PLAINTIFF'S EXHIBIT

CAP-261

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3422 South - 700 West

May 25, 1960

Mr. E. L. Rimbault, Jr.
New York Office

Asbestosis Inquiry - W. R. Grace Co.

The inquiry is not easy to answer briefly, but I'll try to do that.

When the "size" of dust particles is discussed in hygiene and medical literature, the term means the longest dimension of the dust particles. In the case of asbestos fiber dust, the size would therefore be the length of the fiber. The diameter of the fiber could be a few microns down to a fraction of a micron or even down to the diameter of a single crystal unit.

Dust particles have been found to get into the smallest sacs of the lungs to the greatest degree and to be retained best when the particle size is about one micron. Larger particles tend to be caught in the upper part of the respiratory tract; smaller particles tend to be exhaled again after being inhaled. In general, dusts such as lead, arsenic, silica, etc. are regarded as most dangerous in the 1 to 2 micron sizes.

There is some opinion, however, that, in the case of asbestos dust, fibrous particles longer than 10 microns are more important in causing asbestosis than particles shorter than 10 microns. But the fact is not well proved and, if there were a critically dangerous particle size, that size would not be exactly 10 microns. Physiological reactions to dust would not be that selective.

U. S. standards and Quebec standards for permissible dustiness in workroom air both specify, for asbestos dust, a limit of 5 million dust particles per cubic foot of air. There is no mention of a 10 micron particle size. In measuring dustiness, all particles of dust seen under the microscope (light conditions and magnification are specified) are counted. The point is that dust control for dusty operations should be aimed at keeping average dust counts below 5 million particles per cubic foot of air rather than being unduly concerned about particle sizes.

The industrial hygienist for the Quebec Asbestos Mining Association makes dust counts in the accepted fashion, but he also counts separately those asbestos fibers over 10 microns. He does this because of the opinion held by some investigators that fibers longer than 10 microns are most dangerous. He usually finds none or only a very small proportion of such particles in any dust sample. At Lake Asbestos I found the same thing - that larger particles in a sample of airborne dust are relatively rare.

Now to get down to the specific questions directed to Mr. Wilson.

About 75% of Group 7 fiber, I believe, will pass a 200 mesh sieve. This means that those particles are somewhat less than 74 microns in size. I do not know the distribution of particle sizes from 74 down to a fraction of a micron but it is almost certain that <u>all</u> the particles would <u>not</u> be "uniformly less than 10 microns". Probably most of the particles would be above 10 microns. But this could be determined in our laboratory here or at Central Research.

The dustiness of asbestos, of group 7 or of similar size, will depend upon the proportion of small (less than 5 or 10 microns) particles in the group and more so upon the conditions under which the asbestos is used. The particle sizes of the dust that is dispersed during asbestos use will probably be about the same for all of the groups of shorter fibers. There is really not an especially hazardous fiber group nor is there a completely non-hazardous group.

Incidentally, Mr. Wilson refers to the "toxicity" of asbestos dust. Asbestos is not toxic; it does [redacted] lead or example. Inhalation of [redacted] for a long enough time (years) may [redacted] the lung.

Probably asbestos shorts could be made relatively dust-free by certain treatment before packing. The type of treatment would depend, however, on the end use of the asbestos. And, of course, the economics would have to be studied.

I may have written more here than necessary and may have said much that you already know. For Mr. Wilson, the third and fourth paragraphs preceding this one may be a sufficient answer. If any part of this letter is not clear, please let me know.

K. W. Nelson

KWN/mb

cc: Dr. Pinto