



Mr. R. L. Moore

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Projects - Physics Section

The following is the requested list of and a brief statement on the status of and planned work on the various projects assigned to the Physics Section of the Laboratory.

I. Fiber Evaluation.

1. Development of Evaluation Techniques.

The Bauer-McNett Classifier has just arrived and is currently being hooked up in the pilot plant. Cassiar claims this equipment is most effective in evaluating asbestos. It will be necessary to develop the techniques for evaluating fibers with this equipment. Tests will be required to correlate our measurements with Cassiar and to determine the distribution for various grades of fiber.

Cassiar has shown us measurements which indicate that the series of 3/4, 3/8, 3, 6, 12, and 20 Ro-tap screens is more effective in evaluating asbestos than the 1/2, 3, 6, 12, 20, and 35 previously used. We are currently determining distributions using both sets of screens to determine which is preferred.

2. Correlation of Mill Yield Tests.

The policy has recently been established that samples of asbestos used in all standard mill yield tests will be sent to the laboratory for measurement of length by Suter-Webb Comb, surface area, and fiber distribution on the Bauer-McNett apparatus and Ro-tap to determine what laboratory measurements are significant in evaluating asbestos, and the importance of each.

We have now in the laboratory samples from the last four mill tests, measurements on which were held up pending arrival of the Bauer-McNett Classifier. Another mill test is currently in progress.

3. Recent receipts of Cassiar 3K produced by the new Cassiar processing are shorter than the fiber previously received processed by the old process.

Also recent shipments of Cassiar C-1 appear to be shorter than previous shipments.

The textile mill has requested measurements to determine how the new fibers compare with the old, so Cassiar can be properly notified.

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The textile mill is now relying much more than previously on laboratory measurements to aid them in the evaluation of fibers, both through measurements of fibers used in mill yield tests and on fibers as received. This will require a lot of time, but it is considered worthwhile.

One could easily spend full time for a month to get the Bauer-McNett Classifier in operation, get caught up with the correlation with mill yield tests and the status of Cassiar asbestos.

4. Fiber Measurements.

Samples of other asbestos as that in low pressure laminates, filter fiber, etc., are submitted from time to time and the requested measurements made. The time required depends on the number of samples submitted.

5. Splint Content.

A technique has recently been developed for producing mats to qualitatively show the abundance of splints in asbestos as received or after any processing operation. Mr. Cilley has requested mats of various fibers processed through the experimental fiberizer and other fiber processing equipment. He has also requested mats of different lots of Cassiar asbestos. Mr. Cilley commented relative to having something to show the quality of fiber, "I think it would be an excellent idea for the future".

It will take a technician about a week to get the samples for Mr. Cilley and also samples for retention in the laboratory.

* II. Fiberization of Asbestos.

The fiberizer has been used to process three lots of fiber for mill tests: a standard 1000 lb. yield test, a batch for 9505 lap, and a batch for 9394 Pyrotex.

The loss through the ceiling condenser was excessive in the yield test, yet the carding losses were so greatly reduced that the net yield was only 1.4% less than that on fiber as received. A second mill test is to be run as a recheck on the first test. This is important in that it indicates a new concept in carding; that is, that a certain amount of fiber will be lost, either in the preparing department or in carding. One must then determine where the loss can most economically be taken.

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The one sample of lap from fiber through the fiberizer showed very little difference in splint content from lap from asbestos through regular production processes. Since then we have learned more about the techniques for showing and measuring splints. This should be reconsidered both in relation to freedom of the fiber from splints as well as fiber recovery.

The one sample of Pyrotex from fiber through the fiberizer was smoother and freer from splints than Pyrotex processed from regularly processed asbestos. A second check with a better study of residual splints has been requested.

Everyone agrees the fiberizer is effective in removing splints. The only factor deterring its acceptance is the cost of processing and possible greater shrinkage during processing. These must be carefully studied probably through additional runs.

With the availability of the Bauer-McNett Classifier we can obtain additional information on the effect of the fiberizer on the asbestos relative to other processing equipment. This is considered essential.

The completion of the study on the fiberizer will require approximately a month's work.

X III. Dust Counts

The dust count program is very active at present in various departments.

1. Spinning Room.

A study is currently under way to determine the dust in the spinning room, and especially the factors contributing to dust, since variations in the dust count by a factor of 2 have been measured. Once these factors have been determined, they will be applied to reduce the dust from its present level of about 2 million per cuft.

2. T-13.

The exhaust system to the cards of the Pyrotex lines in T-13 are currently being modified. Dust counts are made to evaluate these modifications.

3. Speeders.

Mr. Cilley has requested dust study around the speeders to determine if ventilation is needed under the speeders, how much ventilation is required, and how much the dust can be reduced by proper ventilation. A part of this program is the measure of the dust in the air drawn into the department from outside.

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4. Universal Winders.

Mr. Cilley has requested counts around Universal Winders to determine if dust control measures are required.

5. Wetting Asbestos.

In his memorandum of December 19, 1955, Mr. Cilley requested studies to determine if water sprinkled on asbestos in the preparing department would be effective in reducing dust. This study would include the optimum amount of water, whether water would be lost during carding, the retention of water prior to and during spinning. Mr. Cilley also states "If water doesn't give the desired results, try emulsions. The selection of the right kind of oil is important."

At present, Joe Kinsinger is spending about 1/3 his time in items 1 and 2. We have started on program No. 3. We have not had time to do anything on No. 5.

IV. Noise Studies.

Noise studies are currently being made on the speeders. The noise level is too high for safety and recommendations for its reduction have been made.

V. Friction.

Several requests have been recently made for tests on the Chase Machine following the American Hoist & Derrick Procedure. About 1/3 of Joe Kinsinger's time over the past three weeks has been devoted to this project. I do not know how much longer it will continue.

~~VI.~~ Synthetic Fibers.

Presently the Physics Section has samples of Fiberfrax for the determination of its carding characteristics.

A sample of Pyrotex containing Istron, a plasticized acetate, carrier fiber. Its physical properties are to be measured to determine its possibilities as a base for low pressure laminates.

It will require only several days to obtain these data, but I have not had time to plan the work.

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VII. Teflon.

Two projects on Teflon are currently receiving attention:

1. We are trying to compile the data requested by Mr. Horvath on the limiting pressure for Teflon expansion joints at various temperatures.
2. A customer requirement is that all Teflon rod and sheet for defense applications be x-rayed to insure freedom from internal flaws. An order has just been received for 5,000 feet to be x-rayed. This will require about half of Miss Garner's time for the next 6 weeks.

VIII. Asbestos Bibliography.

All issues of Chemical Abstracts are checked for abstracts on asbestos to be included in the Asbestos Bibliography. Pertinent articles are obtained and studied.

IX. Physical Testing.

Requests are continually being received for the physical properties of various items. In addition, the Physics Section regularly -

1. prepares certifications of compliance of materials to customer specifications. About 3 certifications per day have been requested so far this year.
2. evaluates all skived Teflon tape.
3. measures the magnetic rating of production asbestos laps and yarns.
4. measures resistivity of production laps.

Most physical testing is done by Miss Garner. Over half her time is taken up by these routine physical measurements.

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cc Dr. E. P. Steff

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