14 March 1994

Ms. Anne Kearse
Ness, Motley, Loadholt, Richardson & Poole
2202 Jackson Street
Barnwell, SC 29812

Re: Grinding Wheel
MVA Project No. 0831

Dear Anne:

MVA, Inc., has performed the examination of a grinding wheel requested by your office. Our report is attached.

If you have any questions, please do not hesitate to call.

Sincerely,

Thomas J. Hopen
Senior Chemical Microscopist

James R. Millette, Ph.D.
Executive Director

TJH/JRM/aw

Attachment

D:PROJECTS:0831:RPT0314

Report of Results: MVA0831

Examination of a Grinding Wheel

Prepared for:

Ness, Motley, Loadholt, Richardson & Poole
2202 Jackson Street
Barnwell, SC 29812

Prepared by:

MVA, Inc.
5500 Oakbrook Parkway, Suite 200
Norcross, GA 30093

14 March 1994

D:PROJECTS:0831:RPT0314

Grinding Wheel
Report of Results: MVA0831

Introduction

At the request of the firm of Ness, Motley, Loadholt, Richardson & Poole, Mr. Thomas J. Hopen of MVA, Inc., traveled to Buffalo, New York, to examine a pair of grinding wheels relative to the above referenced project. The examination took place on March 3, 1994, at the Buffalo Marriott Hotel. A hood was constructed with plastic sheets and a High Efficiency Particle Absolute (HEPA) vacuum was used to eliminate the possible release of asbestos fibers during the sampling. Mr. Hopen photographed the grinding wheels and then placed the grinding wheels under the hood for further examination utilizing a stereomicroscope. Samples were also collected from one of the grinding wheels and transferred to the MVA, Inc., laboratory in Norcross, Georgia, for analysis.

Sample Description

Two grinding wheels were examined. One was labeled "CARBORUNDUM". It appeared to have a steel inner area. The other was labeled "CARBORUNDUM BLACK MAGIC DIAMOND WHEEL ". It was inscribed with the number "768" and labeled MAX. R.P.M. 5182. See Appendix A.

Only the Black Magic Diamond Wheel appeared to contain fibrous material and therefore particle samples were only collected from this wheel. These samples are described as follows:

MVA #	Description
0831-E0423	Particles from the black (inner) area of the "CARBORUNDUM Black Magic Diamond Wheel"
0831-E0424 -E0425 -E0426	Samples collected of the loose material by adhesive samplers[1] in the area where MVA-E0423 was collected.
0831-E0427	Adhesive sample of the surface in an undisturbed area
0831-E0428	Blank adhesive sampler

Analytical Procedures

In the laboratory the particle samples were analyzed using a polarized light microscope. The adhesive lift samples were examined with a JEOL 6400 scanning electron microscope (SEM) equipped with a NORAN Voyager x-ray analysis system.

Results

The PLM analysis of the material sampled from the inner area of the Carborundum Black Magic Diamond Wheel showed it to be approximately 60% chrysotile asbestos. Based on this data and the on-site examination of the wheel, it is estimated that the material in the inner area of the Carborundum Black Magic Diamond Wheel is approximately 30% chrysotile asbestos.

The SEM analysis of the Post-it™ note adhesive surfaces showed evidence of chrysotile asbestos. See Figures in Appendix B.

Reference

1. Millette, J. R., Brown, R. S., Barnett, J., et al., Scanning Electron Microscopy of Post-it™ Notes Used for Environmental Sampling, NAC Journal 9 (1):32-35 (1991).

A P P E N D I X A

Photographs of the Grinding Wheels

Figure A1. Carborundum Grinding Wheel with what appeared to be steel inner area.

Figure A2. Carborundum Black Magic Diamond Wheel Grinding Wheel with black inner area

Figure A3. Close-up view of grinding area (lower) and inner area (upper) of Black Magic Diamond Wheel

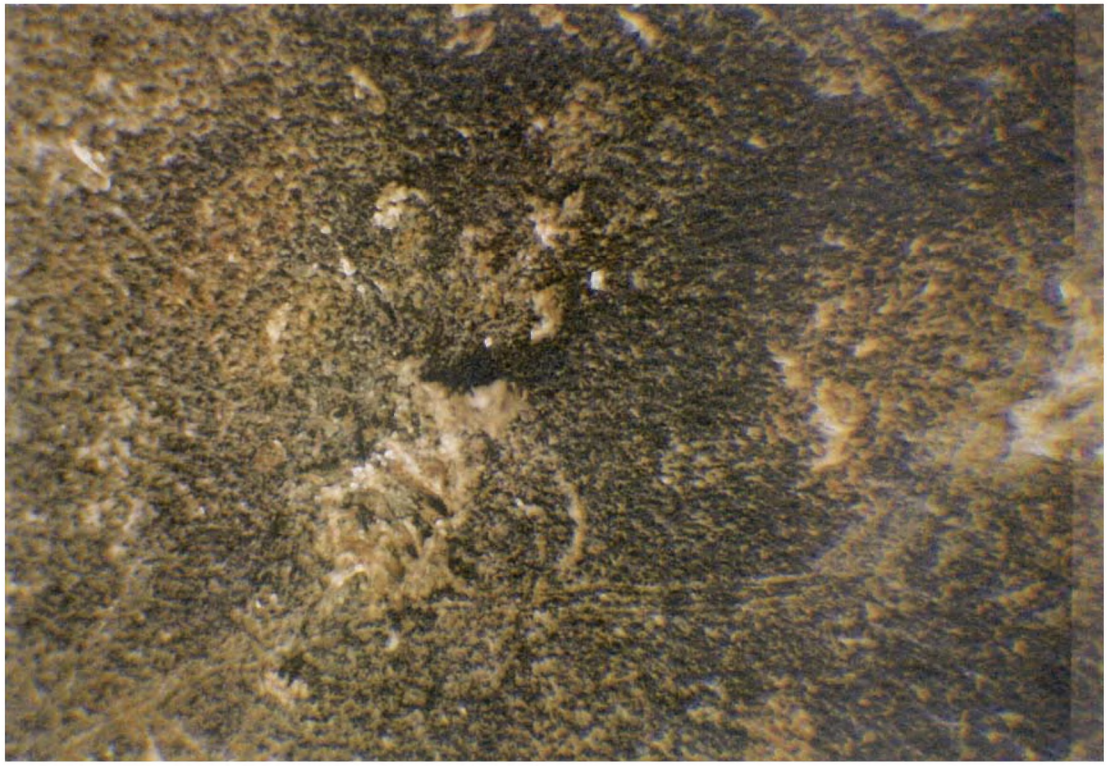


Figure A4. Close-up view of inner area of Black Magic Diamond Wheel showing fiber bundles.

A P P E N D I X B

Scanning Electron Microscopy of Post-it Notes Collected From the Black Magic Diamond Wheel

MVA, Inc.

Post-it™ Note Analysis by SEM-EDS

Date: 03/08/94

MVA #: 0831

MVA Sample ID #: E0424

Stereomicroscope Examination:

Area Examined: Post-it™ note adhesive surface

Findings: Moderate loading, areas with fiber bundles excised for SEM-EDS

SEM Examination:

Area Examined: Post-it™ adhesive surface

Magnification: 100-50,000X

Findings: Chrysotile asbestos fibers and fiber bundles are common

Microscopist: R. S. Brown

MVA, Inc.

Post-it™ Note Analysis by SEM-EDS

Date: 03/08/94

MVA #: 0831

MVA Sample ID #: E0427

Stereomicroscope Examination:

Area Examined: Post-it™ note adhesive surface

Findings: Lightly loaded; area with fiber bundle excised for SEM-EDS

SEM Examination:

Area Examined: Post-it™ adhesive surface

Magnification: 100-50,000X

Findings: Chrysotile fibers were detected

Microscopist: R. S. Brown

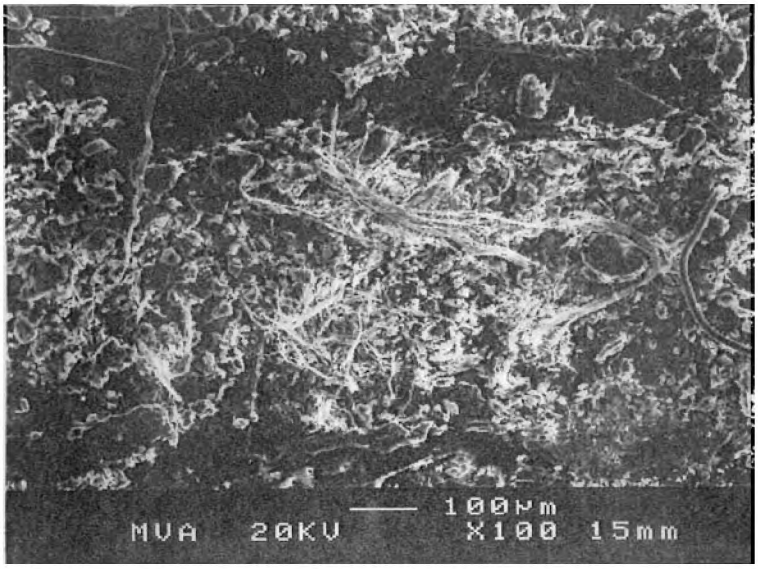


Figure B1. MVA0831-E0424: Secondary electron (SE) image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 100X.

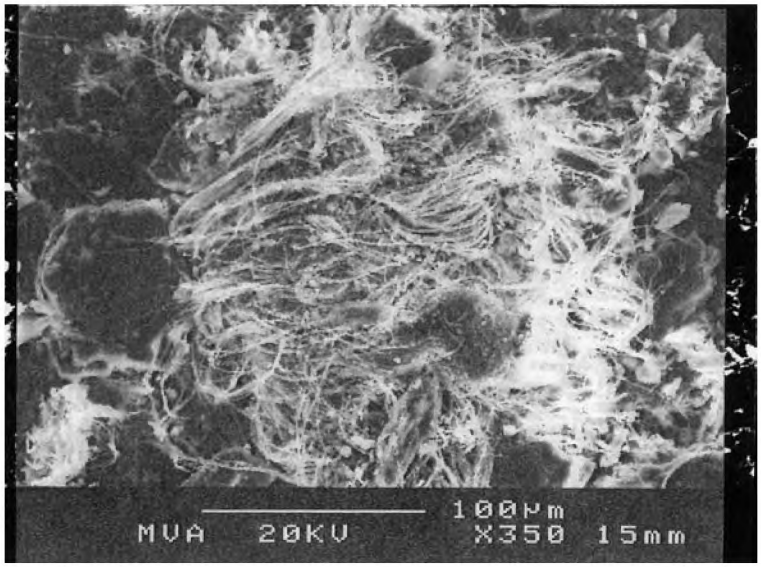


Figure B2. MVA0831-E0424: SE image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 350X.

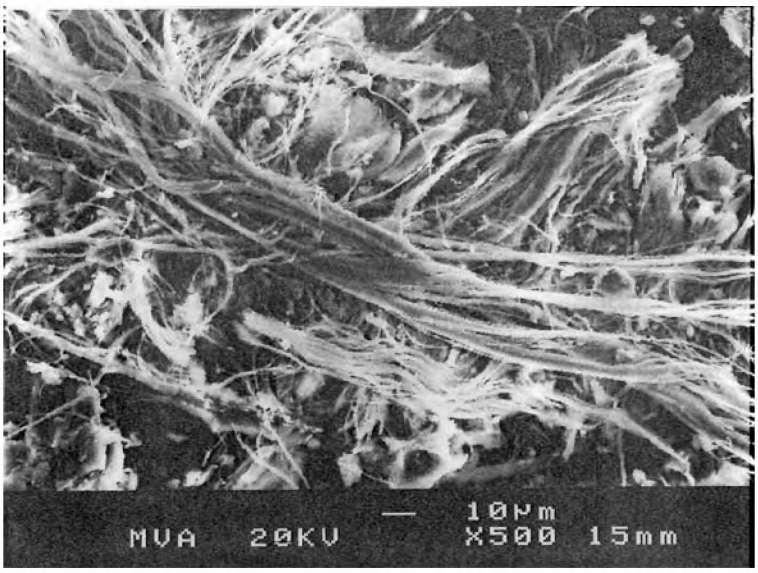


Figure B3. MVA0831-E0424: SE image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 500X.

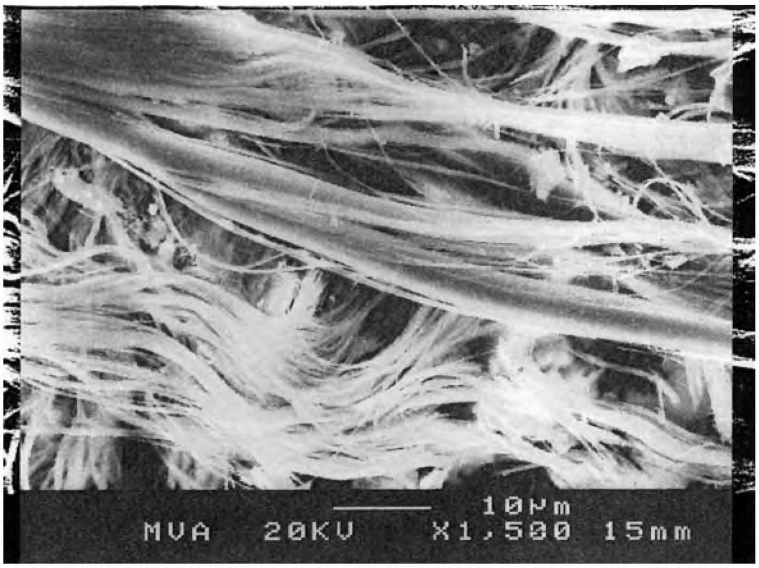


Figure B4. MVA0831-E0424: SE image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 1,500X.

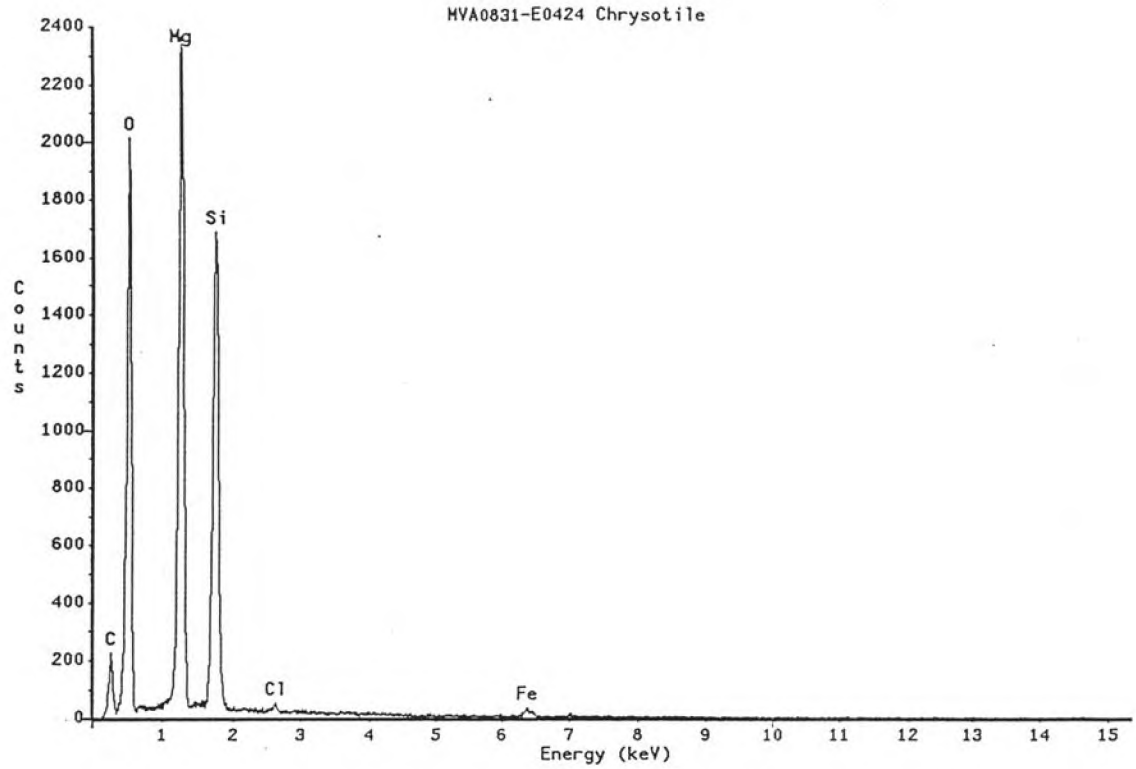


Figure B5. MVA0831-E0424: X-ray spectrum of chrysotile asbestos.

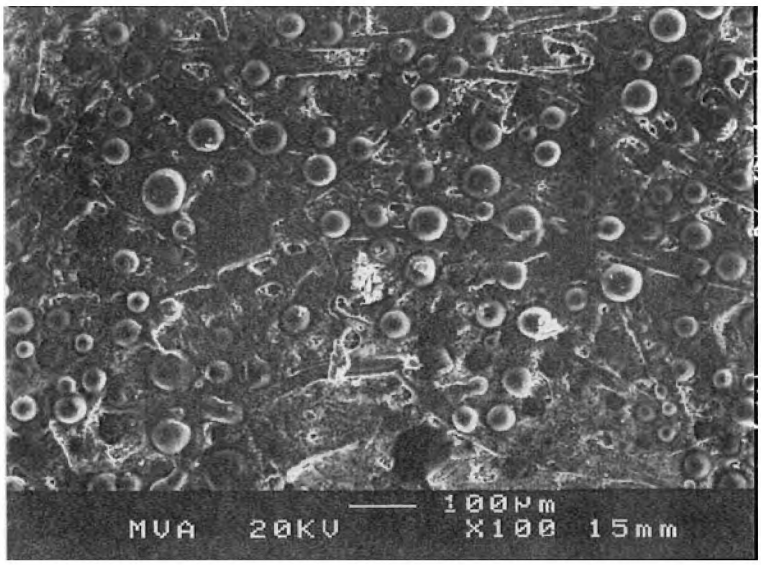


Figure B6. MVA0831-E0427: SE image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 100X.

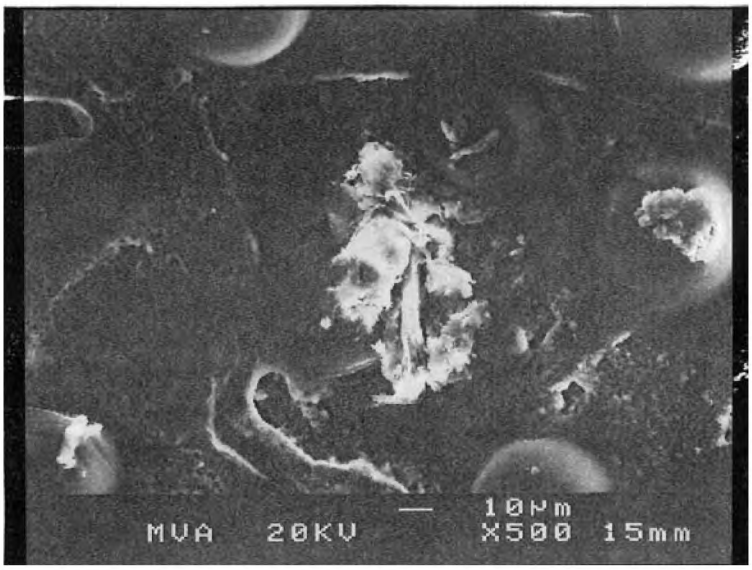


Figure B7. MVA0831-E0427: SE image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 500X.

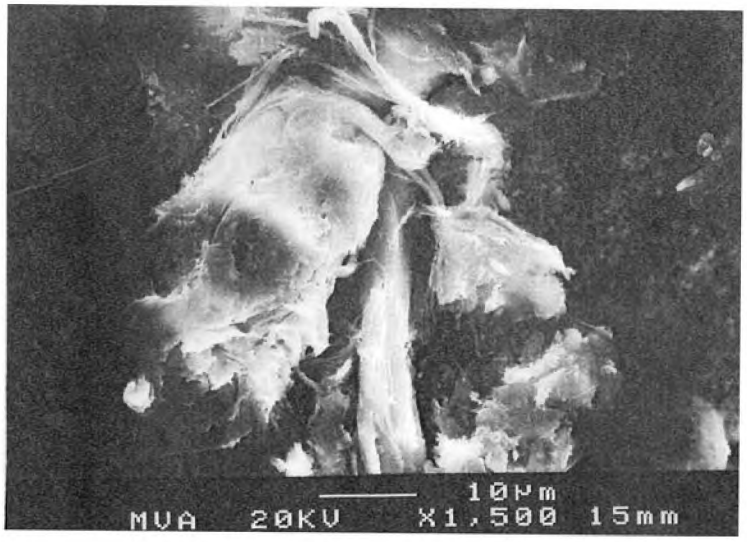


Figure B8. MVA0831-E0427: SE image of Post-it note adhesive surface showing chrysotile asbestos fibers. Magnification 1,500X.

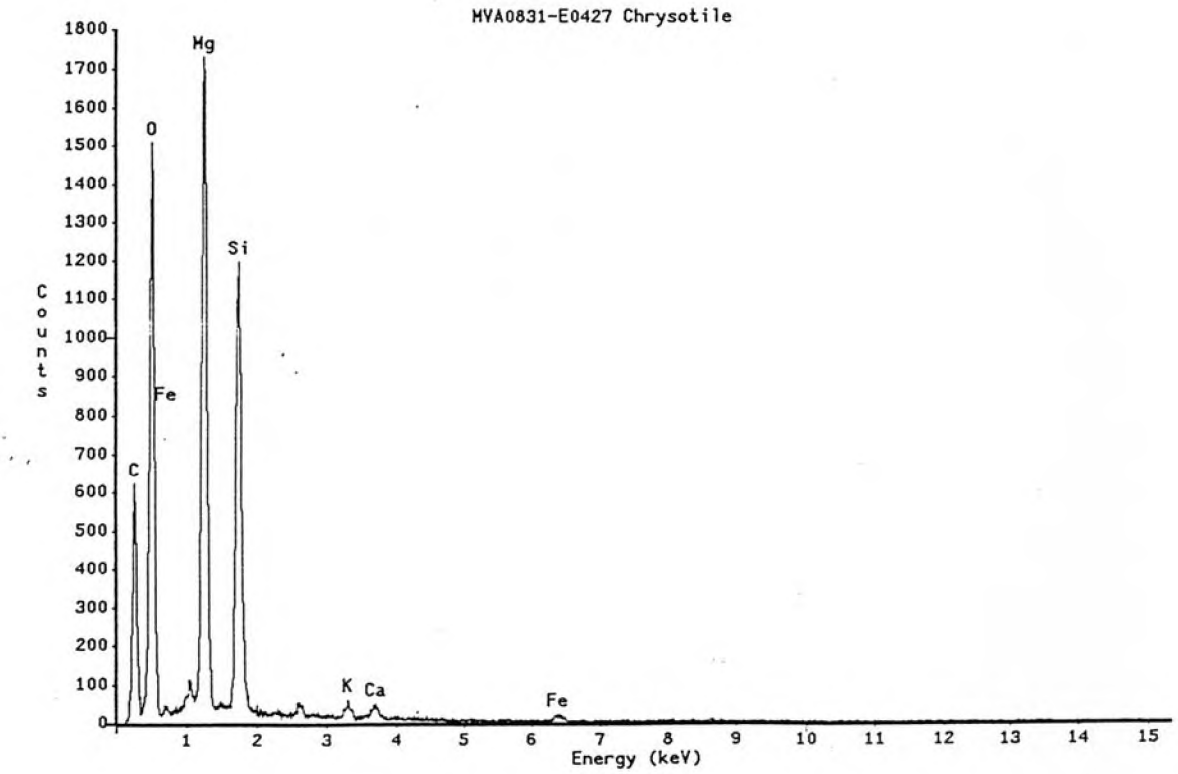


Figure B9. MVA0831-E0427: X-ray spectrum of chrysotile asbestos.

APPENDIX C

Polarized Light Microscopy of Particles Collected From the Black Magic Diamond Wheel

MVA, Inc.

PLM Constituent Analysis

Date: 03/04/94

MVA #: 0831 **Location:**

Sample I.D. #: E0423 **Client Sample I.D. #:**

Examination using the stereomicroscope: Material sampled from the inner area of a grinding wheel (Black Diamond).

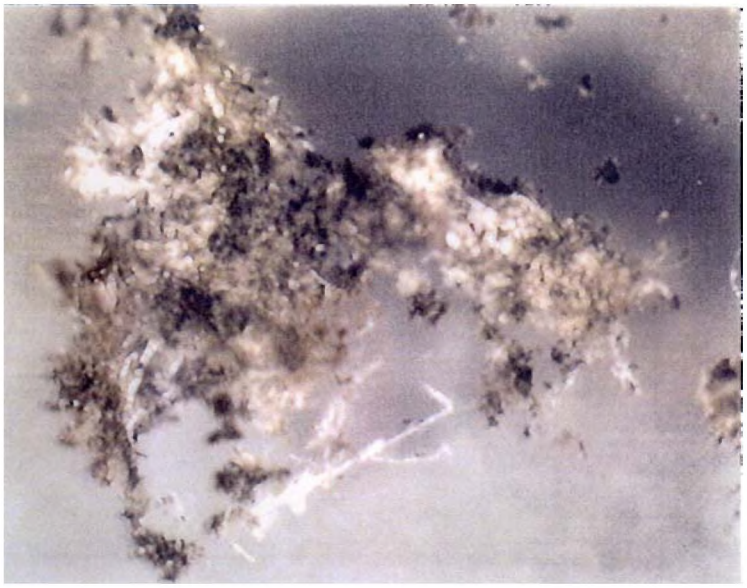
CONSTITUENT	%	CONSTITUENT	%	CONSTITUENT	%
Fibers:		Pigment:		Fillers:	
Cotton	- - -	Binders:		Diatoms	- - -
Fiberglass		Kaolinite	- - -	Iron Chromite	- - -
Filament	- - -	Montmorillonite	- - -	Iron Oxide	- - -
Wool	- - -	Gypsum	- - -	**Limestone**	Minor*
Mineral Wool	- - -	Anhydrite	- - -	Magnetite	- - -
Hair	- - -	Portland Cement	- - -	Mica	- - -
Paper/Wood		Lime (hydrated)	- - -	Perlite	- - -
Chem. Proc.	- - -	Precipitated		Synthetic Foam	- - -
Mech. Proc.	- - -	Carbonate	- - -	Pumice	- - -
Synthetic	- - -	Starch	- - -	Quartz	- - -
		Other	~ 40	Talc	- - -
				Vermiculite	- - -

Asbestos Minerals

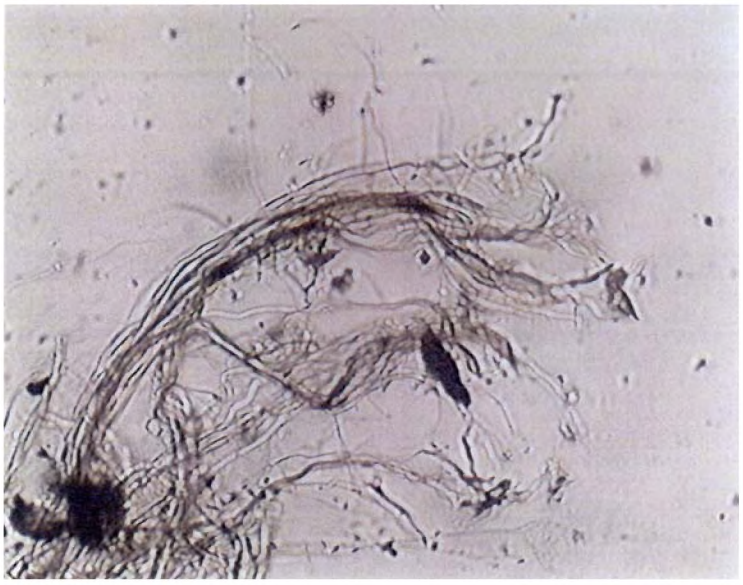
Chrysotile	~ 60	Anthophyllite	- - -	Tremolite/	
Amosite	- - -	Crocidolite	- - -	Actinolite	- - -

Comments: The percents are based on the material that was sampled. The estimated percentage of chrysotile was approximately ~30% at the time of sampling. *The minor carbonate (limestone) percentage is included in the binder percentage.

Analyst: T. Hopen



Photomacrograph of sample MVA0831-E0423.
(Total Magnification = 40X)



Photomicrograph of sample MVA0831-E0423 showing chrysotile, fiber and binder material. (Total Magnification = 380X)