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PLAINTIFF'S EXHIBIT
JM-2046

MOUNT SINAI SCHOOL OF MEDICINE
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FIFTH AVENUE AND 100TH STREET · NEW YORK, N.Y. 10029

Department of Community Medicine

August 13, 1973

Milton C. Lewinsohn, M.B., B.Ch., D.I.H.
Chief Medical Officer
Turner Brothers Asbestos Company, Ltd.
P. O. Box 40
Rochdale, England

Dear Dr. Lewinsohn:

I have read your letter of July 12, 1973. Its burden seems to be that you and Dr. Holmes feel that the results of two sets of x-ray studies of asbestos workers at the Turner Brothers Asbestos Company factory in Rochdale, one made by Dr. Knox in 1966 and another by you in 1970, are not contradictory. You believe I was in error in suggesting that there are important discrepancies in the reported results of the two surveys.

Attached is a memorandum responding to the questions raised. I do not consider that your objections are material or valid nor do I find that you have dispelled the doubts held by me and by many other scientists. Indeed, the failure of your polemic to establish coherence and identity between Dr. Knox's study and yours might make one all the more concerned that such identity does not exist.

Correspondence between us is not the best way of settling the matter - and it must be settled. The problem is a serious one. Reports of results of x-ray surveys at the Turner Bros. Asbestos Co., Ltd. have been used to formulate industrial hygiene asbestos dust exposure standards, regulating the permitted dustiness in workplaces in which hundreds of thousands of men and women are employed. If the x-ray surveys have been inaccurately evaluated, then the standards are wrong and these workers are at serious risk of irreversible, often fatal, disease.

The essential contradiction is:

1. Dr. Knox reported to the British Occupational Hygiene Society that he x-rayed 290 production employees with more than 10 years of exposure at the Turner Bros. factory in 1966. He interpreted the films as showing that 8 had changes "possibly asbestotic" (2.7%). I reproduce the table: [From: Ann. Occup. Hyg. 11: 47-60, 1968 (page 56)].

TABLE I. CLINICAL AND RADIOLOGICAL ASSESSMENT OF TEXTILE ASBESTOS WORKERS FIRST EMPLOYED AFTER 1.1.1933 AND EMPLOYED FOR 10 YEARS AND UPWARDS

Number	Parietal rhonchi present	Per cent of group	Basal rales	Per cent of group	X-ray changes not asbestotic	X-ray changes possibly asbestotic	Per cent of group
280	52	17·6	16*	5·5	12	8*	2·7

*Includes 3 suspensions for asbestosis.

2. It was on these data "...made available to the committee by the Asbestos industry..." that the new standard "... is primarily based." (page 49).

3. You reported that you re-x-rayed all 1,287 workers at Turner Bros. (production, maintenance, research, quality control) in 1970. Your results are reproduced in the attached sheet, duplicating Figures 2 and 3 of your paper in the Royal Society of Health Journal in 1972. It is evident that among male workers the following were found:

Years from first exposure	Abnormal x-rays	Pulmonary fibrosis
10-19	more than 25%	more than 20%
20-29	" " 50%	" " 30%
30-39	" " 70%	" " 50%

Among female workers:

Years from first exposure	Abnormal x-rays	Pulmonary fibrosis
10-19	more than 20%	more than 40%
20-29	" " 25%	" " 60%
30-39	" " 25%	" " 80%

I omit reference to your 40-49 year group since Knox reported no comparable group.

4. Differences exist in the two studies (different times; 1966 and 1970; changes in factory staff; different x-ray interpreters and interpretation; different methods of recording etc.) But it was the same factory and, for the older employees for whom the comparison is made, largely the same workers who were x-rayed. The differences in recorded presence of x-ray abnormalities are not trivial, and require explanation.

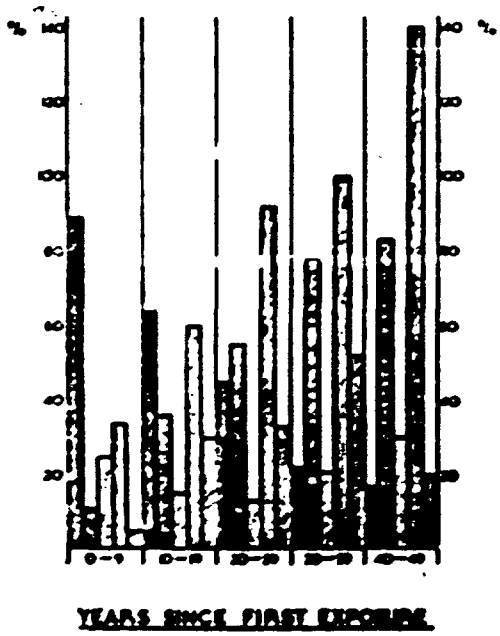

Figure 2

The percentage incidence of normal and abnormal X-ray in men related to 10 year exposure groups. (The incidence of pleural thickening has been calculated by adding all the regional distributions of thickening irrespective of whether more than one area is involved in an individual. The number of findings thus exceeds the number of subjects resulting in the high percentage figures.)(P1–Pleural thickening)

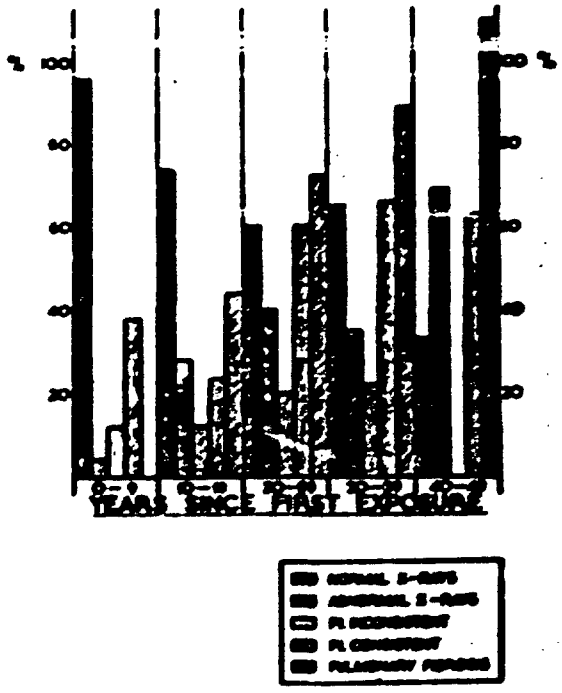

Figure 3

The percentage incidence of normal and abnormal X-rays in women related to 10 year exposure groups.(P1–Pleural thickening)

5. Explanation is possible. The 1966 x-rays exist in the files of the Turner Bros. Asbestos Co., as do the 1970 x-rays. Both sets of films can be reexamined and re-appraised. This is what many of us assumed to have been promised by Dr. Holmes when he said in Lyon on Oct. 2, 1972,

> "Thus the information, although the best available at the time, was, to say the least scanty for the purpose and some of us who were associated with it have become increasingly concerned with the authority with which it has become invested in the international field. The time has therefore probably arrived for an up-to-date re-appraisal of the original data and the study of new data which has since become available elsewhere."

It may turn out that reappraisal of the x-rays will prove Dr. Knox to have been correct and that the figures published by you do not mean what they seem to mean. It may result in the opposite: that Dr. Knox's evaluations were in error. Perhaps you were both correct, and differences are more apparent than real. Without reappraisal, one cannot be sure.

I am confident that skilled independent British experts will be able to provide an accurate answer to this unresolved question.

6. The reappraisal is long overdue for another reason. The standard derived from the data made available by the Turner Bros. Asbestos Co. Ltd. refers only to prevention of asbestosis. The HSE committee, on which Dr. Knox and Dr. Holmes served, stated in its 1968 report that "...the quantitative relationship between asbestos and cancer risk is not known...consequently it is not possible, at this time to specify an air concentration which is known will be free of risk in this respect." (page 54).

Unfortunately, asbestosis is only one serious hazard of asbestos workers. In some cohorts approximately 90% of excess deaths have been found due to one or another type of asbestos-associated cancer. Such cancers, as mesothelioma, can occur at dust exposure levels below those which result in asbestosis.

This unhappy omission of cancer from consideration in the setting of asbestos exposure standards, makes it all the more necessary to be diligent and prudent in evaluating data related to the establishment of such standards.

Sincerely yours,

Irving J. Selikoff, M.D.
Professor

IJS:vs

CE1001204444

8.13.1973

Memorandum: Review of letter of Dr. H.C. Lewinsohn and Dr. S. Holmes to Dr. I.J. Selikoff, July 12, 1973.

Documents

A. Dr. Selikoff's remarks at the American Industrial Hygiene Conference, May 21, 1973, as recorded and transcribed by undisclosed sources and submitted by Drs. Lewinsohn and Holmes.

B. Committee on Hygiene Standards of the British Occupational Hygiene Society. Ann. Occup. Hyg. 11:47-63, 1968.

C. H.C. Lewinsohn. The Medical Surveillance of Asbestos Workers. Roy. Soc. Health J. 92:69-77, 1972.

D. G. Berry. Hygiene Standards -- Theory and Application Lyon, Oct. 2, 1972, Paper 22.

E. S. Holmes. Criteria for Environmental Data and Bases of Threshold Limit Values -- Environmental Data in Industry. Lyon, Oct. 2, 1972, Paper 20.

Comments (reference to numbered paragraphs in Lewinsohn-Holmes letter).

1(a) The paper "...was not intended to justify or verify the BOHS standard." Nowhere did I say it was so intended.

1(b) "The results presented in MCL's paper were preliminary results."

It is possible that you will have further findings but at the time of my presentation only those were available that you had published, and defined in your paper as follows:

"Figures 2 and 3 illustrate the incidence of radiological changes, in ten years exposure groups, in 970 males and 217 females exposed to asbestos. In the previous report[6] it was shown that radiological abnormality was dependent upon exposure, age and smoking habits but that exposure appeared to be the most important single factor." (Document C, pg. 74.)

1(c) You argue that it was clearly stated in your Discussion that "From the information currently available only tentative opinions can be expressed." I fail to see the relevance of the implied complaint. Nowhere did I quote your opinions. I was interested only in your data.

2(a) You state that the populations reported by Knox and HCL were not identical nor were "the very large majority" "common to both surveys." I would be interested in data to support this assertion, with reference to the employment categories specifically referred to by me in my presentation, i.e., those 10-19, 20-29 and 30-39 years from onset, and reproduced in my tables [see 3(a)]. These were the groups in which radiological changes were seen, and to which reference was made. (Document A, pp. 10-11.)

The thrust of my discussion, and the contrast to which I pointed, bore on the individuals x-rayed by Knox (Document B, p. 55) in 1966. All of these individuals were at least 10 years from onset and, unless no longer working at Turner Bros., were in the 1970 groups x-rayed by you. Do you contend they were not? If so, please explain.

I made no issue of individuals 40+ years from onset, nor were they included in the graph (see 5) since they had begun work before 1933, and were not included in Dr. Knox's report.

2(b) Insofar as you would have preferred that I had designated the additional individuals x-rayed by you as "quality control and research staff" rather than "office workers" I can only plead the shorthand of an extemporaneous presentation designed to fit a limited time allotment. Incidentally, my experience with U.S. research staffs is that they do spend a good deal of time in offices.

3(a) You complain that I stated that Knox reported on 913 men with at least 10 years exposure. You misquote me. My exact words were: "Dr. Knox had examined only men in the scheduled areas — that is, the production areas, 913-, whereas Dr. Lewinsohn included all employees...." (Document A, p. 10.) The figure 913 was given to compare a production area group with the larger population (1,287) x-rayed by you. No statement was made by me that such a number was in the 10 year or over groups. (Document A, p. 8.)

Indeed, my references to Dr. Knox's findings were specific and exact, since I showed a slide which presented the precise data contained in the tables in the paper published in 1968 (Document B, p. 81) and attributed to Dr. Knox (Document B, p. 84).

Group 1

Years employed	Number exposed	fibres/cm^3	X-Ray changes
10-	88	11	0
15-	72	11	1
20-	30	to	2
25-	46		3
30-	6	27	1
	211		7