A STUDY OF ESTABLISHING ASBESTOS ANALYTICAL METHOD USING A TRANSMISSION ELECTRON MICROSCOPE-ENERGY DISPERSIVE X-RAY ANALYZER(TEM-EDX)

Jeong Hee Han, Yong Hyun Chung, Jun Yeon Lee,
Kwang Jin Kim, Yong Mook Lee, Il Je Yu

Industrial Chemical Research Center, Industrial Safety and Health Research
Institute, Korean Industrial Safety Corporation
104-8, Moonji-dong, Yusung-gu, Taejon, 305-380, Korea

To establish an accurate asbestos analysis method for workplace sample, chrysotile, amosite, crocidolite, tremolite, actinolite, and anthophyllite asbestos fibers were analyzed for their morphology, atomic contents and electron diffraction(ED).

The morphology of asbestos fiber was evaluated in 10,000× magnification. The atomic contents were analyzed by transmission electron microscopy with energy dispersive X-ray analyzer(TEM-EDX). Further the asbestos fibers were assessed for the ED patterns to provide an additional criterion for classifying the asbestos fibers. Twenty asbestos fibers were randomly selected for the morphological evaluation, based on an aspect ratio (3:1=length:diameter).

Then the fibers were determined for their EDX and ED patterns. Our results showed that only chrysotile fiber has hollow tube structure to distinguish from other asbestos fibers. Although asbestos fibers had similar morphology, chrysotile,amosite, crocidolite, tremolite, actinolite and anthophyllite fibers had their typical EDX and ED patterns. Our results on the atomic contents of asbestos fibers were very similar to other researchers, but amosite and crocidolite had a little difference in atomic contents compared with the results from other researchers.

The difference may be due to the difference in equipment and asbestos samples. A study on asbestos samples from biological specimens to establish a criterion for determining occupational asbestos exposed diseases should be done in near future.

구두발표(   ), 포스터 발표(0)

<책임연구자>
성명 : 한 정 희
주소 :
연락처 :