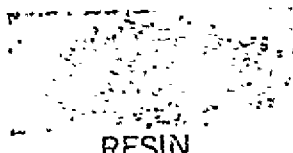


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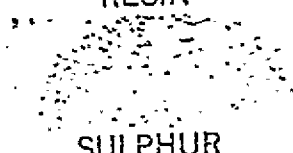
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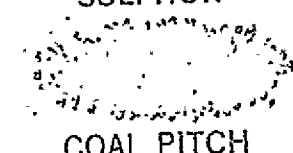
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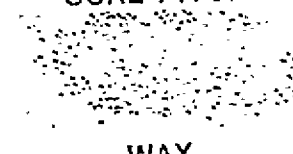
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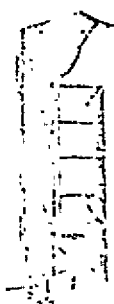
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## Tracking asbestos

Pfizer, one of the nation's leading producers of talc, has developed a new analytical technique for measuring the asbestos impurities of the material—a component of many cosmetics.

"If asbestos is present, we can find it," says the company. "We feel we have a technique that enables us to detect and identify asbestos-like minerals down to 0.1 to 0.2%, and possibly lower."

A foolproof test would be of great value to the Food and Drug Administration, which has been considering imposing new limits on asbestos impurities in talcum powder and other talc-containing cosmetics (*CIV, Mar. 7, p. 13*).

Answers Vary: But the problem with setting any limit is that various testing methods don't always provide the same answer. And the contradiction lies with the chemical composition of talc and its similarity to asbestos-type minerals.

For example, Pfizer researchers Harold Stanley and Robert Norwood have found that certain mixtures shown to be free of asbestos-like minerals by X-ray diffraction and the light microscope nevertheless contained 5% or more of asbestos impurities when viewed in a transmission electron microscope.

By analyzing the reasons for this inconsistency, the scientists learned why there are variations in the answers. And in the process they came up with a foolproof method of determining the amount of asbestos-like minerals in talc.

Chlorite, or  $Mg_3(Si_2O_7) \cdot 8Mg(OH)_2$ , one of the minerals from which talc can be derived, is the culprit. It is chemically quite similar to asbestos-like (asbestiform) minerals, and its presence in a sample tends to mask or interfere with their detection. Pure talc is a naturally occurring hydrous magnesium silicate having a general formula of  $Mg_3(Si_2O_7) \cdot 2Mg(OH)_2$ .

In their work, Stanley and Norwood found that samples of talc can be scanned by an X-ray diffractometer to detect the presence of asbestiform minerals down to 0.5% if there is no chlorite present.

To detect concentrations lower than 0.5%, they turned to the transmission electron microscope. Because of its ability to examine individual particles in minute detail and at very high magnifications, they concluded that it was the technique needed to complete the identification.

Result: a method the researchers feel enables them to detect and identify asbestiform minerals. Next steps will be standard-setting to an official method.