

The measurement of fibers by light microscopy and any conversion from particle to fiber count rests on the assumption that each fiber measured is representative of the total number of fibers present in the air. This is so because most fibers present in the air are not visible under light microscopy. In addition, by convention the QAMA-McGill researchers did not measure fibers < 5 microns in length. [REDACTED] Therefore, for QAMA-McGill exposure estimates to be valid, two requirements must be met. First, there must have been a consistent relationship between visible fibers and total fibers and a consistent relationship between visible fibers and fibers < 5 microns in length in various processes (mining, milling, maintenance etc.) over a 60 year time period during which many processes changed dramatically. Second, in order to compare exposures between two completely different processes like mining and textiles, the ratio of visible to invisible and uncounted fibers must be similar. There are more invisible fibers per visible fiber in textile manufacturing than in mining. Therefore, each textile fiber counted represents more invisible fibers than each mine fiber counted. An examination of the mining, milling and textile processes and the history of fiber measurement techniques indicates that neither of the two requirements is met.

Nicholson summarized the main technical problems in establishing asbestos exposure-disease relationships. (Nicholson 1986b) All of these issues are relevant to the "Textile Mystery."

"Even with the advances in fiber counting techniques, significant errors may be introduced into attempts to formulate general fiber exposure-response relationships. The convention now in use, that only fibers longer than 5 um be counted, was chosen solely for the convenience of optical microscopic evaluation (since surveillance agencies are generally limited to such instrumentation). It does not necessarily correspond to any sharp demarcation of effect for asbestosis, lung cancer, or mesothelioma. While it is