.

3. Definition of probands

3.1 Those studied had to be employed for not less than 1 year all told and for not less than 1 day between 1st January, 1941 and 31st December, 1969. Thus, at one extreme it is possible that the 405 include men who started employment on 2nd January, 1940 and left on 2nd January, 1941 and men who started on 31st December, 1969 and left on 31st December, 1970. At the other extreme it could include men employed continuously from before 1940 until after 31st December, 1975.

3.2 It is not clear how the 405 probands were found nor what proportion of a larger population they represented. If the 405 is the relic of a much larger number of individuals most of

whom were untraced, then the study is of no validity for any purpose. It is difficult to believe that every oligible person employed as a miner or miller etc. from 1940 through 1970 was traced. Almost certainly some were lost to follow-up. The text at the middle of p.4 of the transcript suggests that follow-up was indeed very incomplete. It is extremely important to know what proportion was traced.

3.3 It is not at all clear what "a mixture of miscellaneous category" means.

3.4 No attempt seems to have been made to ascertain whether individuals had other relevant occupational history (e.g. working in other types of mine or with other dusts). More importantly there is completely inadequate information on smoking habits (see below).

3.5 It is no fault of the author of the paper but a defect nevertheless, that there is no reliable information on exposure levels for the miners or mills until recent times.

4. Calculation of expected death rates

4.1 The method used appears to have been unnecessarily crude, it is possible to calculate expectation of death from specific causes accurately for a defined population, using age-specific mortality data for each cohort. Maybe this was done. It is not clear.

4.2 On p.3, lines 22 - 27 etc. of the transcript, the author refers to possible bias in calculating expected death rates for the population of Vermont. In my opinion the likelihood of bias of the kind described renders the comparisons between the probands

5. Causes of death

5.1 It is not clear how data on causes of death were obtained. I have the impression that they are unverified death certificate data.

5.2 Of the 6 respiratory cancer deaths, the presence of lung cancer in Daniel Guyett was not, in my view, adequately established. In two other cases, Allen and Hale, the interval between first employment and death from lung cancer was too short for it to be reasonably likely that exposure to talc caused the cancer. Only for two of the 6 was it known whether he was a smoker, and it is not known how much Guyett smoked.

5.3 It is not clear whether cases of cancer of the upper respiratory tract were looked for and not found or whether they were not looked for.

6. Results

6.1 Whatever else, it is clear to me that the study has revealed no excess risk of death from neoplasia. On the other hand, if follow-up was incomplete, even the negative finding in the millers could be misleading in this regard.

6.2 It is puzzling why the millers and the mixed exposure group, but not the miners, should have shown an excess of non-malignant respiratory disease, emphysema (5 cases) and pneumoconiosis including silicosis (6 cases). Obviously one needs to know more exposure details and to have better information about other occupational expsoures (both before and after working in the talc mines or mills) and about smoking habits.

7. Comments

7.1 This is obviously a totally inadequate study - but the extent of the inadequacy cannot be determined without further information. The data base is meagre and the data largely unreliable. In these circumstances the speaker not only did a disservice to science by presenting the paper but made quite inappropriate discussion points. His conclusion that "the present study clearly demonstrates non-malignant respiratory disease is associated with exposure to relatively pure non-tremolitic talc" is not justified by the data.

7.2 I should be glad to see more details of the study and to extend or expand the above opinion in the light of them.

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