

Attachment 4

Eric Chatfield, Ph.D.

“Very few commercial TEM labs are competent to perform valid analysis of the complicated mineralogical mixtures that you find in mining and quarrying operations.”

“The accreditation of a TEM or a PLM lab is unrelated to the ability of the TEM or PLM lab to perform analyses of these complex mixtures such as those that exist in mines or quarries.”

“The fundamental problem is the individual – it isn’t a question of the individual lab; it’s a question of the individual analyst, and the level of training and knowledge that exists in the individual analyst. And, unfortunately, that training is simply not there.”

“Moving on the PCM methods”

“Using the current PCM fiber counting criteria, cleavage fragments are reported as fibers, even when there ‘s no asbestos present at all.”

Ann Wylie, Ph.D.

“And I think it’s very important, when you think about these regulations, to keep in mind that the longer than five and the 3:1 are not definitions. They never have been definitions. They were counting criteria. That’s all they ever were. And that’s all they ever are today. They are not definitions for asbestos.”

“it’s inclusive of asbestos, but not specific for it.”

“Cleavage fragments get wider as they get longer. And that’s a characteristic of them. Whereas for asbestos, width is essentially independent of length. That’s because of the nature of the way asbestos forms. It forms as unit fibrils.”

“Actually, when you look at airborne particles in bulk populations you see the same characteristics. It’s not as though you have something totally different airborne than you would have in bulk.”

“The bulk populations of asbestos have distinctive characteristics that easily enable you to tell whether they’re asbestos or not. This is an easy thing to do.”

“But one thing that you really need to be aware of is that all these methods were designed for the asbestos-containing materials – not the mining environment – and that no method is adequate to measure quantitatively amounts of asbestos in low abundance. And all methods need attention to the literature, and a well-trained mineralogist familiar with the mining environment to apply them correctly.”

Richard Lee, Ph.D.

“As the PEL is lowered, these factors, these interferences from cellulose fibers, other minerals, from cleavage fragments, become more important.”

“Sometimes you can't tell on a single simple fiber. This is why Dr. Wylie mentioned you have to do populations.”

“A whole set of issues have developed because of the application of historical definitions into the electron microscope, and the use of the terminology, and the aspect ratios and sizes created a set of problems that persist today. They're responsible for the errors and mistakes that have caused various companies and individuals substantial money, shut down organizations like Reserve because of these definitional issues. They will surely pop up more frequently with any reduction of the PEL to a point where the dose you're trying to measure is not substantially different than the background concentration of the interference.”

Mac Ross, Ph.D.

“The crushing of any rock produces some mineral particles that may be within the size range of specified federal regulations. If correct, definitions of the truly hazardous material; that is, asbestos, are not made, it presents a formidable problem to those analyzing for the asbestos minerals in the multitude of different mineral particles that may be found in rock dusts, - - “

“Many different types of non-fibrous amphiboles are found in many types of common rocks. And many of these amphiboles might be considered asbestos, depending on the professional training of the analyst, on the equipment used for analysis.”