

December 19, 1938

Mr. C. Mosier

Mr. R. E. Cryer

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Attached hereto please find the report and correspondence which you recently handed me referring to the asbestos dust experiment being conducted by Dr. Gardner at Jaramac Lake.

In the present report I find most of the information is further in confirmation of previous results as reported in April of this year.

When this experimental work started in March of 1937, Dr. Gardner outlined the objectives as being two-fold:

1. To observe by x-ray examination any tendency towards development of fibrosis in the lungs of experimental animals subjected to high concentrations of asbestos dust over prolonged time intervals.
2. To determine if possible whether the irritation that develops from asbestos dust in the lung tissues is a result of chemical effects, or mechanical action.

To date the results seem to point definitely to mechanical action as being the cause of fibrosis. This means simply that the shape and size of the particles that accumulate in the lungs appears to be of more importance as a source of irritation than the chemical composition of the particles. Dr. Gardner has found, contrary to what was expected, that the finer particles cause less irritation than the coarser particles. Animals exposed to high concentrations of very fine dust for twenty months have not developed fibrosis of lung tissues, whereas in previous experiments with coarser particles of asbestos dust, fibrosis developed in 15 months exposure. This appears to be an important point and something heretofore not known.

Most of the experimental results seem to indicate that asbestos dust is probably less likely to produce fibrosis of the lungs than other forms of silica or silicate dust.

There is some evidence to show that crysotile fiber may be more harmful than other varieties of asbestos that have been tested including Amosite. This is not conclusive at this time however.

To further check the mechanical theory as the source of irritation injections of coarse dust are being made

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Most of the experimental results seem to indicate that asbestos dust is probably less likely to produce fibrosis of the lungs than other forms of silica or silicate dust.

There is some evidence to show that crocidolite fiber may be more harmful than other varieties of asbestos that have been tested including Amosite. This is not conclusive at this time however.

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into both lungs of each of a group of animals. With these animals one lung has been artificially collapsed, and thus rendered immobile. The other lung functions normally. If the mechanical theory is correct, presumably, fibrosis will occur in the lung that moves and will not develop in the collapsed lung.

Further experiments are now under way to get additional information on the effects of asbestos dust in different particle sizes and possibly this may lead to some definite conclusions as to where the limits of the hazard, in respect to particle size begin and end.

My personal opinion is that if this work is continued it will likely establish a background of information that will be of considerable assistance in designing equipment and protective devices for eliminating the industrial hazard. If it can be established that only a certain range of particle size and only definite concentrations of dust are harmful, our problem will have been simplified to a considerable extent.

R. E. Cryor:IS

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