

Exhibit *20*
Exam of *L. Merrill*
Date *Apr 2 59*
Official Reporter
KATHY RYLANDSHOLP

PLAINTIFF'S
EXHIBIT

04240.00

IVAN SABOURIN, Q.C.

ALDRED BUILDING, MONTREAL.

November 11, 1957

Ed. Boadway, Esq., Manager,
Quebec Asbestos Corporation,
East Broughton, P.Q.

Dear Ed,

RE: Industrial Hygiene Foundation Study
(Lung Cancer)

I am enclosing a self-explanatory letter.

Kindest regards,

Ivan Sabourin
IVAN SABOURIN

PLEASE RETURN

Encl.: Letter
Survey

24 11-61

IS/LS

Ed - This information should

not be released until I check with

O.A.M.A. Karl Lindell is out of

town until the 22nd *Ed's*

PLAINTIFF'S
EXHIBIT
WV-000990

COPY

November 7th, 1957.

Karl Lindell, Esq.,
Chairman - C.A.M.A.,
Asbestos, P.Q.

Dear Karl:-

**RE: INDUSTRIAL HYGIENE FOUNDATION STUDY
(LUNG CANCER).-**

Following the annual I. H. F. (Mellon Institute - Pittsburgh) meeting I have perused advance copy of the epidemiological survey we entrusted with the I. H. F.. I enclose herewith a copy of the Summary and Conclusions for your confidential information. The whole survey, in print, will be available in a few days and mailed you. The enclosed photostat is not of the best quality and I am alone guilty in that respect.

I thought you would be deeply interested in having as soon as possible this "summary and conclusions" which tell us of the substance of the findings in the report which, I suggest, is well presented, has logical sequence and is particularly not unfavourable and rather effectively combats the growing concept of later years in Quebec City (Dr. Vidal was holding the fort consistently with the W. C. B.) in Washington, and in Europe where it originated and develops most.

I. H. F. seems to have made the best out of the material available (cancer statistical data were as you know excessively meagre in the whole world and very poor in the Province as report of cancer as cause of death is not compellable by law whereas v.g. Tuberculosis must be reported).

The presentation of the survey appears objective, to the point, and I strongly believe immediate attention should be given to capitalizing upon the report.

IVAN SABOURIN, Q.C.
ALDRED BUILDING
Montreal.

COPY

Karl Lindell, Esq.,
Asbestos, Que.

November 7th 1957

- II -

The underlining and marginal lines are mine (except for the word "recorded" at page 75).

Dr. Braun and those associated with him in this work in my modest opinion have made their good work.

I had a chance to discuss with Dr. Braun the suggestions he makes at the very end, as to independent X-Ray reading. This must not be construed pejoratively and so as to incriminate the reading methods of our Doctors at Thetford and Asbestos. Our method is orthodox and is scientifically sound, objective and in no way antiquated. What the report rather implies as to X-Ray reading is that our classification has for object to determine the various stages of a significant fibrosis of asbestotic nature, "significant" meaning a fibrosis having reached a stage where it may be said that it could play a part in the causality of a certain incapacity to work (presently or in the future). Asbestosis is in our view a disease when it has gone beyond those preliminary stages which are not in themselves significant from a compensation point of view. The author of the survey suggests that independent reading would take into consideration the preliminary stages of asbestosis (which we set aside as insignificant) and would classify them as cases which would be reported for a study, such as that conducted by L. K. F. Thus, the reported cases of asbestosis (whether significant or not) would be more considerable and the lung cancer incidence would fall below the actual figures - - - but I would rather than suggesting we refer our readings to an independent source as I firmly believe our Doctors at Asbestos and Thetford Mines are eminently qualified for readings and that few are as qualified anywhere.

Yours faithfully,

IVAN SABOURIN

IVAN SABOURIN, Q.C.
ALDRED BUILDING
Montreal.

VI. SUMMARY AND CONCLUSIONS

Interest in the question of whether there may be an association between lung cancer and asbestosis or exposure to asbestos has been evident since the report in 1935 by Lynch and Smith of a case in which lung cancer and asbestosis were both present. As additional cases in which the two diseases coexisted were reported, a causal association appears to have been gradually accepted by many authors, although a few workers considered the correlation to be inconclusive. Cases of lung cancer which had occurred among the asbestos miners in Quebec had been carefully recorded over the years, and the present study was commissioned in an effort to determine whether a causal relationship did, in fact, exist between exposure to asbestos and cancer of the lung.

Reference to the literature shows a remarkable uniformity both of method and of conclusions. In general, the method has been to study a circumscribed series of cases of asbestosis and to enumerate those in which lung cancer occurred. The series may consist of cases coming to autopsy or of death certificates mentioning asbestosis, and the total number has served as the denominator by which the number of lung cancer cases is divided to produce a certain "incidence rate". This rate, as reported by various authors has been consistently high, and its uniformity is indicated by the following tabulation.

<u>Author</u>	<u>Asbestosis Deaths</u>	<u>Cancer of Lung</u>	<u>Percentage Incidence</u>
Merewether	344	85	24.8
Wedler	92	15	16.3
Wyers	115	17	14.8
Lynch & Cannon	40	3	7.5
Gloyne	121	17	14.1
Totals	712	107	15.0

The notable characteristic of all previous publications is the adherence to the development of a percentage relationship in a relatively small and very selected group of cases. Only Doll,⁽⁶³⁾ among all of these authors, has described a representative population group and studied it for the mortality rate from lung cancer and compared this rate with that for a control group. His investigation dealt with only 113 men in the study population.

Since most earlier studies had been limited to enumerating the lung cancers found in certain selected samples, such as cases coming to autopsy or death certificates in which asbestosis was mentioned, it was apparent that they could not fulfill the requirements of an epidemiological and statistical approach to the problem. The present study was, therefore, designed to meet the requirements of this method.

After a preliminary survey to explore the availability of reliable information, data were gathered on workers in the asbestos mines in Quebec, based on medical records at the two main locations

of these operations. Cohorts were defined according to certain criteria and all workers who met these criteria were included in the study. Through their medical records, data relative to their characteristics were collected and their status at the end of a six-year period of observation was determined. In the case of those who had died, an exhaustive search of death certificates and insurance records was carried out in order to determine as nearly as possible the exact cause of death. Mortality rates from lung cancer for the general population of the Province of Quebec and its various counties and for the Dominion of Canada, as well as the United States were calculated from statistics collected in the appropriate places. Comparisons of the rates obtained for asbestos workers and for the other population groups were made according to accepted statistical methods which have been explained in some detail in section IV.

Records were obtained on 6091 persons who fulfilled the criteria of our cohorts. It was not possible to trace 133 of these for the whole period, but 5771 of the remaining 5958 were found to be still living in 1955 or later. Of the 187 known dead, cancer of the lung was considered to have been reasonably proved in nine and to be strongly suggested in three.

The members of the cohorts were studied with respect to age, length of employment, a weighted average of their exposure, and their smoking habits. Four thousand, six hundred and seventy-three

were found to be smokers within the definition of that term as used in this study. Thirty-four percent of the cohort were more than 45 years of age, and 30% had been employed for longer than 20 years. Thirty percent had a weighted exposure which placed them in category III.

The mortality rates for lung cancer, as computed on the basis of six "proved" deaths among the Thetford Mines cohort and three "proved" deaths among the Asbestos cohort, were 27.6 per 100,000 for the Thetford Mines group, and 22.2 per 100,000 for the Asbestos group. When the three "suspected" cases were added, the "total" rate for the Thetford Mines cohort rose to 41.3. The rate for the combined cohort was 25.5 per 100,000 for "proved" cases, and 34 per 100,000 for "proved" and "suspected" cases. The importance of the suspected but unproved cases in determining these rates has been reiterated because it is likely that such cases would not be included in the statistics for the general population.

According to the findings in this study, the mortality rate from lung cancer does not appear to increase with length of exposure or with degree of exposure, a fact which presents strong evidence against the carcinogenicity of asbestos. On the other hand, the study indicates that cigarette smoking is a very important factor in the incidence of cancer of the lung.

A comparison of relative frequency of lung cancer and asbestosis is less reassuring, but we believe that this is because of an

under-reporting of asbestosis cases. The incidence of asbestosis indicated by the medical records is far below that which would be expected on the basis of all previously published figures. Naturally, when the cases of lung cancer are compared with an artificially low figure, its relative incidence will be higher than it should. However this may be, 12.5% of the recorded cases of asbestosis in this study developed lung cancer, a figure slightly lower than those quoted by authors who confined themselves to this type of comparison.

Comparison of the experience among the asbestos miners with that of various segments of the unexposed, comparable population shows that the observed number of deaths among the miners is not significantly greater. The rate for proved cases among the asbestos miners (25.5 per 100,000) compares well with the rate of 22.5 per 100,000 for the rest of the Province, and 20.8 per 100,000 for adult males throughout the Dominion of Canada. It also compares satisfactorily with rates of 37.2, 25.3, and 28.0 obtained from various sources for adult males in the United States. Finally, in this matter of comparison, it would appear that the world-wide experience of persons exposed to asbestos dust is not worse with respect to lung cancer than that of the unexposed population.

The counties surrounding the asbestos-producing areas, and in which it is presumed most of the asbestos miners live, have almost identical mortality rates with those of eight counties widely scattered

through the Province, and are lower than those for the remainder of the Province, and much lower than the rate for Montreal. ...

Since 1940, there have been 19 cases in which the diagnosis of primary cancer of the lung may be considered to have been proved. Approximately half of these cases were associated with asbestosis. All but one died in the recognized "cancer age" and at least one-third had only the lightest exposure (category I) to asbestos dust.

Conclusions

On the basis of a careful and detailed study of what are believed to be complete and reliable data, it seems fair to conclude that the asbestos miners at Thetford Mines and Asbestos in the Province of Quebec do not have a significantly higher death rate from lung cancer than do comparable segments of the general population. Despite this, the results suggest that a miner who develops the disease asbestosis does have a greater likelihood of developing cancer of the lung than a person without this disease. We suspect, however, that under-reporting of asbestosis cases had led to a fallacious finding in this connection.

The death rate from lung cancer in the areas contiguous to the asbestos operations is comparable to that in areas widely scattered throughout the Province of Quebec and is lower than in some urbanised areas within the Province.

The present study indicates that the effect of cigarette smoking is a much more important consideration in the production of lung cancer than is exposure to asbestos, and in this respect, it tends to confirm recent studies dealing with the effect of smoking.

The value of this investigation would be considerably enhanced by continuing the observation of the cohorts formulated herein on a year-by-year basis. It is strongly recommended that the chest x-rays of all workers be submitted to an independent reading for the diagnosis of asbestosis, since an inaccurately low incidence rate for this disease creates an artificially high relative incidence for lung cancer.