



Research

MEMORANDUM

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MUCHADOMEN ROSABER

XXXX WEL. 118 TO YOUNG JADIDOLIMFOTER

Date March 30, 1979

By R. J. Lee
Basic Research-Physics

PLAINTIFF'S EXHIBIT

USX-1125

Subject EPIDEMIOLOGICAL STUDY OF 932 NEW YORK
TUNNEL WORKERS BY MT. SINAI HOSPITAL

Summary

The attached paper by Dr. I. Selikoff presents the results of a study of 932 New York tunnel workers. These workers were exposed to dust from the Manhattan formation of Manhattan Island which is rich in amphiboles. The data show that there was no increase in lung cancer among the tunnel workers over that potentially due to smoking. This epidemiological study should be considered as very significant.

Discussion

In January 1976, Drs. R. M. Fisher, J. S. Lally and myself visited the Mt. Sinai Laboratory. At that time, Dr. Selikoff stated that two studies formed the underlying basis for his concern about the possible carcinogenicity of non-asbestos amphiboles (presumably this concern led to his testimony in the Reserve Mining case). One was the Homestake study, which he suggested was faulted, and the second was an on-going study of New York tunnel workers conducted by his group. Dr. Selikoff indicated that they had noticed some puzzling abnormalities in the chest x-rays of these workers which resembled those produced by asbestos disease.

Dr. Langer, of their group, had written his Ph.D. thesis on the Manhattan formation, and alerted Dr. Selikoff of the presence of significant quantities of amphiboles in the rock. Putting two-and-two together, Dr. Selikoff felt this was the first bonafide indication of asbestos disease caused by non-commercial asbestos.

The following are some numbers which I extracted from the paper for comparison. They illustrate the incidence of lung cancer and mesothelioma in three groups; two groups of insulation workers and one group of New York tunnel workers, and also an estimate of the expected incidence of lung cancer due to cigarette smoking in each group.

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Comparison of Expected and Observed Deaths Due to Lung Cancer
 and Mesothelioma

Asbestos Insulation Workers	Lung Cancer		Mesothelioma		Total Deaths	Populatio
	Expected	Observed	Expected	Observed		
1	92	427	0	144	2003	17,000
2	12	89	0	35	451	632
New York Tunnel Workers						
3	13	21	0	0	294	932

Expected Number of Deaths Due to Lung Cancer From Cigarette Smoking

Asbestos Insulation Workers (70-90% Smokers)	Expected Range	Total Deaths	Mortality Rate
1	112-150	2003	5.6 - 7.5%
2	25-33	451	5.6 - 7.5%
New York Tunnel Workers (70-90% Smokers)			
3	16-22	294	5.6 - 7.5%

The mortality rate among white workers (50% smokers) in a similar age group due to lung cancer is about 4.4%.

As indicated in Selikoff's paper (see Tables 8-10) there is no evidence of an increase in lung cancer among the tunnel workers over that potentially due to smoking. However, Selikoff concludes that quartz is not carcinogenic, and dismisses the exposure of the workers to amphibole fragments from the Manhattan formation. In fact, he suggests that hornblende and actinolite have not been identified as significant risks, yet up to 40% of the amphiboles in Lake Superior are of those mineral species.

We plan to obtain some detailed mineralogical information about the Manhattan formation and some representative rock samples for analysis.

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In summary, this paper should represent a significant contribution to the thesis "non-asbestos amphiboles are not carcinogenic."

RJL/d

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