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UNIVERSITY OF MARYLAND

DIVISION OF AGRICULTURE AND LIFE SCIENCES
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DEPARTMENT OF
GEOLOGY
454-3548

March 8, 1983

Mr. Guy Driver
P.O. Box 84
Winston Salem, North Carolina 27102

Dear Mr. Driver;

With a view toward testifying in the case of Poindexter vs R. T. Vanderbilt, I have examined two samples labeled Nyal 300 and Nyal 400 which were sent to me by Mr. Al Harvey. The methods I used to examine these samples are polarized light microscopy, Becke line technique and dispersion staining. I have identified the following minerals in these samples: platy talc, tremolite, fibrous talc and anthophyllite. Of these, tremolite and anthophyllite can occur in nature in an asbestiform habit and are then called asbestos. The characteristics of this habit which are visible using the optical microscope are:

1. fiber bundles exhibiting splayed ends
2. Parallel extinction, a characteristic of asbestos only when the ordinary varieties exhibit oblique extinction such as for tremolite
3. curved fibers
4. extreme elongation, often in excess of 100:1

The tremolite and anthophyllite present as major constituents of these samples do not exhibit any of these characteristics. All of the tremolite and anthophyllite particles I observed are properly called cleavage fragments. Most of these cleavage fragments are elongated and many have aspect ratios in excess of 3:1. Rarely, particles with aspect ratios of up to 20:1 were observed. According to our existing federal government regulations these cleavage fragments can be called fibers of asbestos. However, this is not mineralogically valid. I observed no anthophyllite or tremolite asbestos fibers in the samples I examined.

There are, however, true mineral fibers in the samples. I have identified them as fibrous talc. They are distinguished from the amphiboles tremolite and anthophyllite on the basis of their index of refraction. The maximum index of refraction of fibrous talc does not exceed 1.600 for $\lambda = 589\text{nm}$. Almost all of the fibers I observed in these samples had indices of refraction less than 1.600. This value is much too low for tremolite or anthophyllite asbestos. Fibrous talc is thought to form from anthophyllite and/or tremolite. It also exhibits the characteristics listed above for the asbestiform habit. In the samples I examined, there were a few fibers which fall somewhere between anthophyllite-asbestos and fibrous talc. The abundance of this intermediate material is vanishingly small and occurs in trace quantities only ($< 0.01\%$).

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MAR 10 1983

Sincerely yours,
Ann G. Wyllie

Ann G. Wyllie
Associate Professor

VLC S&R

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