NYC 9/11 Public Portal Document

Liberty Mutual

WTC INDUSTRIAL HYGIENE ASBESTOS TEM RESULTS

Asbestos Air Sample Information Sheet

The air samples being collected at the World Trade Center site by ATC, Inc. under the direction of Liberty Mutual are analyzed using two independent analytical methods as described below.

Phase-Contrast Microscopy (PCM) Analysis

All asbestos samples collected by ATC for the purposes of worker exposure assessment are analyzed by the PCM method. This is a fiber counting method in which fibers are counted under an optical microscope. This is the method used to compare results to the OSHA Permissible Exposure Limit (PEL) and to the Threshold Limit Value (TLV) for asbestos. This method is quick and inexpensive and is the standard method used for measuring worker exposure.

One limitation of the PCM method is that it cannot reliably distinguish between asbestos fibers and other types of fibers, such as mineral wool, glass fibers, etc. So, any asbestos air sample showing fiber counts in excess of 50% of the shift-adjusted occupational exposure limit (OEL) is also sent away for transmission electron microscopy analysis.

Transmission Electron Microscopy (TEM)

Those air samples showing fiber counts in excess of 50% of the shift adjusted OEL by PCM analysis are also analyzed using TEM analysis. This can be done on the very same filter that was analyzed by PCM because only a portion of the filter is used for each analysis.

TEM analysis provides information on the structure of fibers, so the TEM method can distinguish between asbestos and other types of fibers.

TEM analysis is more time-consuming and expensive than PCM analysis and these are two of the reasons why TEM analysis is not used as a standard method for measuring worker exposure. Since it is not a standard method, there are no occupational exposure limits to which to compare TEM results. Although TEM analysis can provide information on fiber counts, in the occupational setting, TEM analysis is primarily used to identify the types of fibers collected on a sample.

Air Sample Results

The attached information contains results of both PCM and TEM analyses. For each sample, the upper line contains the PCM results. The PCM results have been reported earlier as part of the "elevated exposure" reporting process. The lower line for each sample contains the results of the TEM analysis. If asbestos was found by TEM, the asbestos fiber count is reported.

If you have questions about this information, please call the Liberty Mutual industrial hygienist on duty at 917-566-2576.

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