

## ABCOV® Treats Natural Occurring Asbestos In Silt, Dirt, and Rock Pilot Plant Test Results

### Overview:

Samples of silt, dirt, and rock were treated by the ABCOV® Method to destroy asbestos. The treatment is outlined below:

1. The dirt and dark gray rock were crushed in a shredder and the particle size determined as well as asbestos content.
2. The crushed material (combined) was treated with ABCOV-C Solution in a colloid mill.
3. Periodic Samples were analyzed for asbestos content by Polarized Light Microscopy (PLM).
4. Raw and final treated samples were laboratory analyzed for asbestos by Transmission Electron Microscopy (TEM).
5. The final volume after treatment was ca 25 gallons, which was suspended in a holding tank until final clearance by TEM. The volume was then neutralized to pH 7.
6. The converted asbestos material was then transferred to a cement mixer for drying and final disposal to an unregulated landfill.

### Results:

ca 61 pounds of combined sample was treated in ca 21 gallons of ABCOV-C Solution.

This was composed of:           ca 6 lbs crushed rock  
   ca 15 lbs crushed dirt  
   and ca 41 lbs silt (as received)

The onsite PLM test results of untreated asbestos material are exhibited in Table 1:

**Table 1  
Onsite PLM Test Results**

Sample #	Material	PLM
90709.01	Dark Gray Rock Crushed	11% Chrys.
90709.02	Dirt Crushed	28% Chrys.
90709.03	Silt	50% Chrys.

The laboratory TEM results of material before ABCOV treatment are exhibited in Attachment A.

After the dark gray rock was crushed in the shredder, several pieces were 6mm to 11mm. A screen analysis shown in Table 2:

**Table 2  
Screen Analysis**

On US screen	10 mesh – 58%
On US screen	16 mesh – 19%
On US screen	20 mesh – 13%
Thru US screen	20 mesh – 9%

The onsite PLM test results of material during ABCOV® treatment are exhibited in Table 3.

**Table 3**  
**Periodic Samples Analyzed by Polarized Light Microscopy**

Sample #	Run Samples of Mixture (Silt, Crushed Dirt, Crushed Rock)	PLM
90709.04	15 minutes	2% Chrys.
90709.05	30 minutes	1.2% Chrys
90709.06	45 minutes	.05% Chrys
90709.07	1 hr 50 minutes	1% Chrys
90709.08	2 hr 5 minutes; Sample Before 1 <sup>st</sup> ABCOV-C Adjustment	0.24% Chrys
90709.09	2 hr 55 minutes; Sample After 1 <sup>st</sup> ABCOV-C Adjustment	0.24% Chrys
90710.09	3 hr 25 minutes; After 2 <sup>nd</sup> ABCOV-C Adjustment	0.0% Chrys

**NOTE:** The one hour time lapse between Sample 90709.06 and Sample 90709.07 was due to worker leaving containment for respite from containment heat due to ambient temperature.

**NOTE:** The starting ABCOV-C Solution (which was standard), required two adjustments during the run.

Knowledge acquired from this test allows a more efficient and faster acting starting solution to be prepared and used.

The laboratory TEM results of material before and after ABCOV® treatment are exhibited in Attachment B.

TEM Photos of the combined silt, rock and dirt before, exhibited in Attachment C, and after ABCOV® treatment exhibited in Attachment D.

Robert Dvorin

**Attachment A: TEM Results of Material before ABCOV® Treatment**

**ProScience Analytical Services, Inc**

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 781-935-3212 ~ Fax: 781-932-4857 ~ E-Mail general@proscience.net

Client #: 1653  
 Client Project: N/A  
 Client Reference: ABC  
 Client Name: ABCOV COMPANIES

Method: TEM NOB  
 Batch: NT 11232  
 Date Analyzed: 7/1/2009  
 Date Received: 6/29/2009  
 Date of Report: 7/1/2009

LAB ID	Field ID	Description:	Color	Initial Sample Weight	% Asbestos Types						% Other Non-asb.	% Organic	% Carb.	Total % Asbestos	Analyzed /Charged	Preped/ Charged
					CHR	AMO	ACT	CRO	ANT	TRE						
NT87357	A	Silt		.3625	51.69	.00	.00	.00	.00	.00	12.92	27.17	8.22	51.69	Yes	No
NT87358	B	Dirt Uncrushed		1.1050	68.31	.00	.00	.00	.00	.00	17.08	9.17	5.44	68.31	Yes	No
NT87359	C	Dirt Crushed		.7430	35.22	.00	.00	.00	.00	.00	23.48	32.61	8.69	35.22	Yes	No
NT87360	D	Dark Gray Rock Uncrushed		.4878	4.43	.00	.00	.00	.00	.00	84.26	.98	10.33	4.43	Yes	No
NT87361	E	Dark Gray Rock Crushed		.8868	30.54	.00	.00	.00	.00	.00	56.71	5.47	7.28	30.54	Yes	No

**Comments:** Samples are not NOB but they were analyzed by the TEM NOB method on the client's request. Sample F (tan rock unable to crush through shredder) could not be analyzed because it did not lose any weight after being ashed.

Roland Holacsek, Analyst

*Asbestos Codes:* CHR = Chrysotile AMO = Amosite CRO = Crocidolite ACT = Actinolite TRE = Tremolite ANT = Anthophyllite TR = Trace = < 1% ND = None Detected

**Attachment B: Results of Material Before and After ABCOV® Treatment**

**ProScience Analytical Services, Inc**

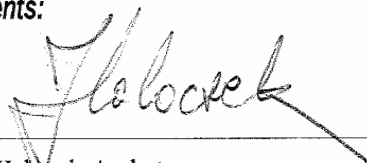
22 Cummings Park, Woburn, Massachusetts 01801  
 781-935-3212 ~ Fax: 781-932-4857 ~ E-Mail general@proscience.net

Client #: 1653  
 Client Project: N/A  
 Client Reference: ABC  
 Client Name: ABCOV COMPANIES

Method: TEM NOB  
 Batch: NT 11320  
 Date Analyzed: 7/16/2009  
 Date Received: 7/13/2009  
 Date of Report: 7/16/2009

LAB ID	Field ID	Description:	Color	Initial Sample Weight	% Asbestos Types						% Other Non-asb.	% Organic	% Carb.	Total % Asbestos	Analyzed /Charged	Preped/ Charged
					CHR	AMO	ACT	CRO	ANT	TRE						
NT88187	1	Unconverted mixed silt, crushed dirt, crushed rock		.5833	56.96	.00	.00	.00	.00	.00	24.41	1.30	17.33	56.96	Yes	No
NT88188	2	Converted mixed silt, crushed rock, crushed dirt		.4127	.00	.00	.00	.00	.00	.00	23.74	55.59	20.67	ND	Yes	No

**Comments:**



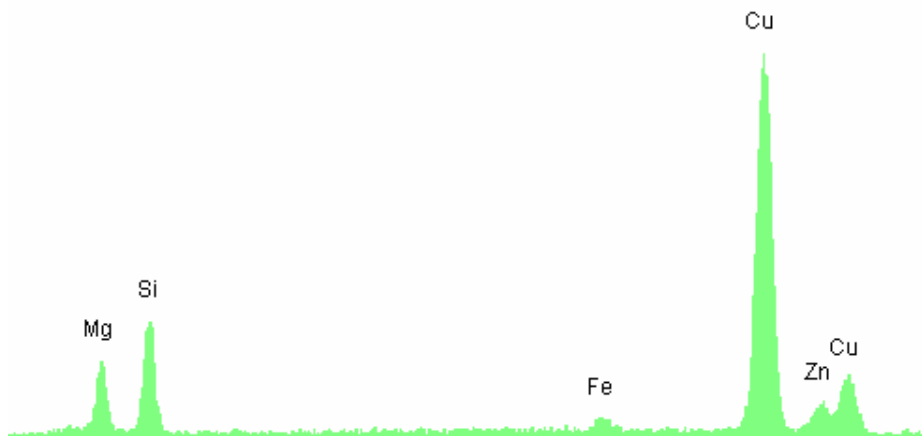
Roland Holacsek, Analyst

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**Attachment C: TEM Photo of Material Before ABCOV® Treatment**

**Sample 1**

**Chrysotile Spectrum and Field of View Image**



**Attachment C: TEM Photo of Material Before ABCOV® Treatment**

**Sample 1**

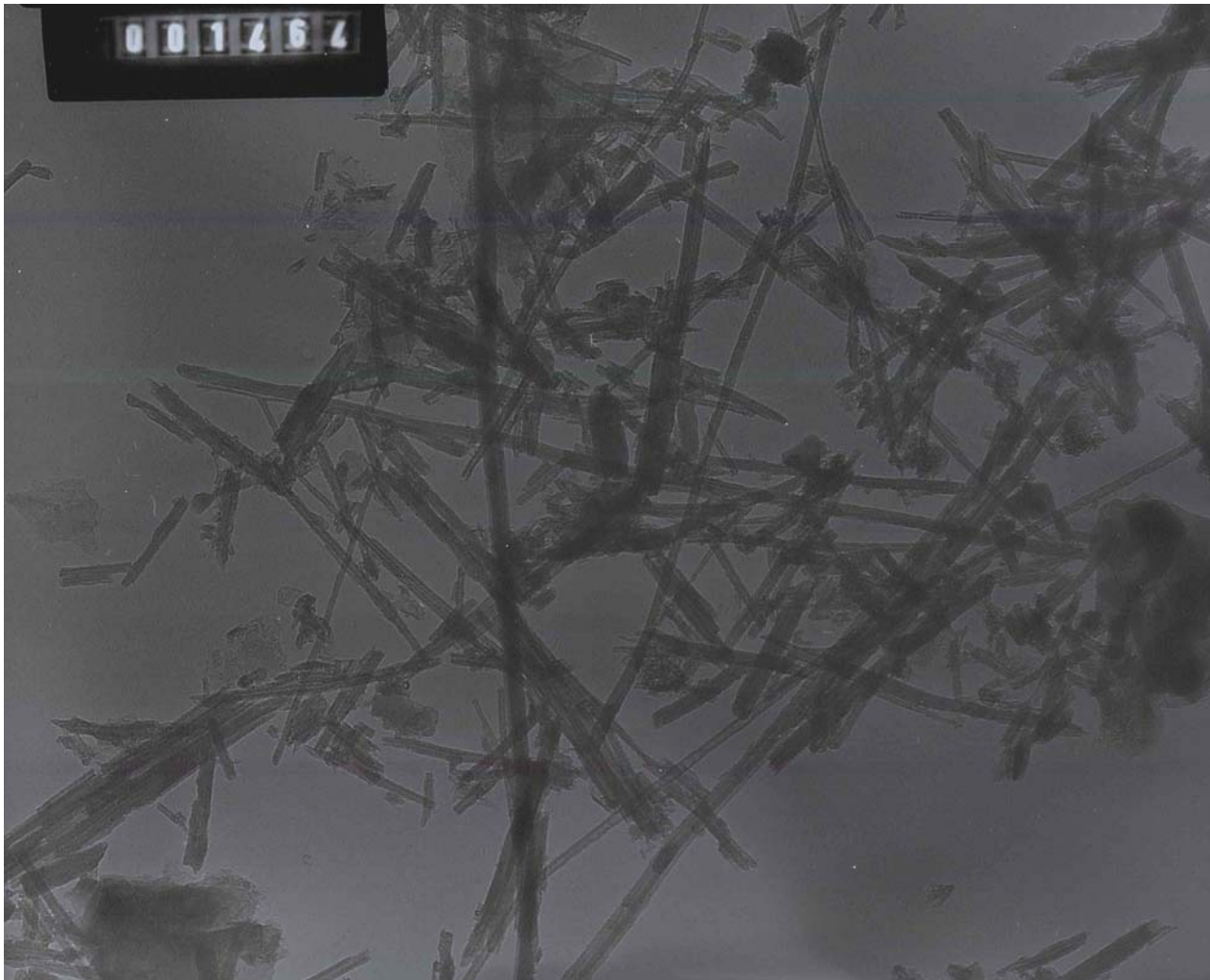
**Field of View Image**



**Attachment C: TEM Photo of Material Before ABCOV® Treatment**

**Sample 1**

**Field of View Image**

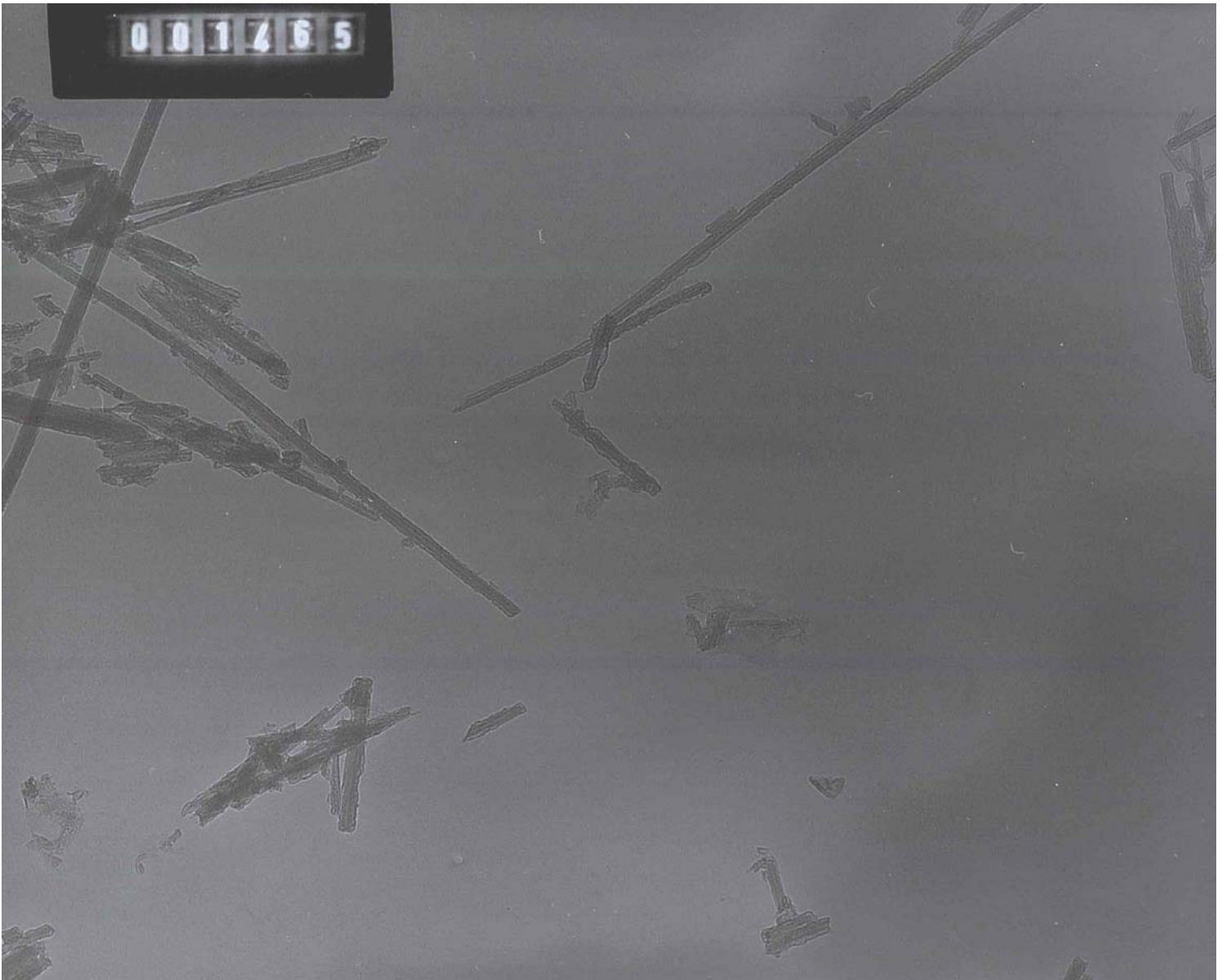




**Attachment C: TEM Photo of Material Before ABCOV® Treatment**

**Sample 1**

**Field of View Image**





**Attachment D: TEM Photo of Material After ABCOV® Treatment**

**Sample 2**

**Field of View Image – No Asbestos Detected**

