



5001 Cedar Lake Road * St. Louis Park, MN 55416
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E-MAILED
7/7/15

ANALYSIS OF BULK SAMPLES FOR ASBESTOS USING POLARIZED LIGHT

Calhoun Ventures
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2 Samples from 812 Cook Ave back yard & 3 samples from the west neighbor's property along the fence line.

METHOD AND DEFINITIONS

The submitted samples were analyzed using the EPA Interim Method #600/M4-82-020 (polarized light microscopy with optional dispersion staining). The method defines an asbestos-containing material as one that contains greater than 1% asbestos by visual area estimation, and asbestos is defined as the fibrous forms of serpentine and certain amphiboles. While the fibrous and non-fibrous forms of minerals are discernible macroscopically in hand specimens, the distinction between them is not clear on a microscopic level, especially after processing or manufacturing. Fibrous amphiboles are generally those whose mean aspect ratios (length over width) under the microscope are approximately >10; non-fibrous amphiboles are generally those whose mean aspect ratios are approximately <6. During analysis, morphology and an estimate of mean aspect ratio are used to assign a given mineral fiber population to fibrous or non-fibrous categories. That non-fibrous amphiboles are not reported as asbestos is consistent with mineralogical definitions, but does not imply that non-fibrous amphiboles are not hazardous. Airborne concentrations of them may be regulated by OSHA under certain circumstances. The type of dispersion staining used is generally phase contrast, although central stop dispersion staining may also be used.

PERCENTAGE REPORTING

The percentage of each fiber type present was determined using volume percents estimated from stereoscopic examination, projected area percents from mounted slide examination and percents from comparison to weight percent standards. Such estimations are suitable for most samples, but do have large error ranges. Errors are estimated to be 100 relative percent uncertainty for percentage estimates under 10% ranging down to as little as 10 relative percent uncertainty for percentage estimates greater than 50%. Friable samples which have been estimated by the above methods to contain less than 10% asbestos can be point-counted, according to the EPA Interim Method, as required by NESHAPS. In low percentage samples, point counting may produce false negatives or positives, due to the small number of points counted. For samples consisting of more than one apparent type of material or layer, the percentage of each fiber type in each type of material or layer is determined and reported separately; an overall average for the sample of each fiber type is then calculated. The reported friability of a sample refers to that friability observed in the condition analyzed (broken, crushed, etc), and is not to be substituted for an on-site assessment of friability. Each Angstrom Analytical Lab report relates only to the sample tested and may not, due to the sampling process, be representative of the material sampled. For dust sampling no percentage or rating is given. The results can only be expressed in positive or negative terms. In our analysis a positive result, meaning asbestos was detected in the dust, is listed as present. A negative result, meaning no asbestos was detected in the dust is listed as none detected or ND. If at some point, additional copies of these results are requested a \$50.00 administration charge will be assessed to retrieve records from our archive.

A handwritten signature in black ink, appearing to read 'Kevin Hagen'.

Kevin Hagen, Angstrom Analytical, Inc.

Date

July 7, 2015



Angstrom Analytical
 5001 Cedar Lake Road
 St. Louis Park, Mn 55416

**ASBESTOS (PLM) BULK SAMPLES:
 REPORT OF MATERIALS ANALYSIS**

CLIENT Calhoun Ventures	Project Location 812 Cook Ave. E.	Results Via Report	Data Entry 7-1-15	Approved By _____
CLIENT ADDRESS Fax # _____	Client/Receiving # 1-5		Project # ON-site	Analyst KH
	Assigned/Lab # 15-07		Date Rec'd 7-1-15	Analyzed 7-7-15
			Paid _____	Email/Fax/Phone _____ (circle)

Sample Number	Material	Physical Description	Location	Asbestos Type	Approximate Percent
1	Soil Sample	black granular	back yard 812	None	Detected
2			Back yard along sidewalk 812	None	Detected
3			WEST side Cook Ave. neighbors property	None	Detected
4			Center of fence line WEST neighbor	None	Detected
5			South end of fence WEST neighbor	None	Detected