

Report of Results: MVA Project No. 3907

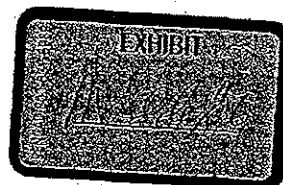
Analysis of LAQ Chrysotile Product

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Introduction

This report includes the results of analyses for tremolite in three (3) fiber product samples, received by MVA, Inc. on February 21, 2000. The samples were described as having been collected from a bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. The samples were collected from the top, side and bottom of the bag. Upon receipt at the MVA, Inc. laboratory, the samples were each assigned a unique MVA number as follows:

MVA #	Client ID	Description
K0223ELG1		Sample taken from Top of Bag
K0224ELG2		Sample taken from Bottom of Bag
K0225ELG3		Sample taken from Side of Bag

Methods and Equipment

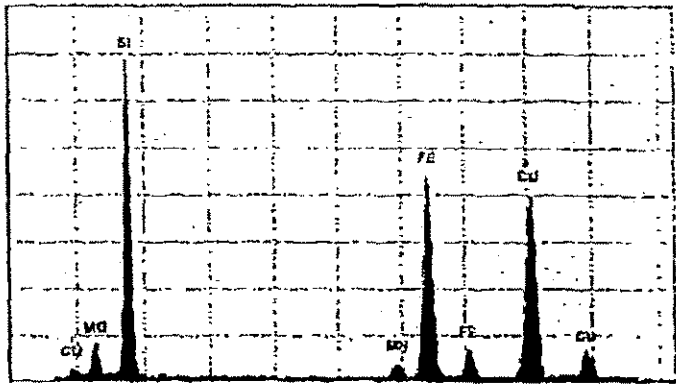
The samples were first examined by stereomicroscopy utilizing a Zeiss Stemi 2000 stereomicroscope having a magnification range from 6.5X to 47X. The samples were then analyzed by polarized light microscopy including microchemical tests utilizing an Olympus BH-2 polarized light microscope having a magnification range from 40X to 1000X. Portions of the samples were analyzed with a JEOL 1200 STEM equipped with a Noran x-ray energy dispersive x-ray analysis unit. Tremolite asbestos fibers were identified on the basis of morphology, selected area electron diffraction (SAED) and energy dispersive x-ray spectroscopy analysis (EDS). Representative EDS spectra from reference asbestos types are shown in Figure 1.

Results

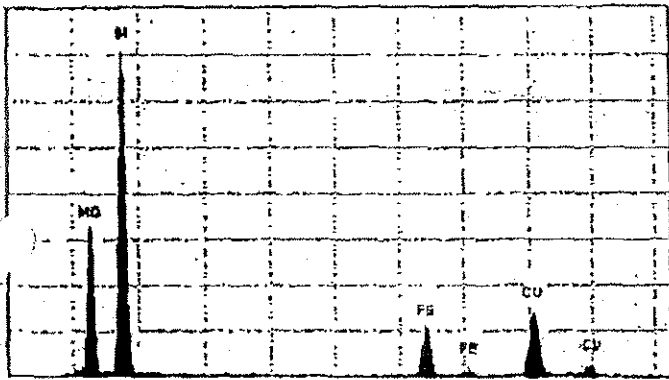
No tremolite asbestos fibers were found during the examination of the chrysotile asbestos material by polarized light microscopy. Tremolite fibers were found during the analyses by transmission electron microscopy. Examples of the tremolite fibers found are given in Figures 2 - 19.



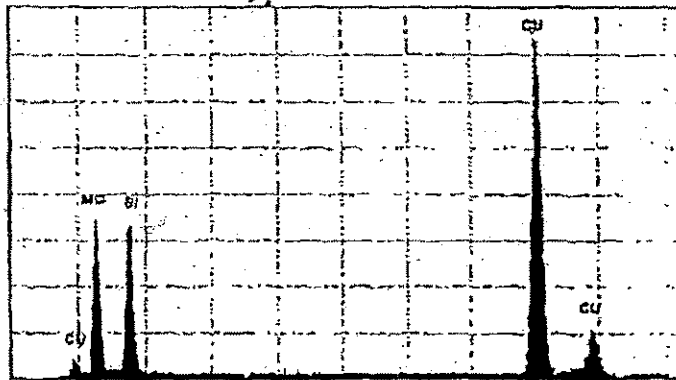
Actinolite



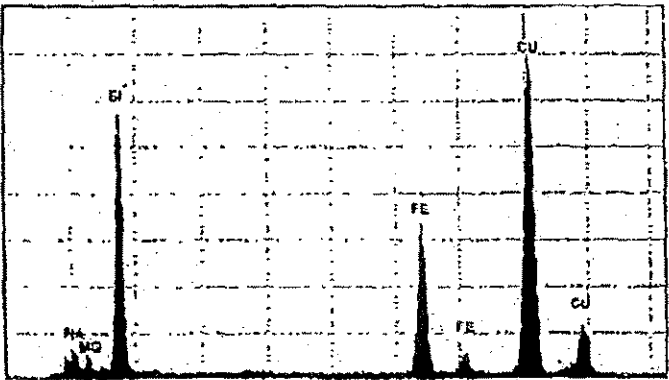
Amosite



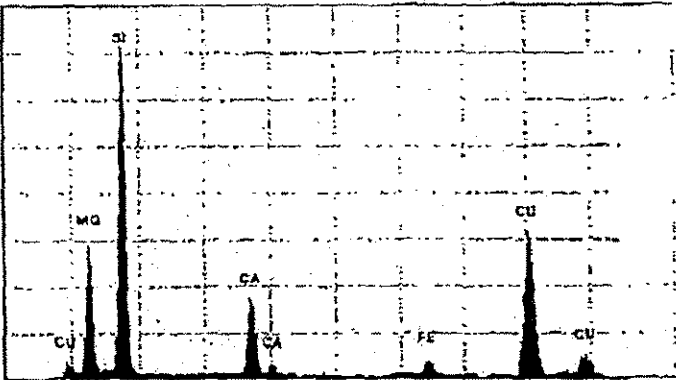
Anthophyllite



Chrysotile



Crocidolite



Tremolite

Asbestos X-Ray Reference Spectra



Figure 1. Representative EDS spectra from Reference Asbestos Types.

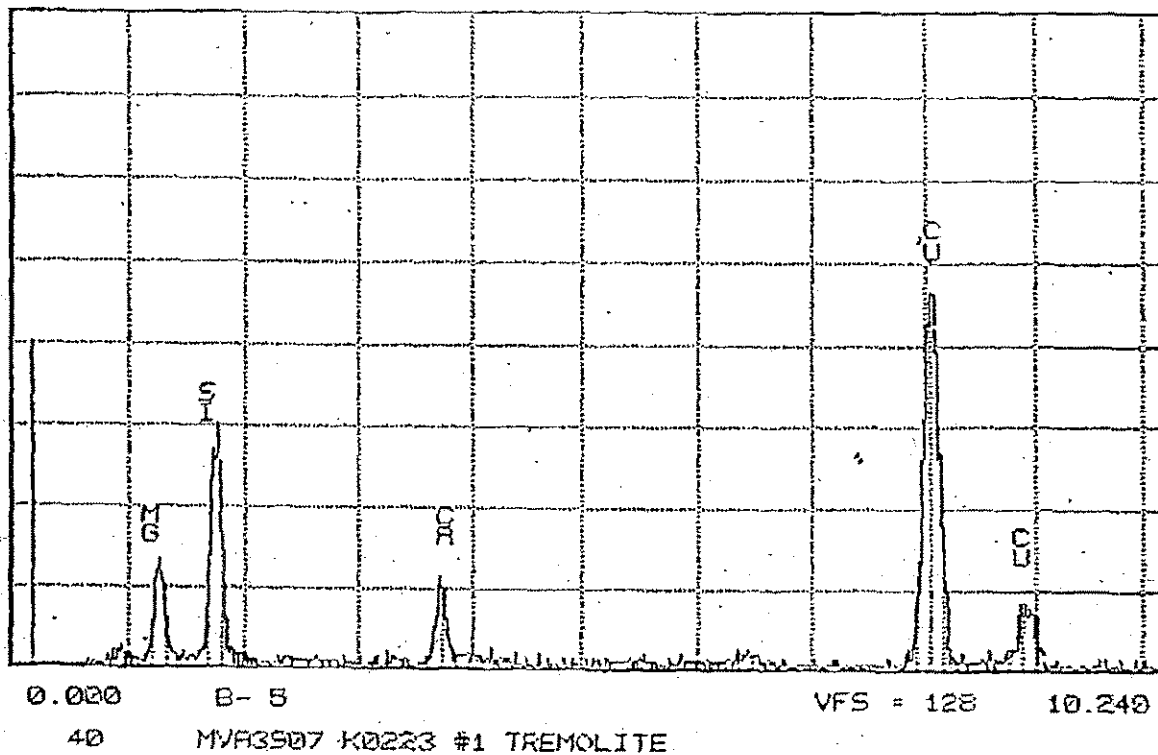
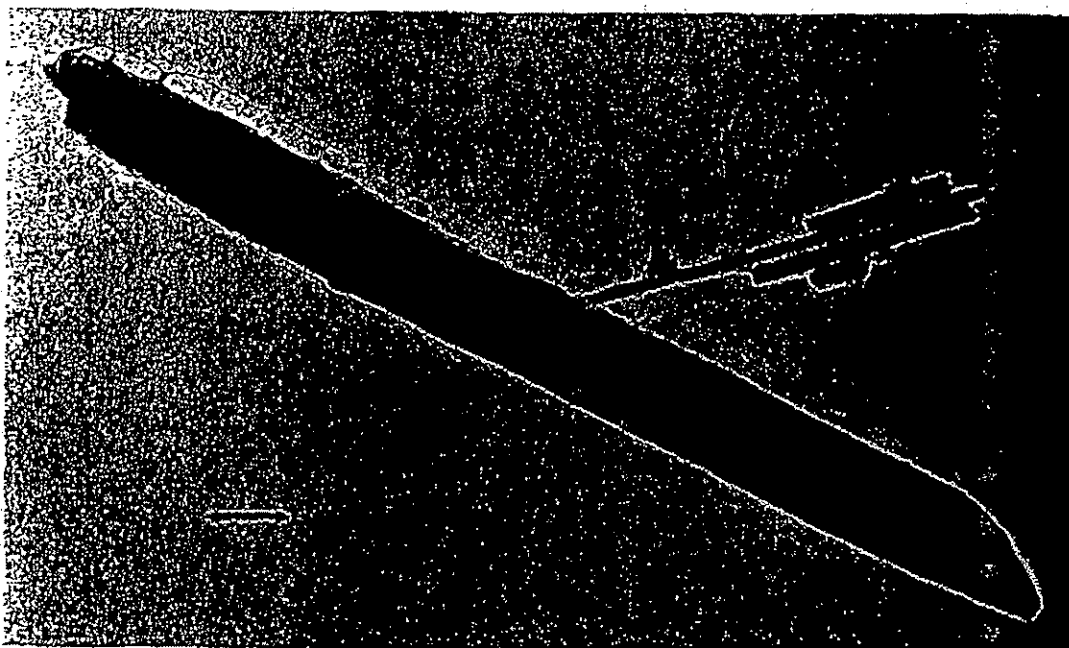


Figure 2. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μm .



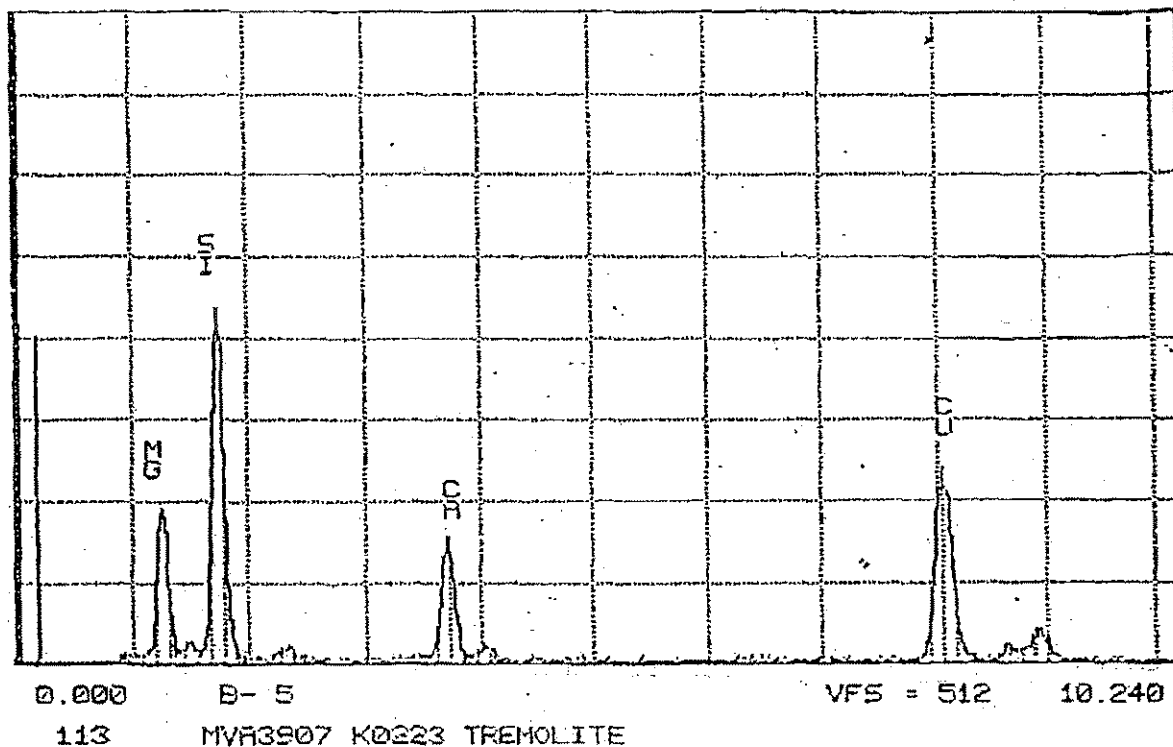


Figure 3. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



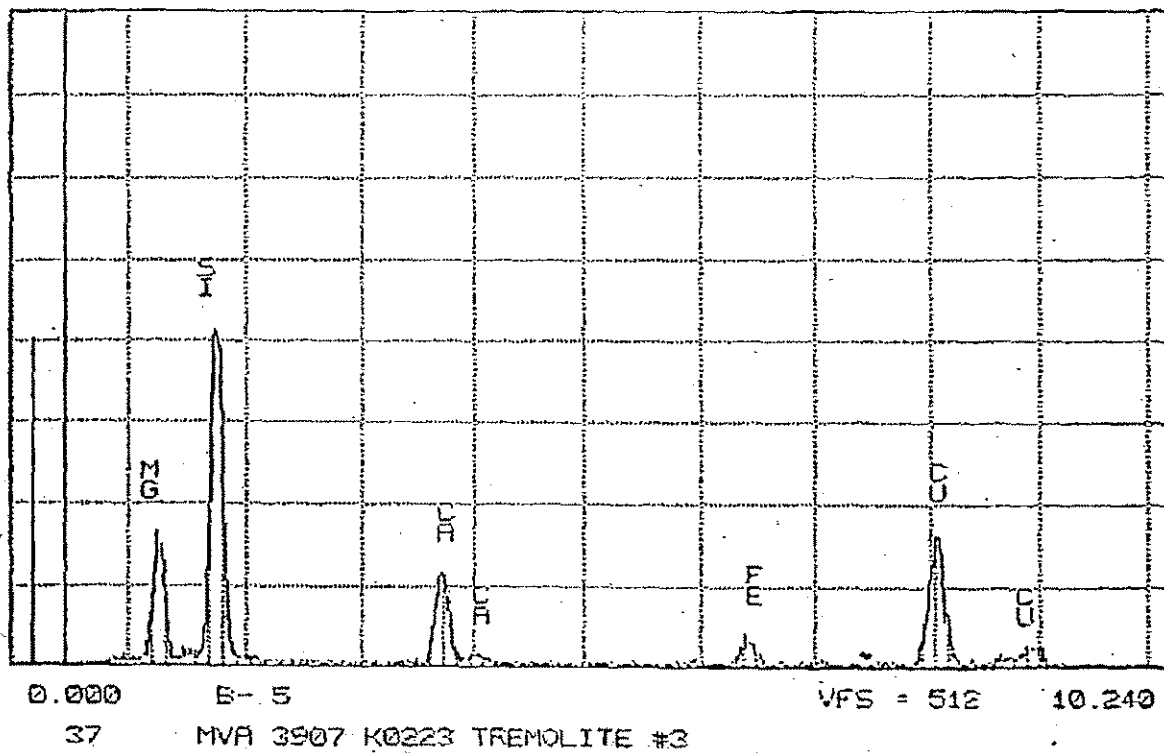


Figure 4. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



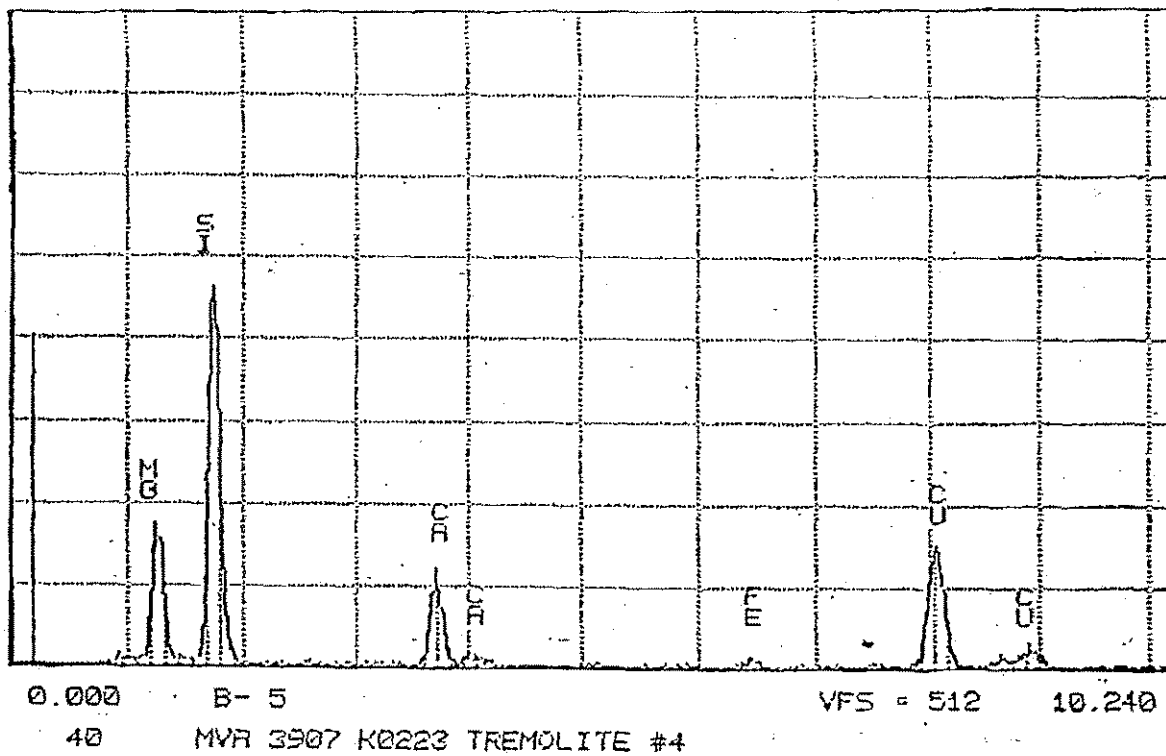


Figure 5. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 6R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



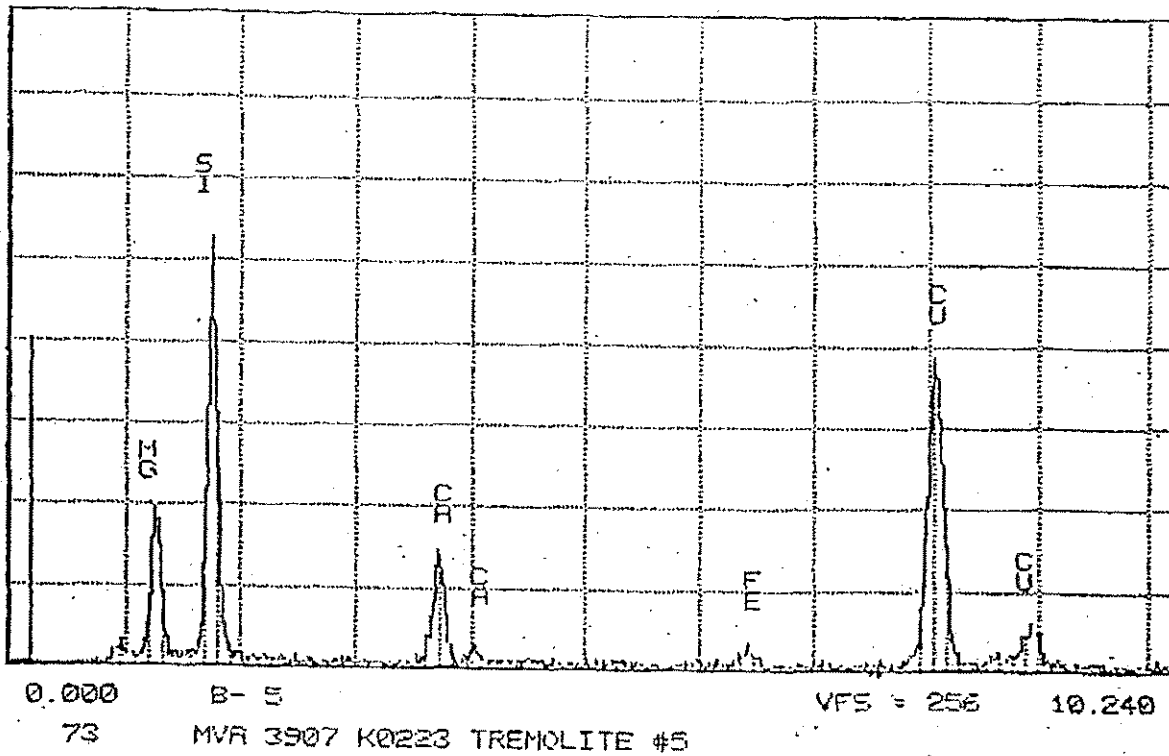


Figure 6. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



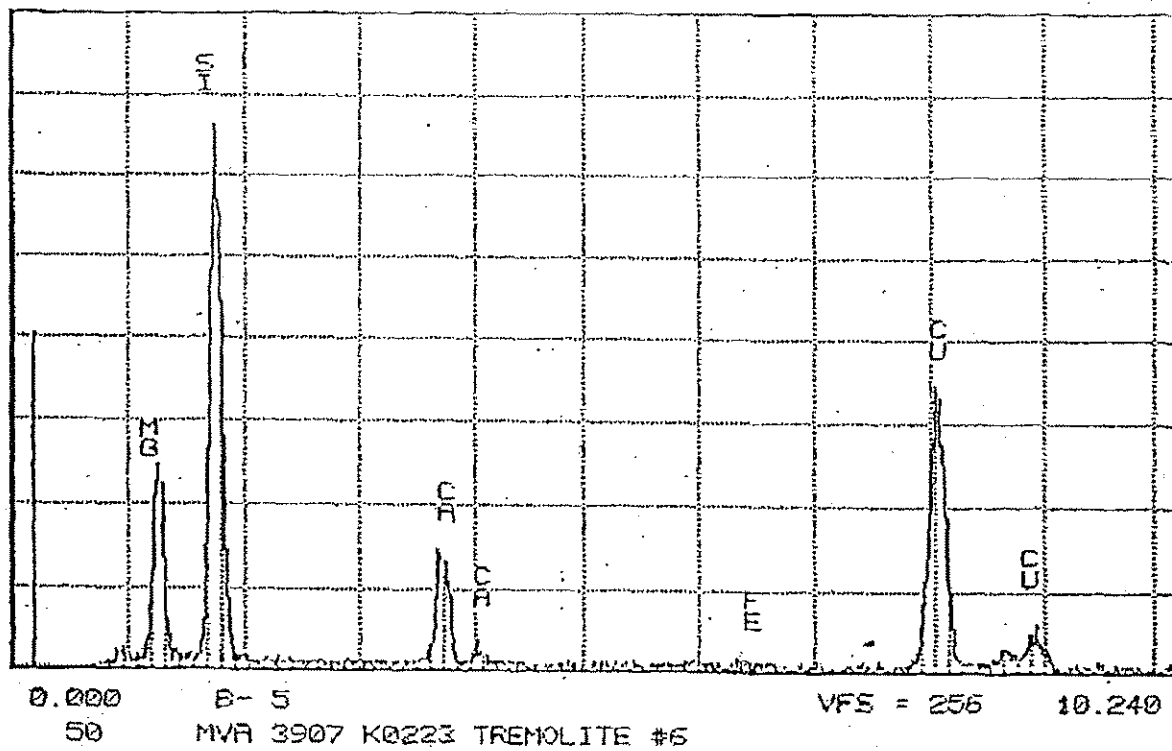


Figure 7. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μm .



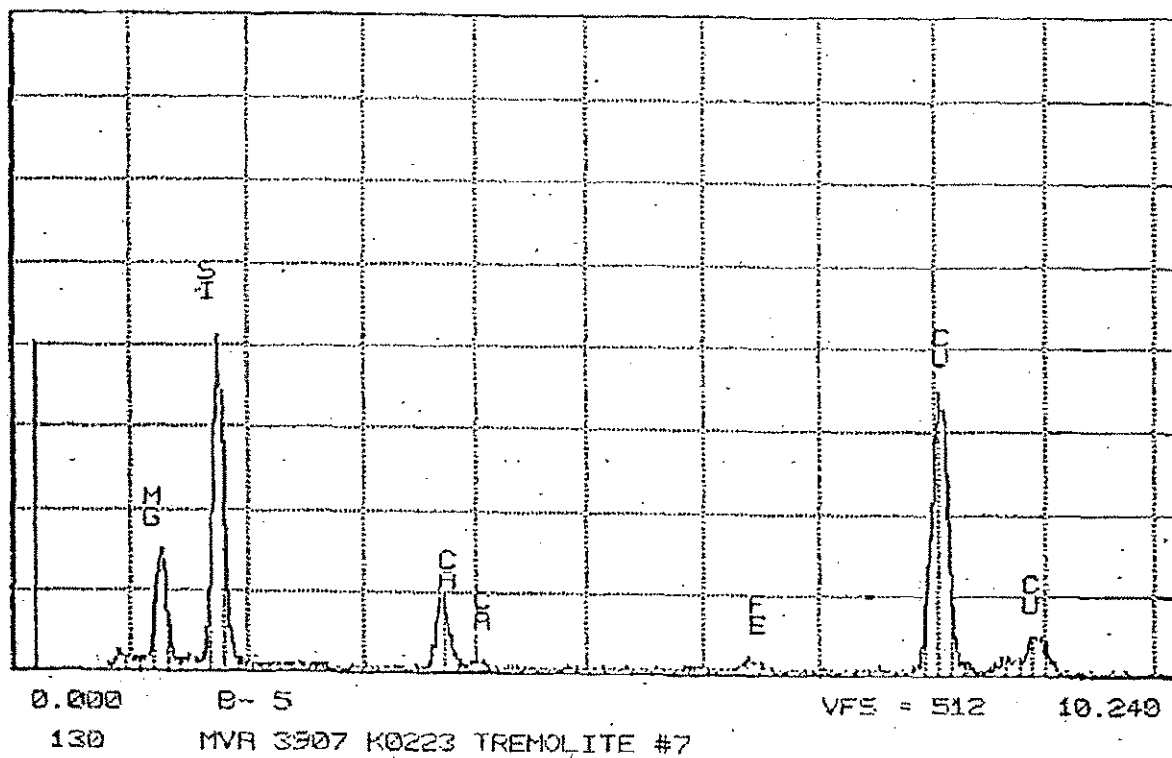
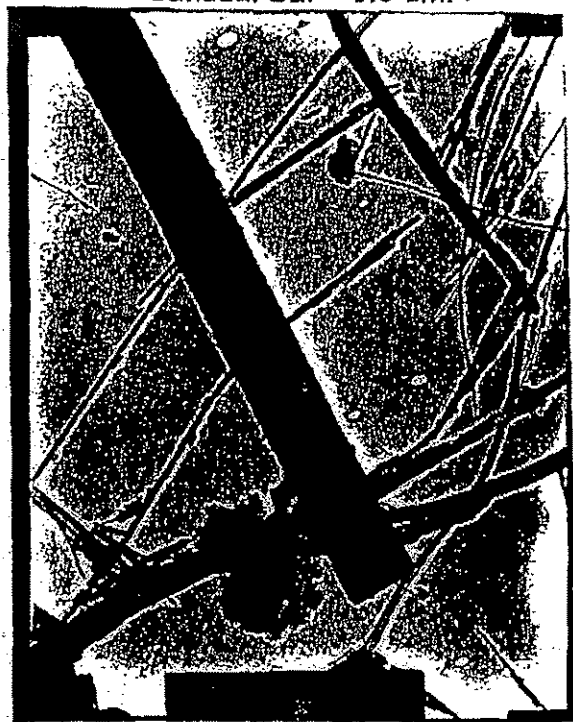


Figure 8. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



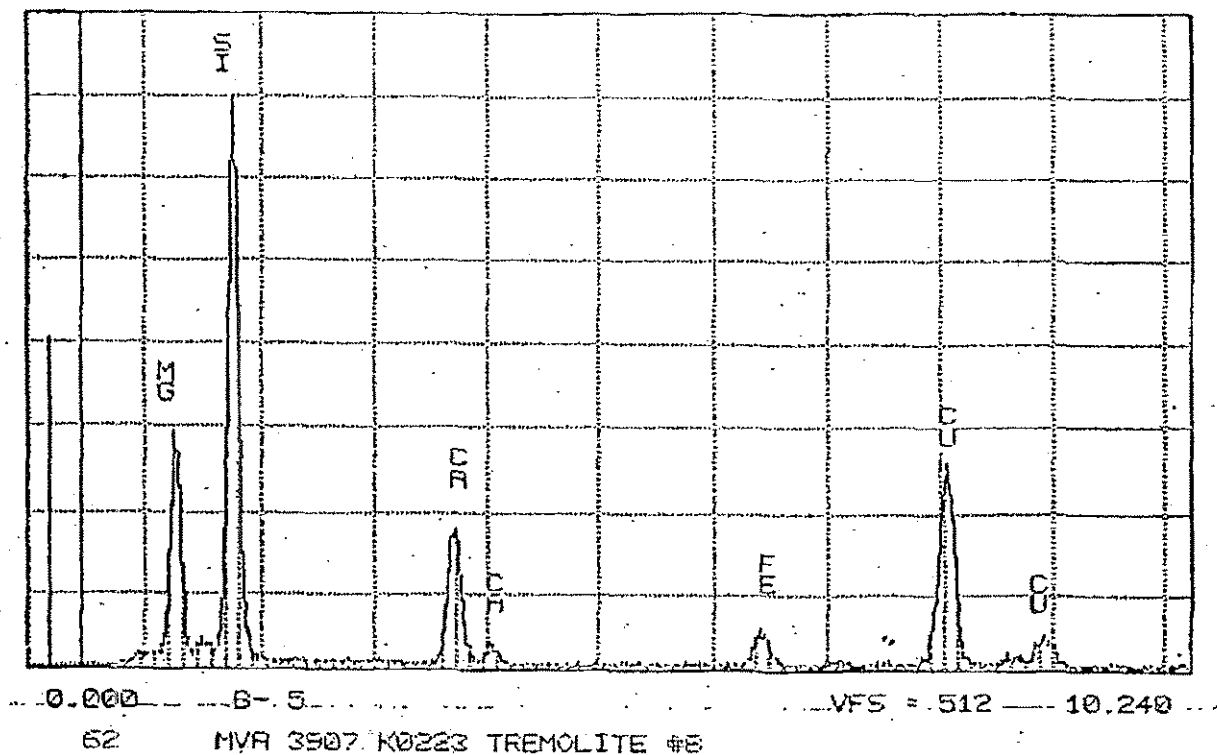


Figure 9. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



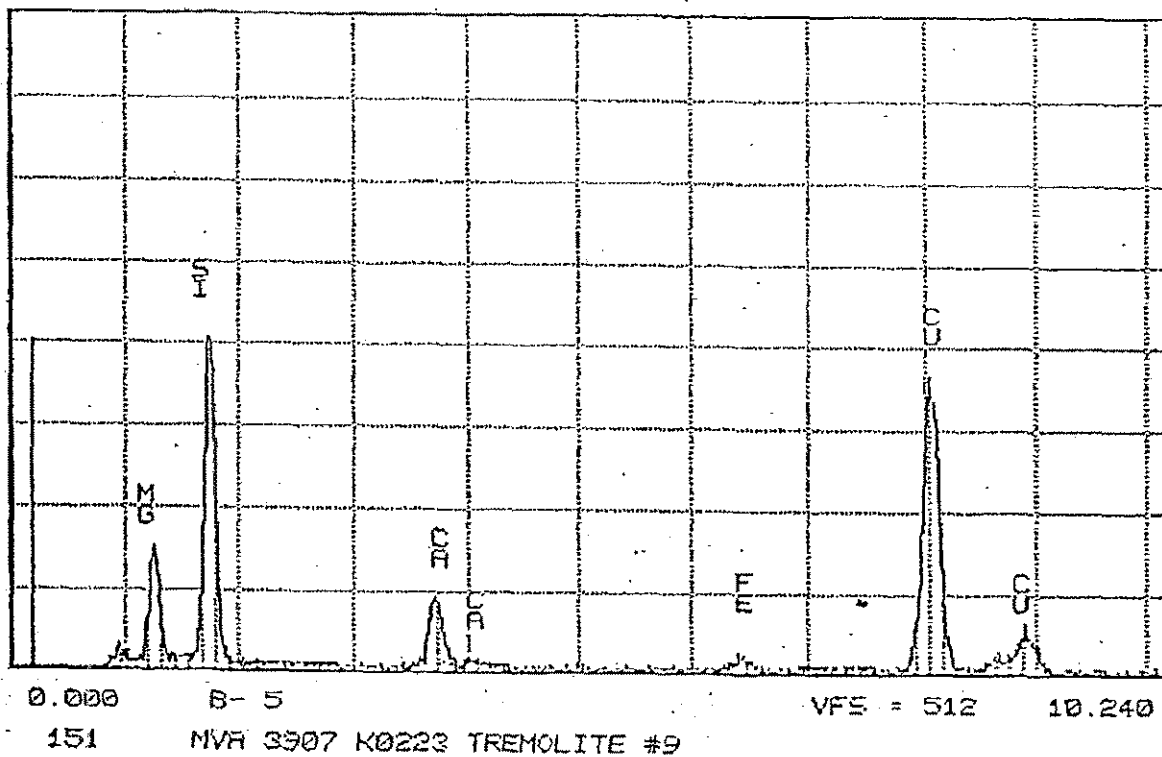
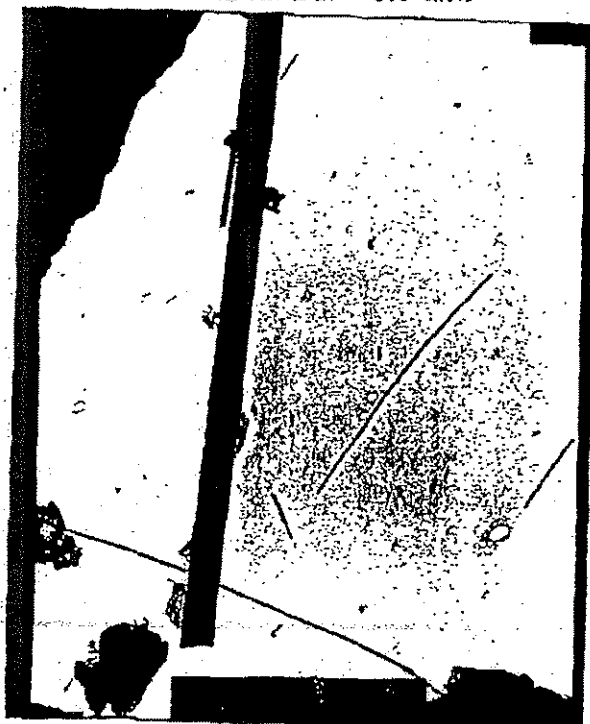


Figure 10. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



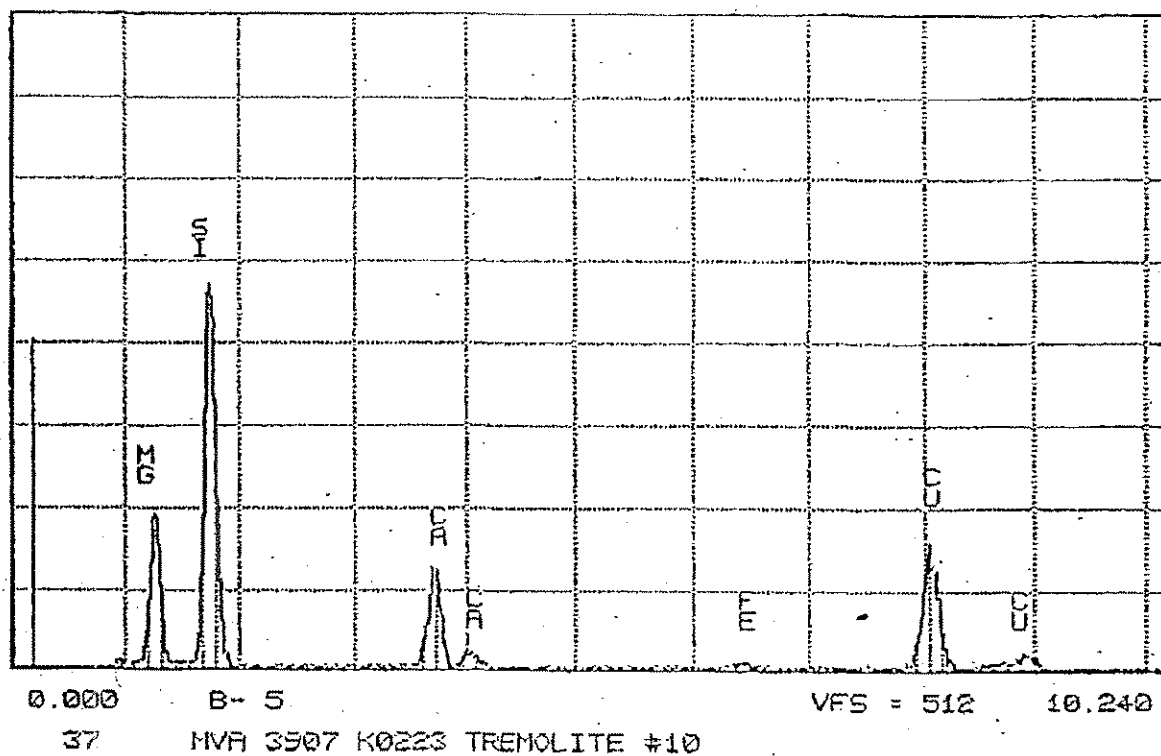
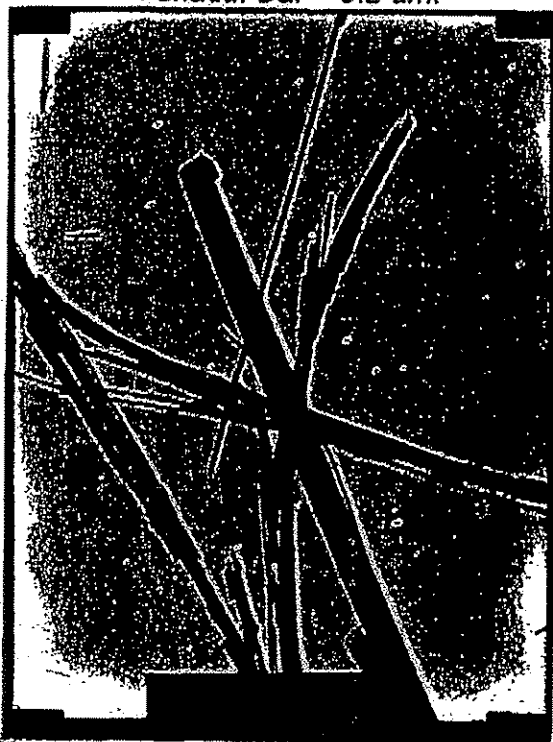


Figure 11. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.



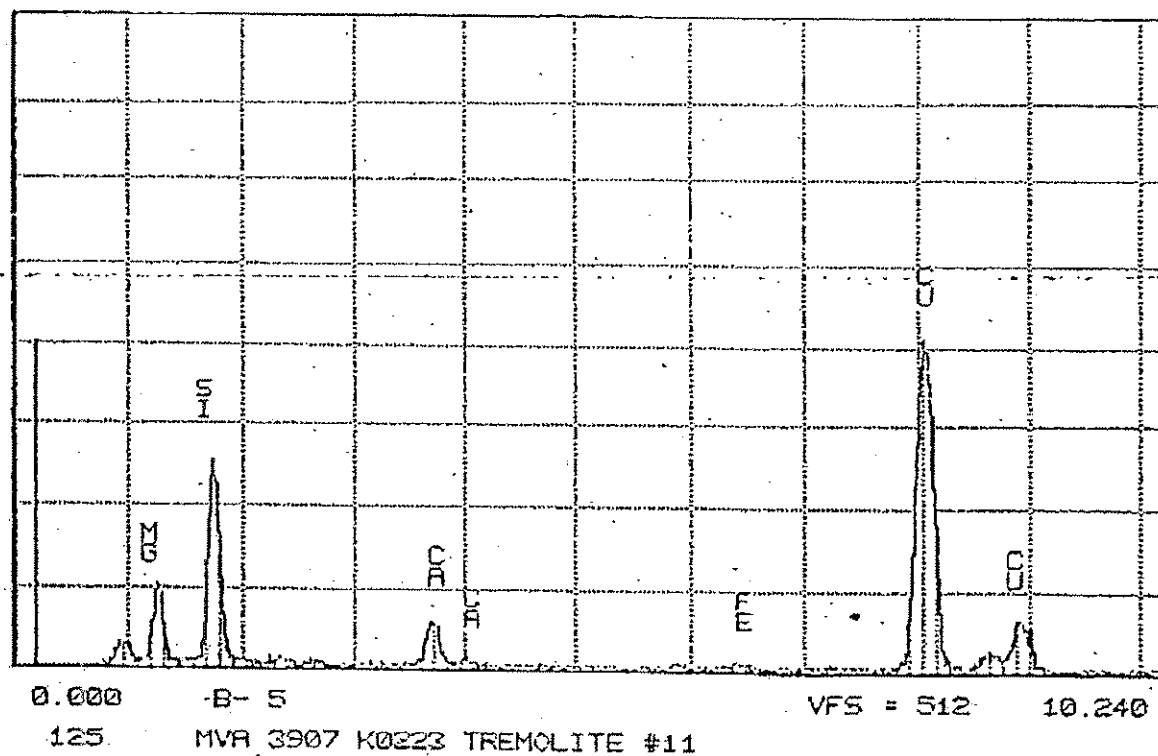
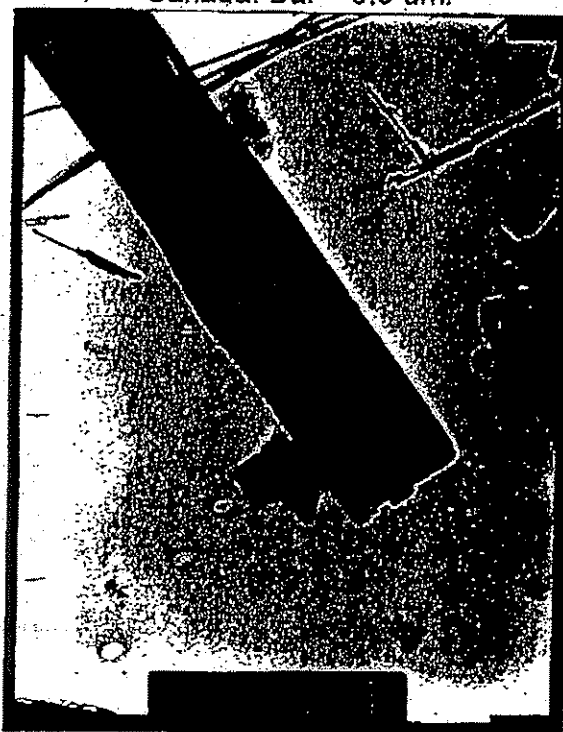


Figure 12. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



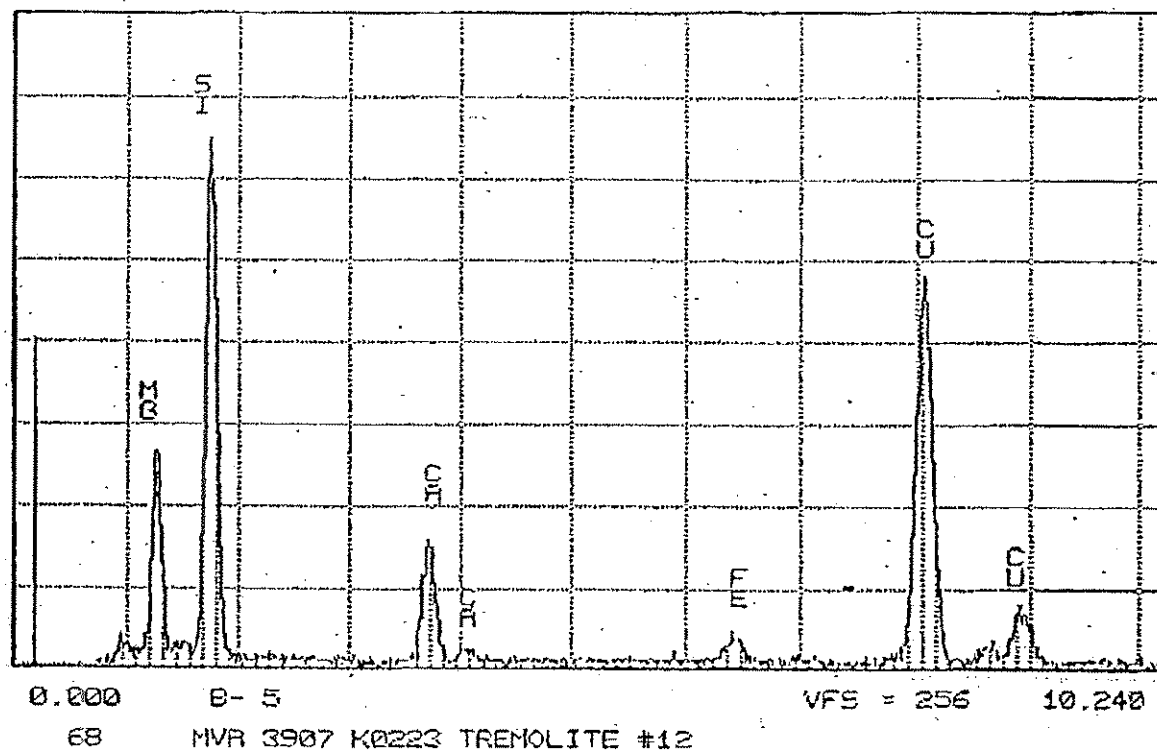
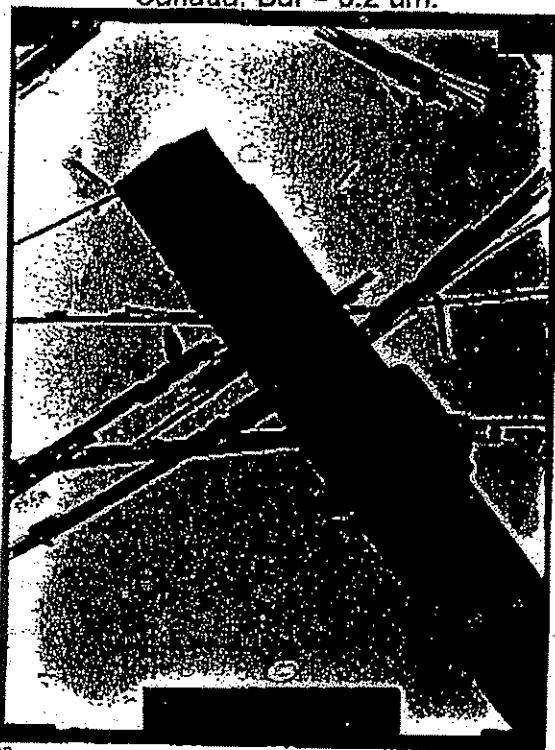


Figure 13. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.



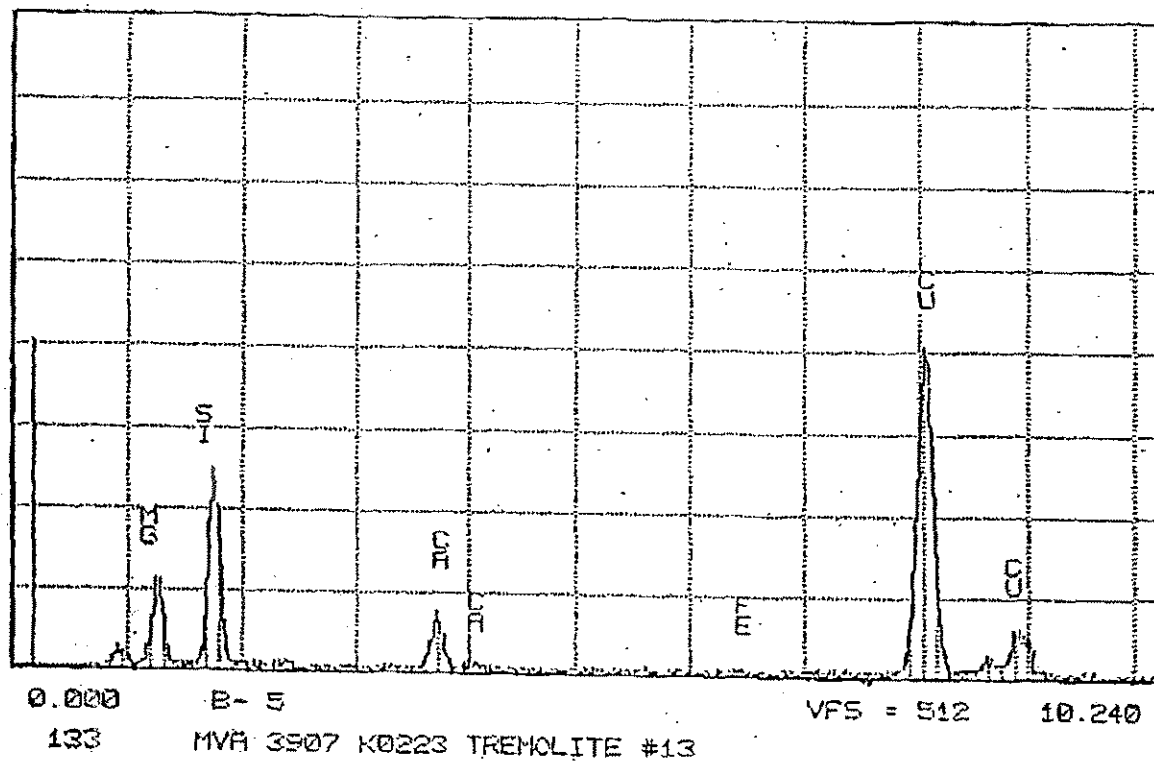


Figure 14. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.



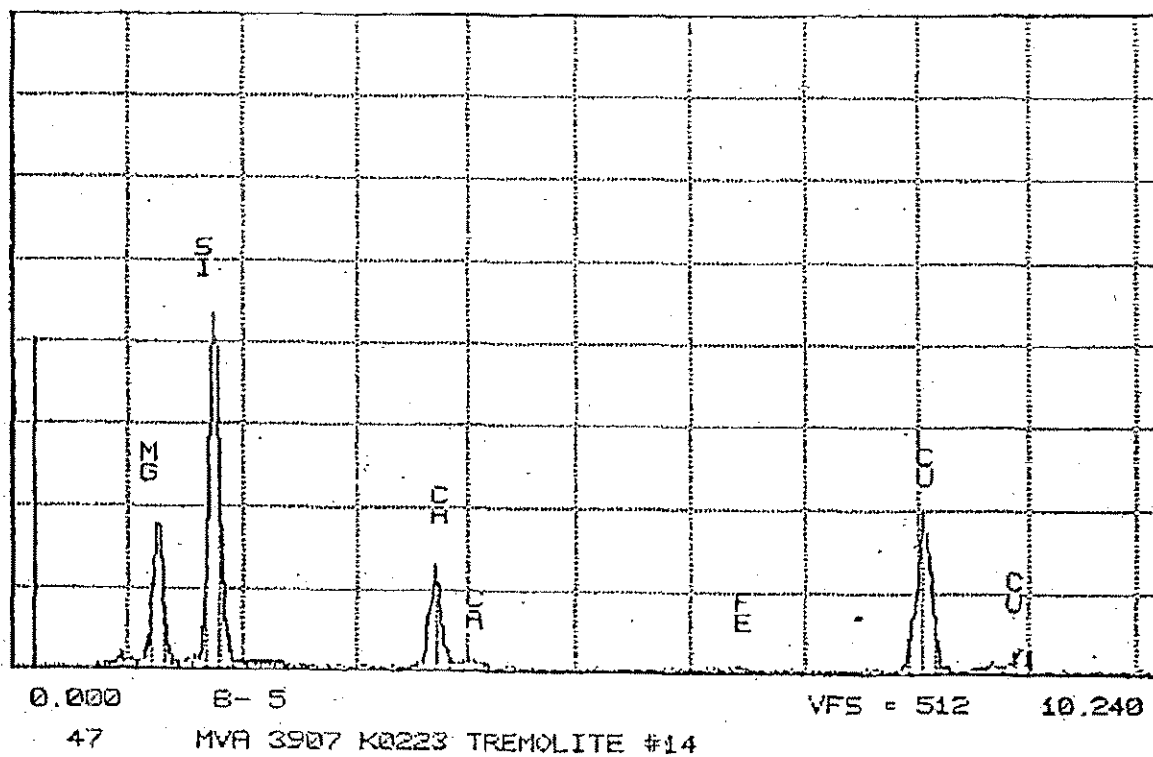


Figure 15. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.5 μ m.



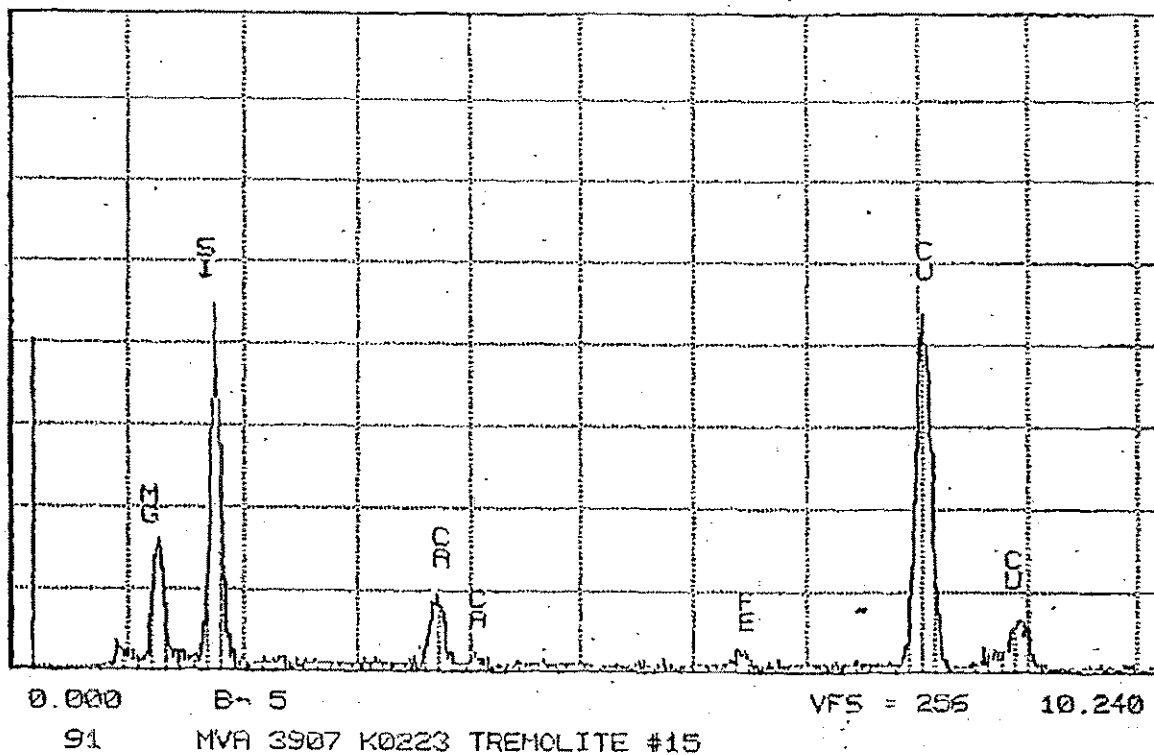


Figure 16. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.



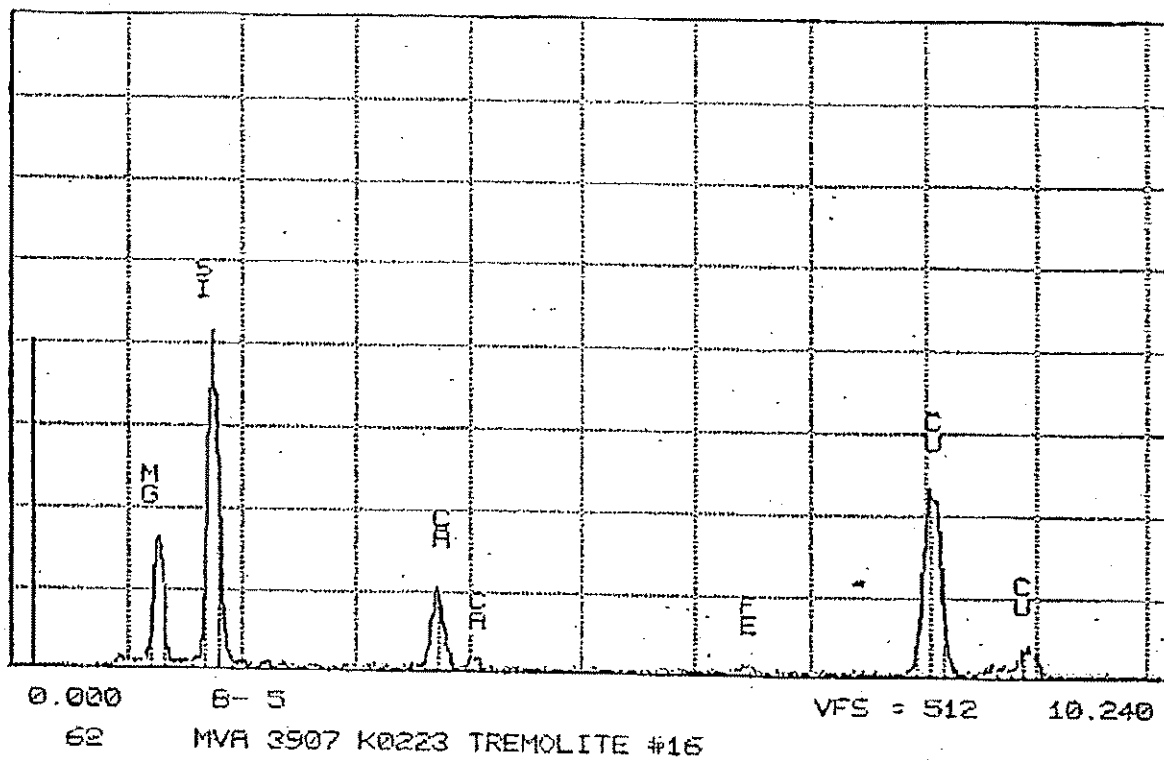
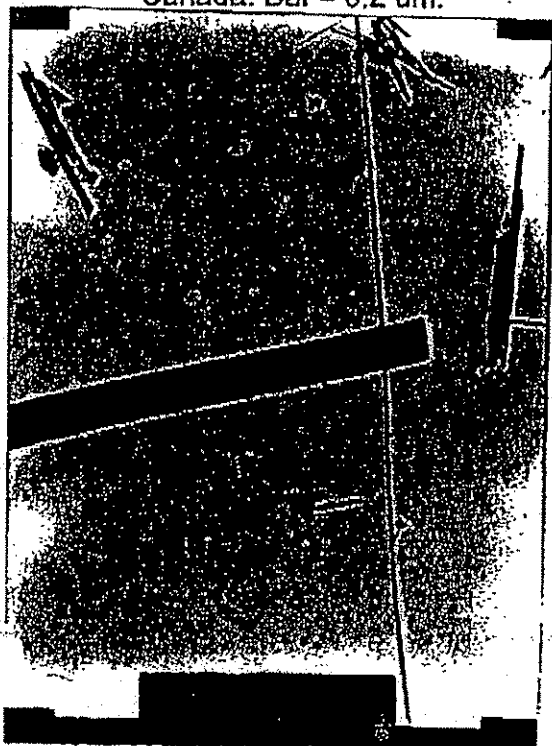


Figure 17. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.



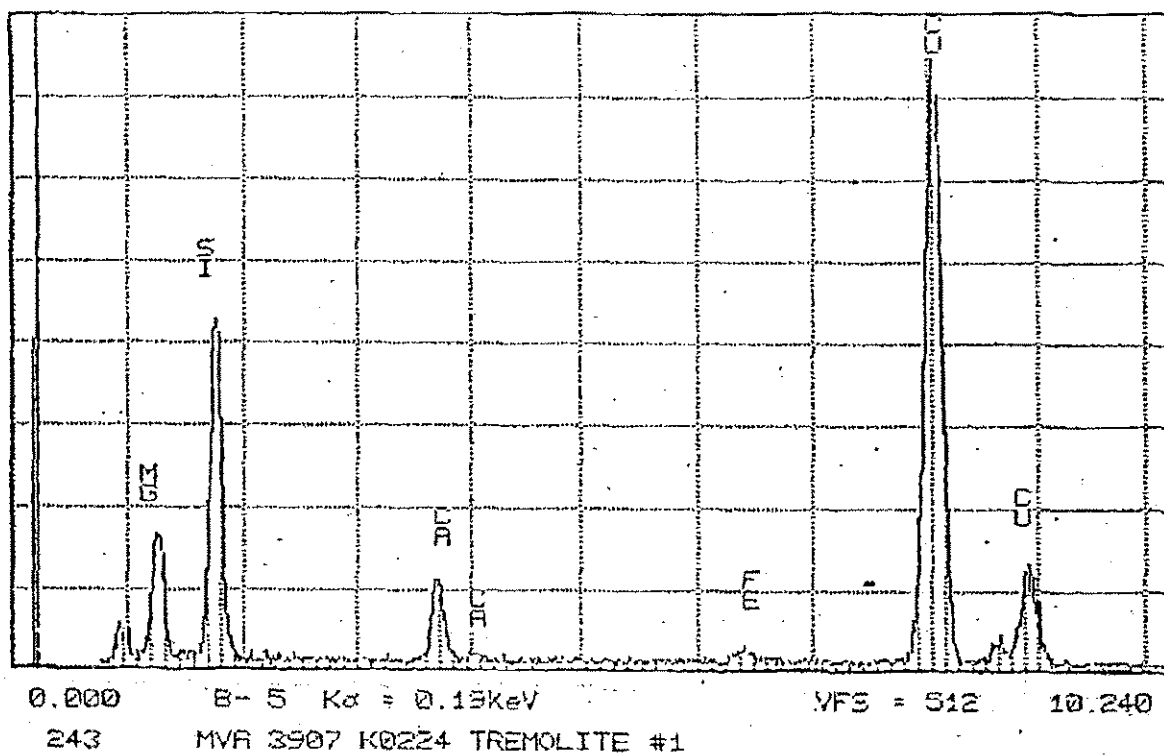


Figure 18. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.



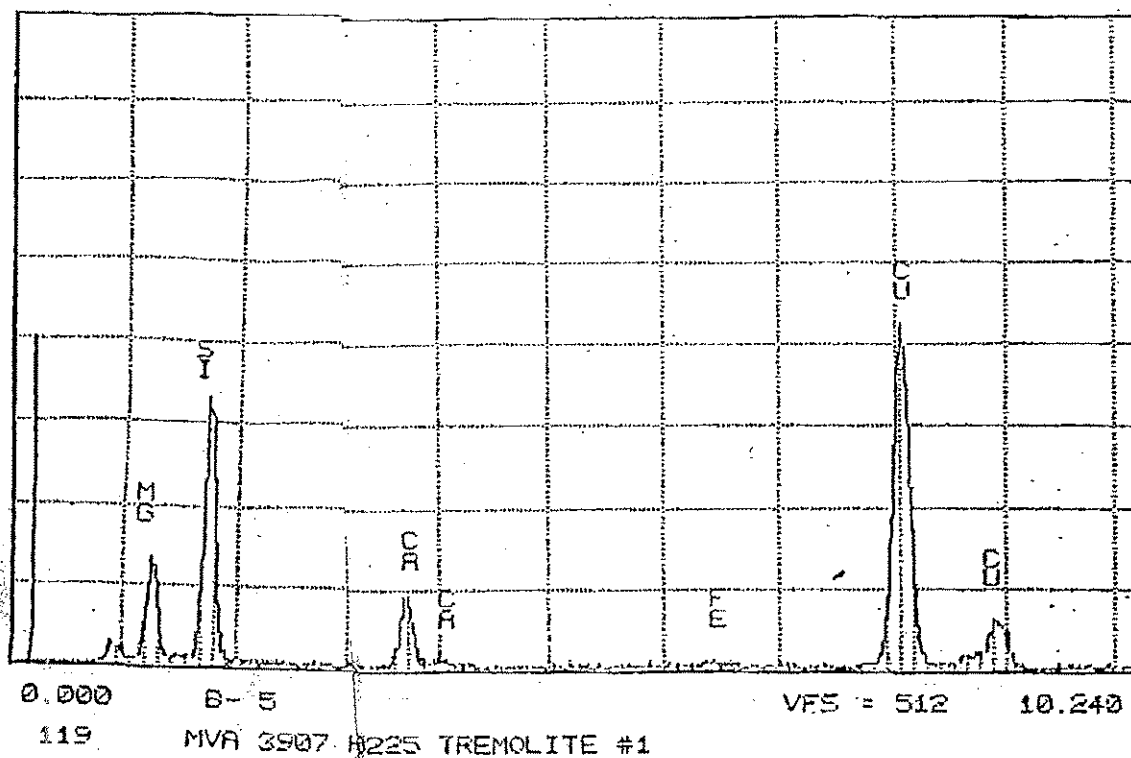


Figure 19. X-ray spectrum (above) and TEM image below of tremolite fiber in a sample from the bag of asbestos labeled 5R-4 Asbestos, Black Lake, Quebec, Canada. Bar = 0.2 μ m.

