Industrial Hygiene Assessment Report: Evaluation of Settled Dust

Sonoma State University
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Rohnert Park CA 94928

Prepared for:

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FACS Project #PJ29642
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Introduction

Forensic Analytical Consulting Services, Inc. was retained by Sonoma State University to perform settled dust sampling for asbestos fibers and other particle identification from representative areas of Stevenson Hall and control locations on the Sonoma State University campus located at 1801 E. Cotati Avenue in Rohnert Park, California. The assessment was conducted in support of ongoing operations and maintenance (O&M) and exposure assessment activities currently being conducted by FACS.

The purpose of the assessment was to 1) evaluate historical asbestos fiber loading in representative areas of Stevenson Hall and a control building, 2) evaluate asbestos fiber loading in areas where asbestos exposure assessments had previously been conducted, and 3) attempt to identify potential sources of asbestos fibers in dust through particle identification and distribution analysis. The assessment was performed by David Brinkerhoff, Certified Industrial Hygienist (CIH), on September 23 and 26, 2016. This report contains the findings of this industrial hygiene evaluation.

Scope of Work

In the course of this project, FACS conducted the following scope of work:

1. Collection of surface dust samples in Stevenson Hall and a control building for analysis by ASTM method D5755 to determine asbestos fiber loading.

2. Collection of surface dust samples in Stevenson Hall and a control building for particle identification analysis in an effort to identify whether sources of asbestos are aligned with indoor or outdoor sources by their association with other particles found in the historical deposition samples.

The data collected in the course of the investigation is presented in this report as follows:

- Appendix A: Data Collection Methodologies
- Appendix B: Sampling Results (summary tables, laboratory reports, and chain of custody forms)
- Appendix C: Sample Location Drawing

Background

Limited dust sampling had previously been conducted by SSU employees and other consulting firms that appeared to indicate relatively high loading of asbestos fibers on the upper surface of lay-in ceiling tiles and other surfaces above ceiling. These previous sampling events did not provide a clear indication of the extent of dust distribution, potential impact on employees working above ceiling or potential sources of asbestos fibers.

Prior to the settled dust evaluation, FACS conducted asbestos employee exposure assessments during three tasks that are commonly conducted above-ceiling by SSU staff in Stevenson Hall, which included:

- Light bulb changing and ballast repair
- Variable air volume (VAV) system inspection and repair
- Cable installation
Results of these exposure assessments were provided under separate report and are further summarized below.

Findings and Results

Asbestos Fibers in Dust

Surface dust samples were collected from the interior and exterior of Person Theatre, which is not known to contain any asbestos-containing building materials. In addition, samples were collected from the interior and exterior of Stevenson Hall. Samples collected within Stevenson Hall were intended to represent the following conditions:

- Representative above-ceiling areas
- Representative occupied spaces
- Above-ceiling areas where employee exposure assessment had been previously conducted.

Chrysotile was present in several samples collected at interior and exterior locations of Person Theatre but generally below the limit of detection for the method used, which varied significantly depending on dust loading and dilution of the sample by the laboratory.

In general, asbestos loading in above-ceiling dust sampled within Stevenson Hall were highly variable. Locations with the highest concentration of asbestos fibers generally correlated with visual observations of high dust loading. Concentration of fibers greater than 5 microns in length were near or below the limit of detection for the method at all sample locations. Chrysotile asbestos was predominately identified in dust samples within Stevenson hall with tremolite and/or actinolite identified in two samples. Actinolite was identified in one outdoor sample.

Samples collected in a representative classroom (Rm. 2061) had lower fiber concentrations than above-ceiling samples and within the same order of magnitude as Person Theatre.

Although no regulatory standards exist to evaluate asbestos fiber loading in dust, concentrations have been suggested in the literature* for levels in microvacuum samples and are as follows:

<table>
<thead>
<tr>
<th>Concentration</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1000 Str/cm²</td>
<td>considered low</td>
</tr>
<tr>
<td>Greater than 10,000 Str/cm²</td>
<td>considered above background</td>
</tr>
<tr>
<td>Greater than 100,000 Str/cm²</td>
<td>is considered high</td>
</tr>
</tbody>
</table>


Dust samples were collected from above-ceiling areas where employee exposure assessments had been previously. Results are summarized below.
Although asbestos fiber loading in dust would generally be considered high, results of exposure assessments indicated minimal employee exposure to asbestos during the tasks monitored.

Dust sampling results are summarized in Appendix B.

Particle Identification

Particle identification analysis indicated that dust throughout the above-ceiling areas of Stevenson Hall consists of a combination of common natural and man-made sources and were generally similar to samples collected within Person Theatre. Particle compositions did not indicate a specific source of asbestos fibers in dust.

Asbestos was not detected above the limit of quantification (1%) in any sample collected and analyzed by polarized light microscopy (PLM).

Additional commentary is provided in the laboratory report presented in Appendix B.

Conclusions and Recommendations

The following conclusions are made based on this investigation:

1. Asbestos fiber loading in dust was highly variable, with the highest concentrations generally present in areas with the greatest visible dust loading.
2. Particle identification analysis did not identify characteristics of the dust that indicate a particular indoor or outdoor source of asbestos fibers in dust in Stevenson Hall, however; actinolite was identified in an outdoor and indoor sample, which may be indicative of an outdoor naturally occurring source in the absence of know actinolite-containing building materials. The current data set is not sufficient to determine this conclusively.

FACS recommends the following actions be considered:

1. Consider conducting additional employee exposure assessments for tasks that have a high probability of disturbing dust above-ceiling in Stevenson Hall.

Limitations

This investigation is limited to the conditions and practices observed and information made available to FACS. The methods, conclusions, and recommendations provided are based on FACS’ judgment,
experience and the standard of practice for professional service. They are subject to the limitations and variability inherent in the methodology employed. As with all environmental investigations, this investigation is limited to the defined scope and does not purport to set forth all hazards, nor indicate that other hazards do not exist.

Please do not hesitate to contact our office at 916-726-1303 if you have any additional questions or concerns. Thank you for the opportunity to assist Sonoma State University Inc. in promoting a more healthful environment.

Respectfully,
FORENSIC ANALYTICAL

David Brinkerhoff, CIH, CIEC
Director, San Francisco

Reviewed by:
FORENSIC ANALYTICAL

David Kahane, MPH, CIH, FAIHA
Founder
Appendix A
FACS Data Collection Methods

Asbestos in Dust

Microvacuum samples were collected in accordance with the ASTM Standard Test Method for Microvacuum Sampling (D5755). FACS utilized non-conductive 25-mm diameter cassettes pre-loaded with 0.45 micron mixed cellulose ester filters. The cassettes were fitted with 8-mm (internal diameter) and 45 degree angled inlets. An area of 100 square centimeters was vacuumed until no visible dust or particulate matter remained. Triplicate samples were collected each selected location.

Microvacuum asbestos samples were submitted to Forensic Analytical Laboratories in Hayward, CA for analysis by Transmission Electron Microscopy in accordance with method ASTM D5755. Currently, there are no established regulatory levels for microvacuum samples.

Particle ID

Microvac and tape lift samples were collected from each selected location. Samples were analyzed by Forensic Analytical Laboratories in Hayward, CA using modified polarized light microscopy in an effort to identify and characterize components in each sample.
Appendix B

Sample Results Summary and Laboratory Reports
### DRAFT Data Summary

**PJ29642 - Sonoma State University**  
ASTM Method D5755 - Asbestos in Dust, Microvac  
September 23 & 26, 2016

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Building</th>
<th>Location</th>
<th>Component</th>
<th>s/cm² (total)</th>
<th>Average s/cm² (total)*</th>
<th>s/cm² (&gt;5um)</th>
<th>Average s/cm² (&gt;5um)*</th>
<th>CH</th>
<th>AC</th>
<th>TR</th>
<th>ND</th>
<th>Asb. Types(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-101A</td>
<td>Person Theatre</td>
<td>Exterior Mechanical Room</td>
<td>Top of network box</td>
<td>3,300</td>
<td>&lt; 2,500</td>
<td>2,667</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29642-101B</td>
<td>Person Theatre</td>
<td>Make-up Room</td>
<td>Top of shelf</td>
<td>&lt; 2,500</td>
<td>&lt; 2,500</td>
<td>2,500</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29642-101C</td>
<td>Person Theatre</td>
<td>Control Room 301</td>
<td>Top of HVAC duct</td>
<td>&lt; 30,000</td>
<td>&lt; 30,000</td>
<td>30,000</td>
<td>X</td>
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<td></td>
</tr>
<tr>
<td>29642-104A</td>
<td>Stevenson Hall</td>
<td>3092A, Above ceiling</td>
<td>Return air louvre</td>
<td>330,000</td>
<td>1,010,000</td>
<td>59,000</td>
<td>219,667</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>29642-104B</td>
<td>Stevenson Hall</td>
<td>3092A, Above ceiling</td>
<td>Return air louvre</td>
<td>1,500,000</td>
<td>1,200,000</td>
<td>300,000</td>
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<td></td>
</tr>
<tr>
<td>29642-105A</td>
<td>Stevenson Hall</td>
<td>3082, northeast above ceiling</td>
<td>Top of light fixture</td>
<td>&lt; 800,000</td>
<td>690,000</td>
<td>500,000</td>
<td>300,000</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29642-105B</td>
<td>Stevenson Hall</td>
<td>3082, northeast above ceiling</td>
<td>Top of light fixture</td>
<td>690,000</td>
<td>500,000</td>
<td>300,000</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>29642-105C</td>
<td>Stevenson Hall</td>
<td>3059, above ceiling</td>
<td>Top of light fixture</td>
<td>5,000</td>
<td>4,167</td>
<td>2,500</td>
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<tr>
<td>29642-106A</td>
<td>Stevenson Hall</td>
<td>3008, above ceiling</td>
<td>Top of light fixture</td>
<td>190,000</td>
<td>500,000</td>
<td>126,667</td>
<td>X</td>
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</tr>
<tr>
<td>29642-106B</td>
<td>Stevenson Hall</td>
<td>3008, above ceiling</td>
<td>Top of light fixture</td>
<td>210,000</td>
<td>1,100,000</td>
<td>300,000</td>
<td>X</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>29642-107A</td>
<td>Stevenson Hall</td>
<td>2061, above ceiling</td>
<td>Return air louvre</td>
<td>89,000</td>
<td>185,333</td>
<td>119,000</td>
<td>X</td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29642-107B</td>
<td>Stevenson Hall</td>
<td>2061, above ceiling</td>
<td>Return air louvre</td>
<td>&lt; 297,000</td>
<td>185,333</td>
<td>119,000</td>
<td>X</td>
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<td></td>
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<td>29642-108A</td>
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<td>n/a</td>
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<td>n/a</td>
<td>n/a</td>
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<tr>
<td>29642-109A</td>
<td>Stevenson Hall</td>
<td>2061, above ceiling</td>
<td>Top of brown storage cabinet</td>
<td>40,000</td>
<td>22,333</td>
<td>12,000</td>
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</tr>
<tr>
<td>29642-111A</td>
<td>Stevenson Hall</td>
<td>2061, south side</td>
<td>Top of brown storage cabinet</td>
<td>3,300</td>
<td>6,933</td>
<td>2,500</td>
<td>X</td>
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<tr>
<td>29642-112A</td>
<td>Stevenson Hall</td>
<td>2061, northwest corner</td>
<td>Top of oven (IsoTemp 500)</td>
<td>&lt; 2,500</td>
<td>&lt; 2,500</td>
<td>2,500</td>
<td>X</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>29642-113A</td>
<td>Stevenson Hall</td>
<td>Corridor at Rm 2021, above ceiling</td>
<td>Top of light fixture</td>
<td>2,700,000</td>
<td>110,000</td>
<td>30,000</td>
<td>70,000</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>29642-114A</td>
<td>Stevenson Hall</td>
<td>Exterior, north side, east end</td>
<td>3rd floor ledge below roof overhang</td>
<td>&lt; 30,000</td>
<td>36,533</td>
<td>30,000</td>
<td>X</td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

* - Indicates that the result was less than the Limit of Detection (LOD) for the method used  
** - EA Location  
CH - chrysotile  
AC - Actinolite  
TR - Tremolite  
ND - None detected  
* - Average calculated using the LOD for results below the LOD.
ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104 Citrus Heights CA  95610

Client Number: SAC02
Report Number: T027881
Date Received: 9/24/16

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date collected: 9/23/16
Date Analyzed: 9/25/16
Date Reported: 9/26/16

Analyst(s): MZ,MF

SAMPLE PREPARATION AND ANALYSIS:

Each microvac cassette was triple-rinsed with particle-free water; and the resulting suspensions were sonicated for 15 min. Aliquots were then vacuum-filtered through 0.2 micron pore-sized mixed cellulose ester (MCE) filters. After air-drying, quarter-sections of the filters were collapsed, etched, evaporatively coated with carbon, and mounted on TEM grids in a modified Jaffe wick apparatus with DMF. Properly loaded grids were analyzed in a Philips CM12 TEM at ~19,000x magnification, using morphology, SAED and EDX for asbestos structure identification.

| Client Sample Number | 29642- | 29642- | 29642- | 29642- | 29642- | 29642-
<table>
<thead>
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</thead>
<tbody>
<tr>
<td>Lab Sample Number</td>
<td>101A</td>
<td>102A</td>
<td>103A</td>
<td>104A</td>
<td>105A</td>
<td>106A</td>
</tr>
<tr>
<td>20112345</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area sampled, cm²</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>3.0</td>
<td>3.0</td>
<td>0.1</td>
<td>0.1</td>
<td>0.01</td>
<td>3.0</td>
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<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>4</td>
<td>4</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>33</td>
<td>1</td>
<td>6</td>
</tr>
<tr>
<td>No. asbestos str, &gt;5um long</td>
<td>1</td>
<td>0</td>
<td>0</td>
<td>6</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>830</td>
<td>830</td>
<td>9,900</td>
<td>9,900</td>
<td>99,000</td>
<td>830</td>
</tr>
<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>2,500</td>
<td>2,500</td>
<td>30,000</td>
<td>30,000</td>
<td>300,000</td>
<td>2,500</td>
</tr>
<tr>
<td>Asbestos concentration, structures/cm², total</td>
<td>3,300</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>330,000</td>
<td>&lt;LOD</td>
<td>5,000</td>
</tr>
<tr>
<td>structures/cm², &gt;5um long</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>59,000</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
<td>CH</td>
<td>CH</td>
<td>ND</td>
<td>CH</td>
<td>CH</td>
<td>CH</td>
</tr>
</tbody>
</table>

Mark Floyd, Analytical Microscopy Supervisor

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* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected. n/a: not analyzed

3777 Depot Road, Suite 409, Hayward, California  94545 ● Telephone: 510-887-8828 ● www.falaboratories.com
### ANALYSIS REPORT
**ASBESTOS IN DUST (MICROVACS)**
*Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs  
Contact: David Justin Brinkerhoff  
Address: 7625 Sunrise Blvd, Suite 104, Citrus Heights CA 95610

**ANALYTICAL PARAMETERS AND RESULTS**

<table>
<thead>
<tr>
<th>Client Sample Number</th>
<th>29642-107A</th>
<th>29642-108A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Sample Number</td>
<td>20112351</td>
<td>20112352</td>
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</table>

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value 1</th>
<th>Value 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area sampled, cm²</td>
<td>100</td>
<td>0</td>
</tr>
<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>0.1</td>
<td></td>
</tr>
<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td></td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td></td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
<td>19</td>
<td></td>
</tr>
<tr>
<td>No. asbestos str, &gt;5μm long</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>9,900</td>
<td></td>
</tr>
<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>30,000</td>
<td></td>
</tr>
<tr>
<td>Asbestos concentration, str/cm², total</td>
<td>190,000</td>
<td></td>
</tr>
<tr>
<td>Asbestos concentration, str/cm², &gt;5μm long</td>
<td>50,000</td>
<td></td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
<td>CH</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.  
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.  
n/a: not analyzed

Field blank samples are not routinely analyzed if any sample in the set has no asbestos detected. When analyzed, blanks report only the identification and number of asbestos structures counted. Sample results are not blank-corrected.
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
<th>Component</th>
<th>Area</th>
<th>Result</th>
</tr>
</thead>
<tbody>
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<td>29642-101A</td>
<td>Person Theatre, Ext. Mechanic's Room</td>
<td>Top of network box</td>
<td>100 cm²</td>
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<tr>
<td>-102A</td>
<td>Person Theatre, Make-up Room</td>
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<td>Person Theatre, Control Room 301</td>
<td>Top of duct</td>
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<tr>
<td>-104A</td>
<td>Stevenson Hall, 3092A, Above Ceiling</td>
<td>RA Louver</td>
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<td>-105A</td>
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<td>Top of light fixture</td>
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ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104
Citrus Heights CA 95610

Client Number: SAC02
Report Number: T027882
Date Received: 9/24/16

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date Analyzed: 10/6-10/16
Date Reported: 10/10/16

SAMPLE PREPARATION AND ANALYSIS:

Each microvac cassette was triple-rinsed with particle-free water, and the resulting suspensions were sonicated for 15 min. Aliquots were then vacuum-filtered through 0.2 micron pore-sized mixed cellulose ester (MCE) filters. After air-drying, quarter-sections of the filters were collapsed, etched, evaporatively coated with carbon, and mounted on TEM grids in a modified Jaffe wick apparatus with DMF. Properly loaded grids were analyzed in a Philips CM12 TEM at ~19,000x magnification, using morphology, SAED and EDX for asbestos structure identification.

<table>
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<tr>
<th>Client Sample Number</th>
<th>Lab Sample Number</th>
<th>Area sampled, cm²</th>
<th>Total rinse volume, ml</th>
<th>Rinse volume filtered, ml</th>
<th>Effective filter area, mm²</th>
<th>Grid opening area, mm²</th>
<th>No. grids openings analyzed</th>
<th>No. asbestos structures, total</th>
<th>No. asbestos str, &gt;5μm long</th>
<th>Analytical sensitivity (AS), str/cm²</th>
<th>Limit of detection (LOD)*, str/cm²</th>
<th>Asbestos concentration, structures/cm², total structures/cm², &gt;5μm long</th>
<th>Asbestos Type(s) Detected**</th>
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<td>29642-101B</td>
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<td>45</td>
<td>3.0</td>
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<td>1</td>
<td>0</td>
<td>830</td>
<td>2,500</td>
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<td>CH</td>
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<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>CH</td>
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<td>&lt;LOD</td>
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<td>830</td>
<td>2,500</td>
<td>&lt;LOD</td>
<td>CH</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

Mark Floyd, Analytical Microscopy Supervisor

Analytical results and reports are generated by Forensic Analytical Laboratories Inc (FALI) at the request of and for the exclusive use of the person or entity (Client) named on such report. Results, reports or copies of same will not be released by FALI to any third party without prior written request from client. This report applies only to the sample(s) tested. Supporting laboratory documentation is available upon request. This report must not be reproduced except in full with approval from FALI. The client is solely responsible for the use and interpretation of test results and reports requested from FALI. This report must not be used by the client to claim product endorsement by NVLAP or any US government agency. FALI is not responsible for data collected by personnel who are not part of FALI. FALI is unable to assess the degree of hazard resulting from materials analyzed. FALI reserves the right to dispose of all samples after a period of 30 days, according to all state and federal guidelines, unless otherwise specified.
### ANALYSIS REPORT

**ASBESTOS IN DUST (MICROVACS)**

*Transmission Electron Microscopy*

**Client:** Forensic Analytical Consulting Svcs  
**Contact:** David Justin Brinkerhoff  
**Address:** 7625 Sunrise Blvd, Suite 104  
Citrus Heights CA 95610  
**Client Number:** SAC02  
**Report Number:** T027882  
**Date Received:** 9/24/16

**Site:** Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park  
**Project:** PJ29642  
**Date collected:** 9/23/16  
**Analyst(s):** MZ  
**Date Analyzed:** 10/6-10/16  
**Date Reported:** 10/10/16

---

### ANALYTICAL PARAMETERS AND RESULTS

<table>
<thead>
<tr>
<th>Client Sample Number</th>
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<tr>
<td>Lab Sample Number</td>
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<td>Area sampled, cm²</td>
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<td>0</td>
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<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>0.1</td>
<td>3.0</td>
</tr>
<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>10</td>
<td>4</td>
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<tr>
<td>No. asbestos structures, total</td>
<td>21</td>
<td>0</td>
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<tr>
<td>No. asbestos str, &gt;5μm long</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>9,900</td>
<td></td>
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<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>30,000</td>
<td></td>
</tr>
</tbody>
</table>

| Asbestos concentration, structures/cm², total | 210,000 | <LOD |
| Asbestos concentration, structures/cm², >5μm long | <LOD    |     |

**Asbestos Type(s) Detected**

| CH, TR | n/a |

---

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** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

n/a: not analyzed

Field blank samples are not routinely analyzed if any sample in the set has no asbestos detected. When analyzed, blanks report only the identification and number of asbestos structures counted. Sample results are not blank-corrected.

3777 Depot Road, Suite 409, Hayward, California 94545  ●  Telephone: 510-887-8828  ●  www.falaboratories.com
### Sample Request Form

**Client:** SAC02 FACS Sacramento  
Sonoma State University  

**Contact:** David Justin Brinkerhoff  
Phone: (916) 726-1303  

**Site:** Sonoma State University  
1801 E. Cotati Avenue  

---

**Sample Number** | **Sample Location** | **Component** | **Area** | **Result**
---|---|---|---|---
29642-101B | Person Theatre, Fire. Mechanic's Room | Top of Network Box | 100 cm² |  
-102B | Person Theatre, Make-up Room | Top of Shelf |  
-103B | Person Theatre, Control Room 301 | Top of Duct |  
-104B | Stevenson Hall, 3092A, Above Ceiling | RA Corner |  
-105B | Stevenson Hall, 3082, NE | Top of Light Fixture |  
-106B | Stevenson Hall, 3054 | Top of Light Fixture |  
-107B | Stevenson Hall, 3008 | Top of Light Fixture |  
-108B | Field Blank |  

---

**Shipped via:**  
- [x] Fed Ex  
- [ ] Airborne  
- [ ] UPS  
- [ ] US Mail  
- [ ] Courier  
- [ ] Drop Off  
- [ ] Other:  

**Relinquished by:**  
**Date & Time:**  
**Received by:**  
**Date & Time:**  
Condition Acceptable: [ ] Yes [ ] No

---

**Sample Number** | **Sample Location** | **Component** | **Area** | **Result**
---|---|---|---|---
29642-101B | Person Theatre, Fire. Mechanic's Room | Top of Network Box | 100 cm² |  
-102B | Person Theatre, Make-up Room | Top of Shelf |  
-103B | Person Theatre, Control Room 301 | Top of Duct |  
-104B | Stevenson Hall, 3092A, Above Ceiling | RA Corner |  
-105B | Stevenson Hall, 3082, NE | Top of Light Fixture |  
-106B | Stevenson Hall, 3054 | Top of Light Fixture |  
-107B | Stevenson Hall, 3008 | Top of Light Fixture |  
-108B | Field Blank |  

---

**Shipped via:**  
- [x] Fed Ex  
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- [ ] Other:  

**Relinquished by:**  
**Date & Time:**  
**Received by:**  
**Date & Time:**  
Condition Acceptable: [ ] Yes [ ] No
ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104
Citrus Heights CA 95610
Client Number: SAC02
Report Number: T027883
Date Received: 9/24/16

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date collected: 9/23/16

Sample Preparation and Analysis:
Each microvac cassette was triple-rinsed with particle-free water; and the resulting suspensions were sonicated for 15 min. Aliquots were then vacuum-filtered through 0.2 micron pore-sized mixed cellulose ester (MCE) filters. After air-drying, quarter-sections of the filters were collapsed, etched, evaporatively coated with carbon, and mounted on TEM grids in a modified Jaffe wick apparatus with DMF. Properly loaded grids were analyzed in a Philips CM12 TEM at ~19,000x magnification, using morphology, SAED and EDX for asbestos structure identification.

Analytical Parameters and Results

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<td>102C</td>
<td>103C</td>
<td>104C</td>
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<th>100</th>
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<td>Area sampled, cm²</td>
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<td></td>
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</tr>
<tr>
<td>Total rinse volume, ml</td>
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<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
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<td>Rinse volume filtered, ml</td>
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<td>0.01</td>
<td>3.0</td>
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<td>Effective filter area, mm²</td>
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<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
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<tr>
<td>Grid opening area, mm²</td>
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<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
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<td>4</td>
<td>10</td>
<td>10</td>
<td>10</td>
<td>4</td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
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<td>0</td>
<td>0</td>
<td>12</td>
<td>7</td>
<td>6</td>
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<tr>
<td>No. asbestos str, &gt;5μm long</td>
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<td>0</td>
<td>0</td>
<td>2</td>
<td>2</td>
<td>0</td>
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<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>990</td>
<td>830</td>
<td>9,900</td>
<td>99,000</td>
<td>99,000</td>
<td>830</td>
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<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>3,000</td>
<td>2,500</td>
<td>30,000</td>
<td>300,000</td>
<td>300,000</td>
<td>2,500</td>
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<tr>
<td>Asbestos concentration, structures/cm², total</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>1,200,000</td>
<td>690,000</td>
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<tr>
<td>structures/cm², &gt;5μm long</td>
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<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
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Asbestos Types Detected**
- CH: chrysotile
- AM: amosite
- CR: crocidolite
- AC: actinolite
- TR: tremolite
- AN: anthophyllite

ND: Not Detected

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.
n/a: not analyzed

Mark Floyd, Analytical Microscopy Supervisor

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3777 Depot Road, Suite 409, Hayward, California 94545 ● Telephone: 510-887-8828 ● www.falaboratories.com
# ANALYSIS REPORT

## ASBESTOS IN DUST (MICROVACS)

**Transmission Electron Microscopy***

<table>
<thead>
<tr>
<th>Client:</th>
<th>Forensic Analytical Consulting Svcs</th>
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<tbody>
<tr>
<td>Contact:</td>
<td>David Justin Brinkerhoff</td>
</tr>
<tr>
<td>Address:</td>
<td>7625 Sunrise Blvd, Suite 104, Citrus Heights CA 95610</td>
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<tr>
<td>Client Number:</td>
<td>SAC02</td>
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<td>Date Received:</td>
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<td>PJ29642</td>
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<td>10/10-14/16</td>
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<td>9/23/16</td>
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<td>Date Reported:</td>
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### ANALYTICAL PARAMETERS AND RESULTS

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<tr>
<td>Rinse volume filtered, ml</td>
<td>0.0</td>
<td>3.0</td>
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<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>10</td>
<td>4</td>
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<tr>
<td>No. asbestos structures, total</td>
<td>11</td>
<td>0</td>
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<td>No. asbestos str, &gt;5μm long</td>
<td>2</td>
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<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>99,000</td>
<td>&lt;LOD</td>
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<td>Limit of detection (LOD)*, str/cm²</td>
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<td>&lt;LOD</td>
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<td>Asbestos concentration, structures/cm², total</td>
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<td>&lt;LOD</td>
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<td>Asbestos concentration, structures/cm², &gt;5μm long</td>
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<td>&lt;LOD</td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
<td>CH</td>
<td>n/a</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.

** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

n/a: not analyzed

Field blank samples are not routinely analyzed if any sample in the set has no asbestos detected. When analyzed, blanks report only the identification and number of asbestos structures counted. Sample results are not blank-corrected.

3777 Depot Road, Suite 409, Hayward, California 94545 • Telephone: 510-887-8828 • www.falaboratories.com
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
<th>Component</th>
<th>Area</th>
<th>Result</th>
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</thead>
<tbody>
<tr>
<td>29642-101C</td>
<td>Person Theatre, Fire &amp; Mechanical Room</td>
<td>Top of network box</td>
<td>100 cm²</td>
<td></td>
</tr>
<tr>
<td>-102C</td>
<td>Person Theatre, Make-up Room</td>
<td>Top of shelf</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-103C</td>
<td>Person Theatre, Control Room 301</td>
<td>Top of duct</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-104C</td>
<td>Stevenson Hall, 3092A, Above 2.10N</td>
<td>R+ Louver</td>
<td></td>
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</tr>
<tr>
<td>-105C</td>
<td>Stevenson Hall, 3082, N.E</td>
<td>Top of light fixture</td>
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<td>-106C</td>
<td>Stevenson Hall, 3054</td>
<td>Top of light fixture</td>
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<td>-107C</td>
<td>Stevenson Hall, 3058</td>
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<td>-108C</td>
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</table>
ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104
          Citrus Heights CA  95610

Client Number: SAC02
Report Number: T027893
Date Received: 9/27/16

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date Analyzed: 9/29/16-10/3/16
Date collected: 9/26/16
Date Reported: 10/3/16

Analyst(s): SM, MZ

SAMPLE PREPARATION AND ANALYSIS:

Each microvac cassette was triple-rinsed with particle-free water, and the resulting suspensions were sonicated for 15 min. Aliquots were then vacuum-filtered through 0.2 micron pore-sized mixed cellulose ester (MCE) filters. After air-drying, quarter-sections of the filters were collapsed, etched, evaporatively coated with carbon, and mounted on TEM grids in a modified Jaffe wick apparatus with DMF. Properly loaded grids were analyzed in a Philips CM12 TEM at ~19,000x magnification, using morphology, SAED and EDX for asbestos structure identification.

<table>
<thead>
<tr>
<th>Client Sample Number</th>
<th>29642-109A</th>
<th>29642-110A</th>
<th>29642-111A</th>
<th>29642-112A</th>
<th>29642-113A</th>
<th>29642-114A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Sample Number</td>
<td>20112416</td>
<td>20112417</td>
<td>20112418</td>
<td>20112419</td>
<td>20112420</td>
<td>20112421</td>
</tr>
<tr>
<td>Area sampled, cm²</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
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<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>0.1</td>
<td>0.1</td>
<td>3.0</td>
<td>3.0</td>
<td>0.10</td>
<td>0.1</td>
</tr>
<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
<td>9</td>
<td>4</td>
<td>10</td>
<td>0</td>
<td>53</td>
<td>4</td>
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<tr>
<td>No. asbestos str, &gt;5μm long</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>0</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>9,900</td>
<td>9,900</td>
<td>830</td>
<td>830</td>
<td>50,000</td>
<td>9,900</td>
</tr>
<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>30,000</td>
<td>30,000</td>
<td>2,500</td>
<td>2,500</td>
<td>150,000</td>
<td>30,000</td>
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<td>Asbestos concentration, structures/cm², total</td>
<td>89,000</td>
<td>40,000</td>
<td>8,300</td>
<td>&lt;LOD</td>
<td>2,700,000</td>
<td>40,000</td>
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<tr>
<td>structures/cm², &gt;5μm long</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
<td>CH</td>
<td>CH</td>
<td>CH</td>
<td>ND</td>
<td>CH</td>
<td>CH</td>
</tr>
</tbody>
</table>

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* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.
n/a: not analyzed

Mark Floyd, Analytical Microscopy Supervisor

3777 Depot Road, Suite 409, Hayward, California  94545 ● Telephone: 510-887-8828 ● www.falaboratories.com
ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104
Citrus Heights CA 95610

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date collected: 9/23/16

ANALYTICAL PARAMETERS AND RESULTS

<table>
<thead>
<tr>
<th>Client Sample Number</th>
<th>29642-29642-115A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Sample Number</td>
<td>20112422</td>
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<tr>
<td>Area sampled, cm²</td>
<td>0</td>
</tr>
<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>3.0</td>
</tr>
<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>4</td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
<td>0</td>
</tr>
<tr>
<td>No. asbestos str, &gt;5μm long</td>
<td>0</td>
</tr>
<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>#DIV/0!</td>
</tr>
<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>#DIV/0!</td>
</tr>
<tr>
<td>Asbestos concentration, structures/cm², total</td>
<td>&lt;LOD</td>
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<tr>
<td>structures/cm², &gt;5μm long</td>
<td>&lt;LOD</td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
<td>ND</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

Field blank samples are not routinely analyzed if any sample in the set has no asbestos detected. When analyzed, blanks report only the identification and number of asbestos structures counted. Sample results are not blank-corrected.

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<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
<th>Component</th>
<th>Area</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-109A</td>
<td>Stevenson Hall 2061, Above ceiling</td>
<td>Return Air Louver</td>
<td>100 cm²</td>
<td></td>
</tr>
<tr>
<td>-110A</td>
<td>Stevenson Hall 2061, Above ceiling, Center of Room, South side</td>
<td>Top of light fixture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-111A</td>
<td>Stevenson Hall 2061, South side</td>
<td>Top of brown cabinet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-112A</td>
<td>Stevenson Hall 2061, NW corner</td>
<td>Top of Oven (150 °C 500°C)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-113A</td>
<td>Stevenson Hall Corridor at above Rm 2021, ceiling</td>
<td>Top of light fixture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-114A</td>
<td>Exterior, North side, East end</td>
<td>3rd Fl. Ledge below Roof overhang</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-115A</td>
<td>Field Blank</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
SAMPLE PREPARATION AND ANALYSIS:

Each microvac cassette was triple-rinsed with particle-free water; and the resulting suspensions were sonicated for 15 min. Aliquots were then vacuum-filtered through 0.2 micron pore-sized mixed cellulose ester (MCE) filters. After air-drying, quarter-sections of the filters were collapsed, etched, evaporatively coated with carbon, and mounted on TEM grids in a modified Jaffe wick apparatus with DMF. Properly loaded grids were analyzed in a Philips CM12 TEM at ~19,000x magnification, using morphology, SAED and EDX for asbestos structure identification.

<table>
<thead>
<tr>
<th>Client Sample Number</th>
<th>29642-109B</th>
<th>29642-110B</th>
<th>29642-111B</th>
<th>29642-112B</th>
<th>29642-113B</th>
<th>29642-114B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lab Sample Number</td>
<td>20112423</td>
<td>20112424</td>
<td>20112425</td>
<td>20112426</td>
<td>20112427</td>
<td>20112428</td>
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<td>Area sampled, cm²</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>0.01</td>
<td>1.0</td>
<td>3.0</td>
<td>3.0</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
<td>2</td>
<td>17</td>
<td>12</td>
<td>0</td>
<td>11</td>
<td>3</td>
</tr>
<tr>
<td>No. asbestos str, &gt;5µm long</td>
<td>0</td>
<td>1</td>
<td>3</td>
<td>0</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>99,000</td>
<td>990</td>
<td>830</td>
<td>830</td>
<td>10,000</td>
<td>9,900</td>
</tr>
<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>297,000</td>
<td>3,000</td>
<td>2,500</td>
<td>2,500</td>
<td>30,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

Asbestos Type(s) Detected**

CH: chrysotile; AM: amosite; CR: crocidolite; AC: actinolite; TR: tremolite; AN: anthophyllite; ND: none detected.

n/a: not analyzed

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

Mark Floyd, Analytical Microscopy Supervisor

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ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104
Citrus Heights CA 95610

Client Number: SAC02
Report Number: T027894
Date Received: 9/27/16

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date collected: 9/26/16

Analyst(s): MZ, SM
Date Analyzed: 10/24-25/16
Date Reported: 10/26/16

ANALYTICAL PARAMETERS AND RESULTS

<table>
<thead>
<tr>
<th>Client Sample Number</th>
<th>Lab Sample Number</th>
<th>Area sampled, cm²</th>
<th>Total rinse volume, ml</th>
<th>Rinse volume filtered, ml</th>
<th>Effective filter area, mm²</th>
<th>Grid opening area, mm²</th>
<th>No. grids openings analyzed</th>
<th>No. asbestos structures, total</th>
<th>No. asbestos str, &gt;5µm long</th>
<th>Analytical sensitivity (AS), str/cm²</th>
<th>Limit of detection (LOD)*, str/cm²²</th>
<th>Asbestos concentration, structures/cm², total</th>
<th>Asbestos concentration, structures/cm², &gt;5µm long</th>
<th>Asbestos Type(s) Detected**</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-115B</td>
<td>20112429</td>
<td>100</td>
<td>0</td>
<td>3.0</td>
<td>190</td>
<td>0.0086</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>ND</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

n/a: not analyzed, NA=not applicable

Field blank samples are not routinely analyzed if any sample in the set has no asbestos detected. When analyzed, blanks report only the identification and number of asbestos structures counted. Sample results are not blank-corrected.

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<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
<th>Component</th>
<th>Area</th>
<th>Result</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-109B</td>
<td>Stevenson Hall 2061, Above ceiling</td>
<td>Return Air Louver</td>
<td>Lab Cont</td>
<td></td>
</tr>
<tr>
<td>-110B</td>
<td>Stevenson Hall 2061, Above ceiling, center of room, South side</td>
<td>Top of light fixture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-111B</td>
<td>Stevenson Hall 2061, South side</td>
<td>Top of brown cabinet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-112B</td>
<td>Stevenson Hall 2061, NW corner</td>
<td>Top of ODB (ISO Temp 500)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-113B</td>
<td>Stevenson Hall corridor at RM 2021, above ceiling</td>
<td>Top of light fixture</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-114B</td>
<td>Exterior, North side, East end</td>
<td>3rd floor ledge below roof</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-444B</td>
<td>Field Blank</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>-115B</td>
<td>Field Blank</td>
<td></td>
<td></td>
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</table>
SAMPLE PREPARATION AND ANALYSIS:

Each microvac cassette was triple-rinsed with particle-free water; and the resulting suspensions were sonicated for 15 min. Aliquots were then vacuum-filtered through 0.2 micron pore-sized mixed cellulose ester (MCE) filters. After air-drying, quarter-sections of the filters were collapsed, etched, evaporatively coated with carbon, and mounted on TEM grids in a modified Jaffe wick apparatus with DMF. Properly loaded grids were analyzed in a Philips CM12 TEM at ~19,000x magnification, using morphology, SAED and EDX for asbestos structure identification.

### ANALYTICAL PARAMETERS AND RESULTS

<table>
<thead>
<tr>
<th></th>
<th>29642-</th>
<th>29642-</th>
<th>29642-</th>
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<td>Area sampled, cm²</td>
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<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Total rinse volume, ml</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
<td>45</td>
</tr>
<tr>
<td>Rinse volume filtered, ml</td>
<td>0.1</td>
<td>1.0</td>
<td>3.0</td>
<td>3.0</td>
<td>0.1</td>
<td>0.1</td>
</tr>
<tr>
<td>Effective filter area, mm²</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
<td>190</td>
</tr>
<tr>
<td>Grid opening area, mm²</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
<td>0.0086</td>
</tr>
<tr>
<td>No. grids openings analyzed</td>
<td>10</td>
<td>10</td>
<td>4</td>
<td>4</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>No. asbestos structures, total</td>
<td>17</td>
<td>10</td>
<td>1</td>
<td>0</td>
<td>13</td>
<td>4</td>
</tr>
<tr>
<td>No. asbestos str, &gt;5µm long</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Analytical sensitivity (AS), str/cm²</td>
<td>10,000</td>
<td>990</td>
<td>830</td>
<td>830</td>
<td>10,000</td>
<td>9,900</td>
</tr>
<tr>
<td>Limit of detection (LOD)*, str/cm²</td>
<td>30,000</td>
<td>3,000</td>
<td>2,500</td>
<td>2,500</td>
<td>30,000</td>
<td>30,000</td>
</tr>
</tbody>
</table>

** Asbestos concentration, structures/cm², total

<table>
<thead>
<tr>
<th></th>
<th>170,000</th>
<th>10,000</th>
<th>&lt;LOD</th>
<th>&lt;LOD</th>
<th>130,000</th>
<th>39,600</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;LOD</td>
<td>3,000</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
<td>&lt;LOD</td>
</tr>
<tr>
<td>Asbestos Type(s) Detected**</td>
<td>CH,TR,AC</td>
<td>CH</td>
<td>CH</td>
<td>ND</td>
<td>CH</td>
<td>CH,AC</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.

n/a: not analyzed
ANALYSIS REPORT
ASBESTOS IN DUST (MICROVACS)
Transmission Electron Microscopy*

Client: Forensic Analytical Consulting Svcs
Contact: David Justin Brinkerhoff
Address: 7625 Sunrise Blvd, Suite 104
Citrus Heights CA  95610

Site: Sonoma State Univ, 1801 E Cotati Ave, Rohnert Park
Project: PJ29642
Date collected: 9/26/16

<table>
<thead>
<tr>
<th>Client Sample Number</th>
<th>Lab Sample Number</th>
<th>Area sampled, cm²</th>
<th>Total rinse volume, ml</th>
<th>Rinse volume filtered, ml</th>
<th>Effective filter area, mm²</th>
<th>Grid opening area, mm²</th>
<th>No. grids openings analyzed</th>
<th>No. asbestos structures, total</th>
<th>No. asbestos str, &gt;5µm long</th>
<th>Analytical sensitivity (AS), str/cm²</th>
<th>Limit of detection (LOD)*, str/cm²</th>
<th>Asbestos concentration, structures/cm², total</th>
<th>Asbestos concentration, structures/cm², &gt;5µm long</th>
<th>Asbestos Type(s) Detected**</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-</td>
<td>20112436</td>
<td>100</td>
<td>0</td>
<td>3.0</td>
<td>190</td>
<td>0.0086</td>
<td>10</td>
<td>0</td>
<td>0</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>NA</td>
<td>ND</td>
</tr>
</tbody>
</table>

* ASTM Method D5755. AS & LOD are the results calculated when the number of asbestos structures counted are 1 & 3, respectively.
** Asbestos types: CH=chrysotile; AM=amosite; CR=crocidolite; AC=actinolite; TR=tremolite; AN=anthophyllite; ND=none detected.
n/a: not analyzed, NA=not applicable
Field blank samples are not routinely analyzed if any sample in the set has no asbestos detected. When analyzed, blanks report only the identification and number of asbestos structures counted. Sample results are not blank-corrected.

3777 Depot Road, Suite 409, Hayward, California 94545  ●  Telephone: 510-887-8828  ●  www.falaboratories.com
## Sample Request Form

**Client:** SAC02 FACS Sacramento  
Sonoma State University  
**Contact:** David Justin Brinkerhoff  
Phone: (916) 726-1303  
**Site:** Sonoma State University  
1801 E. Cotati Avenue  
**Client No.:** C17451  
**Job #:** PJ29642  
**Sample Number** | **Sample Location** | **Component** | **Area** | **Result**  
--- | --- | --- | --- | ---  
29642-109c | Stevenson Hall, 2061, Above Ceiling | Return Air Louver | 100 cm² |  
-110c | Stevenson Hall, 2061 Above Ceiling Center of Room South Side | Top of Light Fixture |  |  
-111c | Stevenson Hall, 2061, South Side | Top of Brown Paint |  |  
-112c | Stevenson Hall, 2061, NW Corner | Top of Oven (ISO Test 500) |  |  
-113c | Stevenson Hall, corridor at Rm 2021, above ceiling | Top of Light Fixture |  |  
-114c | Exterior, North Side, East End | 3rd Floor Entry Below Roof overhang |  |  
-115c | Field Blank |  |  |  

**Shipped via:**  
- [ ] Fed Ex  
- [ ] Airborne  
- [ ] UPS  
- [ ] US Mail  
- [ ] Courier  
- [ ] Drop Off  
- [ ] Other  

**Received by:**  
Date & Time:  

**Date & Time:**  
Condition Acceptable  
- [ ] Yes  
- [ ] No  

**Relinquished by:**  
Date & Time:  

**Relinquished by:**  
Date & Time:  
Condition Acceptable  
- [ ] Yes  
- [ ] No
# SAMPLE REQUEST FORM

**Client:** SAC02 FACS Sacramento  
Sonoma State University  

**Contact:** David Justin Brinkerhoff  
Phone: (916) 726-1303  

**Site:** Sonoma State University  
1801 E. Cotati Avenue  

**Client No.:** C17451  
**Job #:** PJ29642  

**Sample Number** | **Sample Location** | **Component** | **Area** | **Result**  
--- | --- | --- | --- | ---  
29642-01A | Person Theatre, Ext. Mechanical Room, Top of network box | | |  
-01B | | | |  
-02A | Stevenson Hall, 3092A, Above ceiling | | |  
-02B | | | |  
-03A | Stevenson Hall, 3082, NE | | Top of light fixture |  
-03B | | | |  
-04A | Stevenson Hall, 3059 | | Top of light fixture, difficult to clean areas |  
-04B | | | |  
-05A | Stevenson Hall, 3008 | | Top of light fixture |  
-05B | | | |  

**Due Date and Time:**  

**Analysis:**  
- ASTM 5755  
- Other: Forlovy Wayne - Special PID Project  

**Shipped via:**  
- Fed Ex  
- Airborne  
- UPS  
- US Mail  
- Courier  
- Drop Off  
- Other:  

**Received by:**  

**Condition Acceptable:**  
- Yes  
- No  

**Date & Time:** 9/23/16
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Sample Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006-06A</td>
<td>Return A1 lower</td>
</tr>
<tr>
<td>-06B</td>
<td></td>
</tr>
<tr>
<td>-07A</td>
<td>Top of light fixture</td>
</tr>
<tr>
<td>-07B</td>
<td></td>
</tr>
<tr>
<td>-08A</td>
<td>Top of brown cabinet</td>
</tr>
<tr>
<td>-08B</td>
<td></td>
</tr>
<tr>
<td>-09A</td>
<td>Top of light fixture</td>
</tr>
<tr>
<td>-09B</td>
<td></td>
</tr>
<tr>
<td>-10A</td>
<td></td>
</tr>
<tr>
<td>-10B</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- Last name of Proper name: Brinkerhoff
- Processed by: -
- Received by: -
- Shipped var: -
- Drop Off: -
- Reinstated by: -
- Date & Time: SEP 7 2015
### SAMPLE REQUEST FORM

| Client | SAC02 FACS Sacramento  
Sonoma State University |
|--------|-------------------------|
| Contact | David Justin Brinkerhoff  
Phone: (916) 726-1303 |
| Site | Sonoma State University  
1801 E. Cotati Avenue |
| Client No. | C17451 FACS  
Job #: PJ29642 |
| Sample Number | Sample Location | Component | Area | Result |
| 29642-11A | Stevenson Hall, Exterior, North Side East and 3rd Floor Lobby below Roof overhead | | | |
| -11B | "" | "" | "" | "" |

**Analysis:**  
- ASTM 5755  
- Other: ""For Larry Wayne - Special PID Project"

**Shipped via:**  
- Fed Ex  
- Airborne  
- UPS  
- US Mail  
- Courier  
- Drop Off  
- Other:  

**Relinquished by:**  
- Date & Time: 9/6/16 12:00

**Received by:**  
- Date & Time: 9/6/16 00:00

**Condition Acceptable:**  
- Yes  
- No

**Date & Time:**  
- SEP 27, 2016

**Condition Acceptable:**  
- Yes  
- No
PARTICLE IDENTIFICATION ANALYSIS
by Polarized Light Microscopy (PLM)

(Asbestos by EPA 600/R-93/116)

<table>
<thead>
<tr>
<th>Description</th>
<th>Sample Media</th>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fibrous</td>
<td></td>
<td>29642-01A</td>
<td>11813468</td>
</tr>
<tr>
<td>Major</td>
<td>Cotton (a)</td>
<td>Person, Ext. Mech. Rm.top netwk bx microvac</td>
<td>29642-01B</td>
</tr>
<tr>
<td></td>
<td>Cellulose (a)</td>
<td></td>
<td>11813469</td>
</tr>
<tr>
<td>Minor</td>
<td>Cellulose</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Synthetics (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Trichomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td>Feathers</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mineral wool (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paper fibers (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asbestos</td>
<td>ND</td>
<td></td>
<td>ND</td>
</tr>
<tr>
<td>Non-Fibrous</td>
<td>Major</td>
<td>Carbonate minerals (a)</td>
<td>Epithelial cells</td>
</tr>
<tr>
<td></td>
<td>Epithelial cells</td>
<td></td>
<td>Carbonate minerals (a)</td>
</tr>
<tr>
<td>Minor</td>
<td>Clear isotropics (a)</td>
<td></td>
<td>Iron oxide (a)</td>
</tr>
<tr>
<td></td>
<td>Fungal spores</td>
<td></td>
<td>Gypsum (a)</td>
</tr>
<tr>
<td></td>
<td>Rubber (tire wear) (a)</td>
<td></td>
<td>Fungal spores</td>
</tr>
<tr>
<td></td>
<td>Quartz</td>
<td></td>
<td>Rubber (tire wear) (a)</td>
</tr>
<tr>
<td></td>
<td>Iron oxide (a)</td>
<td></td>
<td>Quartz</td>
</tr>
<tr>
<td>Trace</td>
<td>Pollen</td>
<td></td>
<td>Pollen</td>
</tr>
<tr>
<td></td>
<td>Insect parts</td>
<td></td>
<td>Insect parts</td>
</tr>
<tr>
<td></td>
<td>Spray paint (a)</td>
<td></td>
<td>Char</td>
</tr>
<tr>
<td></td>
<td>Paint chips (a)</td>
<td></td>
<td>Perlite (a)</td>
</tr>
<tr>
<td></td>
<td>Metal chips (a)</td>
<td></td>
<td>Cement dust (a)</td>
</tr>
<tr>
<td></td>
<td>Feldspars</td>
<td></td>
<td>Spray paint (a)</td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.
* Clear isotropics may be glass chips or aluminum corrosion products.
NOTE: Items followed by an (a) are anthropogenic, or man-modified
**PARTICLE IDENTIFICATION ANALYSIS**

by Polarized Light Microscopy (PLM)

(Asbestos by EPA 600/R-93/116)

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-02A</td>
<td>11813470</td>
<td>Stevenson Hall, 3092A above ceiling microvac</td>
</tr>
<tr>
<td>29642-02B</td>
<td>11813471</td>
<td>Stevenson Hall, 3092A above ceiling tapelift</td>
</tr>
</tbody>
</table>

**Fibrous**

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mineral wool (a)</td>
<td>Spider silk</td>
<td>Fungal hyphae</td>
</tr>
<tr>
<td>Cotton (a)</td>
<td>Cellulose</td>
<td>Synthetics (a)</td>
</tr>
<tr>
<td></td>
<td>Cotton (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cellulose</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonate minerals (a)</td>
<td>Perlite (a)</td>
<td>Soot (a)</td>
</tr>
<tr>
<td>Epithelial cells</td>
<td></td>
<td>Pollen</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Fungal spores</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quartz</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Flyash (a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Char (a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Spray paint (a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Paint chips (a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insect parts</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rubber (tire wear) (a)</td>
</tr>
</tbody>
</table>

**Asbestos**

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>ND</td>
<td>ND</td>
<td>ND</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Epithelial cells</td>
<td>Carbonate minerals (a)</td>
<td>Asphalt (a)</td>
</tr>
<tr>
<td>Carbonate minerals (a)</td>
<td>Perlite (a)</td>
<td>Soot (a)</td>
</tr>
<tr>
<td>Perlite (a)</td>
<td></td>
<td>Pollen</td>
</tr>
<tr>
<td>Iron oxide (a)</td>
<td></td>
<td>Fungal spores</td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.

* Clear isotropics may be glass chips or aluminum corrosion products.

NOTE: Items followed by an (a) are anthropogenic, or man-modified
## PARTICLE IDENTIFICATION ANALYSIS RESULTS

<table>
<thead>
<tr>
<th>Description</th>
<th>Sample Media</th>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Quantitation: Major: &gt;10%, minor: 1-10%, trace: &lt;1%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>29642-03A</td>
<td>11813472</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Stevenson Hall, 3082, NE microvac</td>
<td>Stevenson Hall, 3082, NE tapelift</td>
<td></td>
</tr>
<tr>
<td><strong>Fibrous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>Mineral wool (a)</td>
<td>Cellulose (a)</td>
<td>Mineral wool (a)</td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td>Cellulose</td>
<td>Cellulose (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td>Trichomes</td>
<td>Trichomes</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Synthetics (a)</td>
<td>Cotton (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feathers</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Asbestos</strong></td>
<td>ND</td>
<td>29642-03B</td>
<td>11813473</td>
<td></td>
</tr>
<tr>
<td></td>
<td>ND</td>
<td>Stevenson Hall, 3082, NE</td>
<td>Stevenson Hall, 3082, NE</td>
<td></td>
</tr>
<tr>
<td><strong>Non-Fibrous</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major</td>
<td>Carbonate minerals (a)</td>
<td>Epithelial cells</td>
<td>Carbonate minerals (a)</td>
<td>Epithelial cells</td>
</tr>
<tr>
<td>Minor</td>
<td>Paint chips (a)</td>
<td>Iron oxide (a)</td>
<td>Iron oxide (a)</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td>Spray paint (a)</td>
<td>Char (a)</td>
<td>Paint chips (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Char (a)</td>
<td>Soot (a)</td>
<td>Spray paint (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Pollen</td>
<td>Fungal spores</td>
<td>Char (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quartz</td>
<td></td>
<td>Pollen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Feldspars</td>
<td></td>
<td>Fungal spores</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rubber (tire wear) (a)</td>
<td>Pollen</td>
<td>Fungal spores</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Perlite (a)</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Starch (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Quartz</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Insect parts</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Clear isotropics may be glass chips or aluminum corrosion products.

NOTE: Items followed by an (a) are anthropogenic, or man-modified
### PARTICLE IDENTIFICATION ANALYSIS RESULTS

<table>
<thead>
<tr>
<th>Fibrous</th>
<th>Major</th>
<th>Trichomes</th>
<th>Cellulose (a)</th>
<th>Trichomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Cellulose</td>
<td>Mineral wool (a)</td>
<td>Cellulose</td>
<td>Mineral wool (a)</td>
</tr>
<tr>
<td>Trace</td>
<td>Synthetics (a)</td>
<td></td>
<td>Paper fibers (a)</td>
<td>Cotton (a)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Celulose</td>
<td>(a)</td>
</tr>
</tbody>
</table>

| Asbestos | ND | ND |

| Non-Fibrous | Major | Carbonate minerals (a) | Epithelial cells |
|            | Carbonate minerals (a) | Epithelial cells |
| Minor | Pollen | Paint chips (a) | Iron oxide (a) |
|       | Quartz | Paint chips (a) | Iron oxide (a) |
| Trace | Feldspars | Spray paint (a) | Char (a) |
|       | Soot (a) | Perlite (a) | Fungal spores |
|       | Insect parts | Metal chips (a) | Metal chips (a) |
|       | Char (a) | Soot (a) | Soot (a) |

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.

* Clear isotropics may be glass chips or aluminum corrosion products.

NOTE: Items followed by an (a) are anthropogenic, or man-modified.
# PARTICLE IDENTIFICATION ANALYSIS

by Polarized Light Microscopy (PLM)

(Asbestos by EPA 600/R-93/116)

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description:</th>
<th>Sample Media:</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-05A</td>
<td>11813476</td>
<td>Stevenson Hall, 3008</td>
<td>microvac</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>29642-05B</td>
<td>11813477</td>
<td>Stevenson Hall, 3008</td>
<td>tapelight</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fibrous</th>
<th>Major</th>
<th>Cellulose (a)</th>
<th>Cotton (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Mineral wool (a)</td>
<td>Cellulose</td>
<td>Cotton (a)</td>
</tr>
<tr>
<td>Trace</td>
<td>Synthetics (a)</td>
<td>Feathers</td>
<td>Paper fibers (a)</td>
</tr>
</tbody>
</table>

| Asbestos         | ND             | ND            |

<table>
<thead>
<tr>
<th>Non-Fibrous</th>
<th>Major</th>
<th>Carbonate minerals (a)</th>
<th>Epithelial cells</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minor</td>
<td>Paint chips (a)</td>
<td>Iron oxide (a)</td>
<td>Quartz</td>
</tr>
<tr>
<td>Trace</td>
<td>Feldspars</td>
<td>Pollen</td>
<td>Fungal spores</td>
</tr>
<tr>
<td></td>
<td>Pollen</td>
<td>Fungal spores</td>
<td>Flyash</td>
</tr>
<tr>
<td></td>
<td>Insect parts</td>
<td>Insect parts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Char (a)</td>
<td>Metal chips (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Soot (a)</td>
<td>Insect parts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paint chips (a)</td>
<td>Spray paint (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Metal chips (a)</td>
<td>Char (a)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Quartz</td>
<td>Quartz</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Mica</td>
<td>Mica</td>
<td></td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.

* Clear isotropics may be glass chips or aluminum corrosion products.

NOTE: Items followed by an (a) are anthropogenic, or man-modified
# PARTICLE IDENTIFICATION ANALYSIS

## by Polarized Light Microscopy (PLM)

(Asbestos by EPA 600/R-93/116)

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description</th>
<th>Sample Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-06A</td>
<td>11813478</td>
<td>Fibrous</td>
<td>Stevenson Hall, 2061 above ceiling microvac</td>
</tr>
<tr>
<td>29642-06B</td>
<td>11813479</td>
<td>Fibrous</td>
<td>Stevenson Hall, 2061 above ceiling tapelift</td>
</tr>
</tbody>
</table>

**Fibrous**
- **Major**
  - Cotton (a)
  - Cellulose (a)
- **Minor**
  - Cellulose
- **Trace**
  - Mammalian hair
  - Trichomes
  - Synthetics (a)

**Asbestos**
- **ND**

**Non-Fibrous**
- **Major**
  - Carbonate minerals (a)
  - Epithelial cells
- **Minor**
  - Spray paint (a)
  - Iron oxide (a)
  - Paint chips (a)
  - Quartz
  - Feldspars
- **Trace**
  - Soot (a)
  - Char (a)
  - Rubber (tire wear) (a)
  - Metal chips (a)
  - Gypsum (a)
  - Insect parts
  - Starch (a)

**Quantitation:**
- Major: >10%
- Minor: 1-10%
- Trace: <1%

* Clear isotropics may be glass chips or aluminum corrosion products.

**NOTE:** Items followed by an (a) are anthropogenic, or man-modified
## PARTICLE IDENTIFICATION ANALYSIS

by Polarized Light Microscopy (PLM)

(Asbestos by EPA 600/R-93/116)

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description</th>
<th>Sample Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-07A</td>
<td>11813480</td>
<td>Stevenson 2061 abv cl ctr, south side microvac</td>
<td></td>
</tr>
<tr>
<td>29642-07B</td>
<td>11803481</td>
<td>Stevenson 2061 abv ceilingl ctr, south side tapelift</td>
<td></td>
</tr>
</tbody>
</table>

### Fibrous

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton (a)</td>
<td>Cellulose</td>
<td>Synthetics (a)</td>
</tr>
<tr>
<td>Cellulose</td>
<td>Mineral wool (a)</td>
<td>Trichomes</td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cellulose</td>
<td>Cotton (a)</td>
<td>Cellulose (a)</td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint chips (a)</td>
<td>Iron oxide (a)</td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint chips (a)</td>
<td>Iron oxide (a)</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray paint (a)</td>
<td>Feldspars</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray paint (a)</td>
<td>Feldspars</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray paint (a)</td>
<td>Insect parts</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray paint (a)</td>
<td>Metal chips (a)</td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray paint (a)</td>
<td>Metal chips (a)</td>
<td></td>
</tr>
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</table>

### Asbestos

<table>
<thead>
<tr>
<th>ND</th>
<th>ND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonate minerals (a)</td>
<td>Carbonate minerals (a)</td>
</tr>
<tr>
<td>Epithelial cells</td>
<td>Epithelial cells</td>
</tr>
</tbody>
</table>

### Non-Fibrous

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonate minerals (a)</td>
<td>Paint chips (a)</td>
<td>Starch (a)</td>
</tr>
<tr>
<td>Epithelial cells</td>
<td>Iron oxide (a)</td>
<td>Soot (a)</td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint chips (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint chips (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint chips (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trace</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Paint chips (a)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Quantitation:

- Major: >10%
- Minor: 1-10%
- Trace: <1%

* Clear isotropics may be glass chips or aluminum corrosion products.

**NOTE:** Items followed by an (a) are anthropogenic, or man-modified
PARTICLE IDENTIFICATION ANALYSIS
by Polarized Light Microscopy (PLM)

(Asbestos by EPA 600/R-93/116)

Forensic Analytical Consulting Services, Inc.
David Brinkerhoff
7625 Sunrise Blvd., Suite 104
Citrus Heights, CA 95610

Client Number: SAC02
Report Number: P010204
Analyst: LW
Date Received: 9/27/16

Job ID: PJ29642
Job Site: Sonoma State University, Rohnert Park, CA
Date Reported: 12/19/16

PARTICLE IDENTIFICATION ANALYSIS RESULTS

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description</th>
<th>Sample Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-08A</td>
<td>11813482</td>
<td>Stevenson Hall, 2061 south side microvac</td>
<td></td>
</tr>
<tr>
<td>29642-08B</td>
<td>11813483</td>
<td>Stevenson Hall, 2061 south side tapelift</td>
<td></td>
</tr>
</tbody>
</table>

**Fibrous**

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cotton (a)</td>
<td>Mineral wool (a)</td>
<td>Cellulose (a)</td>
</tr>
<tr>
<td>Cellulose (a)</td>
<td>Synthetics (a)</td>
<td>Cotton (a)</td>
</tr>
<tr>
<td></td>
<td>Trichomes</td>
<td>Synthetics (a)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trace</th>
<th>Major</th>
<th>Non-Fibrous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose</td>
<td>Epithelial cells</td>
<td>Epithelial cells (a)</td>
</tr>
<tr>
<td>Feathers</td>
<td>Carbonate minerals (a)</td>
<td>Carbonate minerals (a)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Trace</th>
<th>Major</th>
<th>Non-Fibrous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pollen</td>
<td>Paint chips (a)</td>
<td>Iron oxide (a)</td>
</tr>
<tr>
<td>Fungal spores</td>
<td>Iron oxide (a)</td>
<td>Paint chips (a)</td>
</tr>
<tr>
<td>Metal chips (a)</td>
<td>Quartz</td>
<td></td>
</tr>
<tr>
<td>Feldspars</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spray paint (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fungal spores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perlite (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rubber (tire wear) (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gypsum (a)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Spray paint (a)</td>
<td>Insect parts</td>
</tr>
<tr>
<td></td>
<td>Metal chips (a)</td>
<td>Metal chips (a)</td>
</tr>
<tr>
<td></td>
<td>Pollen</td>
<td>Pollen</td>
</tr>
<tr>
<td></td>
<td>Fungal spores</td>
<td>Fungal spores</td>
</tr>
<tr>
<td></td>
<td>Quartz</td>
<td>Quartz</td>
</tr>
<tr>
<td></td>
<td>Mica</td>
<td>Mica</td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.

* Clear isotropics may be glass chips or aluminum corrosion products.

NOTE: Items followed by an (a) are anthropogenic, or man-modified.
## PARTY IDENTIFICATION ANALYSIS RESULTS

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>Sample Media</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fibrous</strong></td>
<td>Stevenson Hall, 2061 NW corner microvac</td>
</tr>
<tr>
<td>Major</td>
<td>Cotton (a)</td>
</tr>
<tr>
<td></td>
<td>Cellulose (a)</td>
</tr>
<tr>
<td>Minor</td>
<td>Cotton (a)</td>
</tr>
<tr>
<td></td>
<td>Cellulose (a)</td>
</tr>
<tr>
<td>Trace</td>
<td>Cellulose</td>
</tr>
<tr>
<td></td>
<td>Trichomes</td>
</tr>
<tr>
<td></td>
<td>Synthetics (a)</td>
</tr>
<tr>
<td><strong>Asbestos</strong></td>
<td>Stevenson Hall, 2061 NW corner tapelift</td>
</tr>
<tr>
<td>Major</td>
<td>ND</td>
</tr>
<tr>
<td>Minor</td>
<td>ND</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Non-Fibrous</th>
<th>Sample Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
<td>Iron oxide (a)</td>
</tr>
<tr>
<td></td>
<td>Epithelial cells</td>
</tr>
<tr>
<td>Minor</td>
<td>Gypsum (a)</td>
</tr>
<tr>
<td></td>
<td>Paint chips (a)</td>
</tr>
<tr>
<td>Trace</td>
<td>Carbonate minerals (a)</td>
</tr>
<tr>
<td></td>
<td>Quartz</td>
</tr>
<tr>
<td></td>
<td>Feldspars</td>
</tr>
<tr>
<td></td>
<td>Metal chips (a)</td>
</tr>
<tr>
<td></td>
<td>Pollen</td>
</tr>
<tr>
<td></td>
<td>Fungal spores</td>
</tr>
<tr>
<td></td>
<td>Char (a)</td>
</tr>
<tr>
<td></td>
<td>Soot (a)</td>
</tr>
<tr>
<td></td>
<td>Starch (a)</td>
</tr>
<tr>
<td></td>
<td>Mica</td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.  
* Clear isotropics may be glass chips or aluminum corrosion products.  
NOTE: Items followed by an (a) are anthropogenic, or man-modified
## PARTICLE IDENTIFICATION ANALYSIS RESULTS

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description: Sample Media:</th>
<th>Ref. Sample No.</th>
<th>Date:</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-10A</td>
<td>11813486</td>
<td>Stevenson Hall, corr. at 2021 abv ceil. microvac</td>
<td>29642-10B</td>
<td>11813487 Stevenson Hall, corridor at 2021 above ceiling tapelift</td>
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</table>

### Fibrous

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose (a)</td>
<td>Cellulose</td>
<td>Mammalian hair</td>
</tr>
<tr>
<td>Cotton (a)</td>
<td>Mineral wool</td>
<td>Synthetics</td>
</tr>
<tr>
<td></td>
<td>(a)</td>
<td>Trichomes</td>
</tr>
</tbody>
</table>

### Asbestos

<table>
<thead>
<tr>
<th>ND</th>
<th>ND</th>
</tr>
</thead>
</table>

### Non-Fibrous

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbonate minerals (a)</td>
<td>Paint chips (a)</td>
<td>Pollen</td>
</tr>
<tr>
<td>Epithelial cells</td>
<td>Spray paint (a)</td>
<td>Fungal spores</td>
</tr>
<tr>
<td></td>
<td>Metal chips (a)</td>
<td>Gypsum (a)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Gypsum (a)</th>
<th>Rubber (tire wear) (a)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Soot (a)</td>
<td>Starch (a)</td>
</tr>
<tr>
<td>Quartz</td>
<td>Metal chips (a)</td>
</tr>
<tr>
<td>Mica</td>
<td>Mica</td>
</tr>
<tr>
<td>Starch (a)</td>
<td>Pollen</td>
</tr>
<tr>
<td>Soot (a)</td>
<td>Fungal spores</td>
</tr>
<tr>
<td>Char (a)</td>
<td>Insect parts</td>
</tr>
<tr>
<td>Rubber (tire wear) (a)</td>
<td></td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.

* Clear isotropics may be glass chips or aluminum corrosion products.

**NOTE:** Items followed by an (a) are anthropogenic, or man-modified
### PARTICLE IDENTIFICATION ANALYSIS RESULTS

<table>
<thead>
<tr>
<th>Client Sample No.</th>
<th>Lab Sample No.</th>
<th>Description</th>
<th>Sample Media</th>
</tr>
</thead>
<tbody>
<tr>
<td>29642-11A</td>
<td>11813488</td>
<td>Stevenson Hall, ext., N. side E. end</td>
<td>microvac</td>
</tr>
<tr>
<td>29642-11B</td>
<td>11813489</td>
<td>Stevenson Hall, ext., N. side E. end</td>
<td>tapelift</td>
</tr>
</tbody>
</table>

#### Fibrous

<table>
<thead>
<tr>
<th>Major</th>
<th>Minor</th>
<th>Trace</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cellulose</td>
<td>Trichomes</td>
<td>Trichomes, Cellulose (a)</td>
</tr>
</tbody>
</table>

#### Asbestos

<table>
<thead>
<tr>
<th>Non-Fibrous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Major</td>
</tr>
<tr>
<td>Carbonate minerals (a)</td>
</tr>
<tr>
<td>Paint chips (a)</td>
</tr>
<tr>
<td>Iron oxide (a)</td>
</tr>
<tr>
<td>Carbonate minerals (a)</td>
</tr>
<tr>
<td>Paint chips (a)</td>
</tr>
<tr>
<td>Iron oxide (a)</td>
</tr>
</tbody>
</table>

Quantitation: Major: >10%, minor: 1-10%, trace: <1%.

* Clear isotropics may be glass chips or aluminum corrosion products.

NOTE: Items followed by an (a) are anthropogenic, or man-modified.
Material received: Eleven (11) samples of debris from various locations, each consisting of a matched area microvac and tape lift sample. The samples were received sealed and in good condition.

Purpose of Examination: Characterize and identify components of the samples. Further characterize the provenance of the components of the samples as being consistent with interior or exterior environments.

Examination of Material: The samples were examined by polarized light microscopy using a specially modified Olympus BX51 polarized light microscope.

Results/Conclusions: Sample 29642-01 was collected at the Person Theater, exterior Mechanical room, top of Network box. The sample is consistent with expected particle populations of building area in a semi-industrial location. Much of the material is anthropogenic (man-modified), primarily including three basic categories: textile fibers, epithelial (skin) cells and building components (including mineral wool, gypsum, carbonate minerals, etc.). These classes of materials were all found on sample 29642-01 and serve as a control sample for comparison.

Samples 29642-02 thru 29642-11 consists of samples collected at various locations in Stevenson Hall. Again, the samples show the same basic categories as listed in the previous paragraph indicating a human presence in a slightly industrial environment, but there are slight changes from the control. There is an increased level of mineral wool and sometimes perlite throughout the samples. This is an indication of the samples being collected somewhere in the vicinity of ceiling tiles, as mineral wool and perlite are major components of many ceiling tiles. A worker safety concern is the distribution of mineral wool (commonly known as fiberglass) which may cause some contact dermatitis, but can be easily protected against by proper personal protective equipment (PPE).

The presence of several materials in the samples indicates that outside air is migrating into indoor areas. Two main particle types indicating migration from exterior to interior are trichomes and rubber particles. Trichomes are also known as stellate seed hairs and occur naturally on most leafy plants, which shed them easily. The rubber particles detected are anthropogenic in origin and are determined to be automobile tire wear. This is surprisingly common in human occupied locations with paved roads and high automobile traffic.

Much of the detected material has its origins in the human population within the building. Textile fibers, almost entirely cellulose-based and including what is reported as Cellulose (a) and Cotton (a) are from the sloughing of fibers from clothing items worn by persons in the building. Epithelial cells are dead skin which is constantly sloughed by humans and is nearly always found in great abundance in areas of human activity.
Results/Conclusions (continued): The third type of particulate found is building materials or construction debris. This material may have been deposited at any time since the last time the area was cleaned. This can even extend back to the initial construction of the building. In this set of samples, the primary component detected is carbonate minerals, also known as calcium carbonate or limestone. It is one of the commonest building components in the human world, and finding high concentrations is an expected result especially above ceiling tiles, where calcium carbonate is a very common component.

Other materials that indicate construction include (but are not limited to): gypsum, paint chips, metal chips and spray paint.

The specific combination of particle types found in the samples taken in Stevenson Hall are indicative of ceiling areas above ceiling tiles, where construction materials, anthropogenic cellulose fibers, epithelial cells and plant materials would combine into a specific particle population. Sampling of different areas of the building has shown a remarkable uniformity to the particle populations from separate areas and while there is some variation, it is within expected norms.

In addition to examination to determine the components of the samples, it was also requested that the samples be examined for the presence of asbestiform minerals. This testing was performed in accordance with EPA protocols for the testing of asbestos. Using EPA Method 600/R-93/116, no asbestos was detected on any submitted microvac or tapelift sample. This statement must come with the caveat that this indicates only that any asbestos is below the limit of detection for the method, not a statement of the absolute absence of the material.
Appendix C
Sample Location Drawings
10/01/4

Persian Theatre

- Built in 1989
- No known plans
- Some operable windows

301
Upper Level

Mech.