



Healthy Home Package:

Asbestos & Mould Sampling Report

Client's Address
Toronto, ON
Postal Code

Prepared for: Client's Name

Prepared by: Lilja Palsson, B.Sc., Dip. Eng., CRSP

Date of Report

Project Number: ####

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1.0 Introduction

Mould and Asbestos Sampling was conducted in the home located at Client's Address, Toronto, ON by LEAP Management Inc. on Inspection Date.

The Mould Sampling was performed to determine the presence of mould growth, whether it is impacting the air quality of the home and to create a scope of work for the proper removal and disposal of mould-contaminated materials. The scope of work included a detailed visual inspection including moisture readings and the collection of two (2) indoor air samples and one (1) outdoor reference sample for mould.

Sampling of materials suspected to contain asbestos was conducted to determine whether the building materials are asbestos-containing and to create a scope of work for the proper removal of any asbestos-containing materials identified following Ontario Regulation 278/05 "Asbestos on Construction Projects and in Buildings and Repair Operations".

The following report summarizes the results of the investigation.

1.1 About Asbestos

Asbestos is a general term for fibrous silicates that are used in a wide variety of building materials. There are several types of asbestos found in building materials, the most common type is chrysotile asbestos.

Asbestos products can be categorized as friable and non-friable; friable asbestos products can be pulverized with hand pressure, releasing fibers into the air, while non-friable asbestos products contain asbestos fibers that are locked into the product matrix and cannot easily release asbestos fibers.

Asbestos is considered a hazardous material because when the fibrous bundles within an asbestos product become disturbed, the strands break down into smaller and thinner microscopic fibers that can become airborne. These fibers, when inhaled by the lungs, are able to get passed the lungs respiratory defenses and become lodged in the lungs, causing lung cancers such as asbestosis and mesothelioma.

In Ontario, a product is considered to be asbestos-containing if it contains greater than 0.5% asbestos by dry weight. This is determined through sampling. Table 1 in Ontario Regulation 278/05 "Asbestos on Construction Projects and in Buildings and Repair Operations" (O. Reg. 278/05) outlines the proper methodology to follow when collecting asbestos samples and requires

that asbestos samples be analyzed following Test Method EPA/600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials (PLM analysis) by an accredited laboratory.

When a material is found to contain asbestos and requires removal, O. Reg. 278/05 outlines proper removal procedures and safety requirements to ensure the safe removal and disposal of asbestos-containing products.

1.2 About Mould

Mould or fungi is a natural part of the outdoor and indoor environment. Mould is usually found in the indoor environment at levels that do not affect healthy individuals.

Mould requires three things to grow:

1. Nutrients - organic matter such as cellulose-based materials (wood, paper)
2. Moisture - a source of water is required for growth
3. Time - mould requires 24-48 hours to grow when a nutrient and moisture source is present.

Mould produces spores, which they release into the air. When the spores land on a surface where moisture is present, they sporulate and begin to grow. Mould growth in the indoor environment is associated with flooding and high humidity, causing high moisture on building materials such as drywall. Mould growth caused by high humidity occurs in air tight homes in the summer months when humidity is trapped inside the home and condensation occurs on building materials and in drafty homes in the winter months when warm air escapes into unheated spaces and condenses. The best way to avoid mould growth is to eliminate the source of moisture and to keep the structure well sealed in the winter months and properly ventilated in the summer months.

Some moulds are toxic to humans such as *Stachybotrys* sp., as they produce mycotoxins, which can cause allergic reactions in some individuals. Symptoms such as headaches, itchiness, coughing, watery eyes, sneezing, respiratory difficulty, fatigue and nasal congestion. In immunocompromised individuals, exposure to mould can cause infections that are often fatal.

There are several guidelines that offer instruction on how to conduct a mould assessment and remediate areas of mould growth in Ontario. The following guidelines were used to conduct this assessment:

- The Canadian Construction Association's (CCA) "Mould Guidelines for the Construction Industry" CCA-82-2004
- The Environmental Abatement Council of Ontario (EACO) "Mould Abatement Guidelines", 2004.

2.0 Results of the Sampling

2.1 Asbestos

Nine (9) samples were collected for asbestos type and content and submitted to EMC Scientific Inc. for PLM Analysis. The following table summarizes the results. The certificate of analysis is included in Attachment 1.

Sample No.	Sample Location	Sample Description	Asbestos Content
ASB-01A	Basement Laundry Room	Vinyl sheet flooring	none detected
ASB-01B	Basement Laundry Room	Vinyl sheet flooring	none detected
ASB-01C	Basement Laundry Room	Vinyl sheet flooring	none detected
ASB-02A	Closet under the Stairs	Drywall joint compound	1% Chrysotile
ASB-02B	First Floor Hall	Drywall joint compound	stop positive (not analyzed)
ASB-02C	Second Floor Hall	Drywall joint compound	stop positive (not analyzed)
ASB-03A	Living Room	Popcorn ceiling	5% Chrysotile
ASB-03B	Living Room	Popcorn ceiling	stop positive (not analyzed)
ASB-03C	Living Room	Popcorn ceiling	stop positive (not analyzed)

**Note: One (1) positive sample for asbestos is required to determine whether a material is considered an "asbestos-containing building material", while a minimum of three (3) negative samples are required to deem a building material negative for asbestos.*

2.2 Mould

2.2.1 Visual Observations

The following table summarizes the visual observations made throughout the home. Please refer to Attachment 2 for Selected Photographs.

Location	Observations
Basement	Relative humidity and moisture readings noted. Visual observations of mould growth and/or asbestos-containing materials noted. Signs of water damage noted.
First Floor Living/Dining Room	
Second Floor	

Location	Observations
Attic	

2.2.2 Air Sampling for Mould

The non-viable airborne mould concentration was determined by collecting air samples using a Quick Take 15 Pump coupled with air-o-cell cassettes. The pump was calibrated to 15 liters per minute and sampled for 5 minutes to collect 75 liters of air. The cassettes were sent to Sporometrics Inc., AIHA accredited laboratory, and analyzed using the Spore Trap Analysis (STA) method. STA method determines the total fungal spore count and identifies the genera of fungal spores within the sample. The objective of this type of sampling is to identify any indoor mould amplification sites.

Three (3) non-viable air samples were collected; one (1) from the Basement, one (1) from the Master Bedroom and one (1) outdoors as a reference sample. The following table summarizes the results of the air sampling conducted. Please refer to Attachment 1 for the Laboratory Analysis certificate.

Sample No.	Location/ Description	Fungal Spore Type	Concentration Spores/m ³
AOC-01	Outdoor, Main Entrance	<i>Aspergillus/Penicillium</i> Basidiospores <i>Cladosporium</i> hyphal fragments, pigmented	110 210 53 53
		Total	430
AOC-02	Basement	<i>Aspergillus/Penicillium</i> Basidiospores <i>Cladosporium</i> hyphal fragments, pigmented	87 170 87 87
		Total	440
AOC-03	Master Bedroom	<i>Aspergillus/Penicillium</i> Basidiospores	87 170
		Total	260

3.0 Discussion and Conclusions

3.1 Asbestos

3.1.1 Bulk Sampling for Asbestos

The **drywall joint compound** present on walls and ceilings throughout the home was sampled (Sample No. ASB-02A,B,C) and found to contain **1% Chrysotile asbestos by dry weight**. This material is considered to be a **non-friable asbestos-containing material in good condition**. Should this material require removal, **Type 2 Asbestos Precautions** are required in accordance with O. Reg. 278/05. As this material was found in good condition, removal is not required, as it does not pose a health hazard to the occupants of the home.

Popcorn finish applied to the ceiling of the Living Room was sampled (Sample No. ASB-03A,B,C) and was found to contain **5% Chrysotile asbestos by dry weight**. This material is considered to be a **friable asbestos-containing material in good condition**. Should this material require removal, **Type 3 Asbestos Precautions** are required in accordance with O. Reg. 278/05. Air clearance sampling in accordance with Section 18(6) is required upon completion of a Type 3 Asbestos Operation.

As the vinyl sheet flooring does not contain asbestos, asbestos precautions are not required when removing/disturbing this material.

3.2 Mould

3.2.1 Air Sampling for Mould

For an air sample to be considered “clean”, it must contain a similar fungal ecology to the outdoor reference sample in a much lower concentration. Genera such as *Stachybotrys* and *Chaetomium*, moulds often referred to as “toxic black moulds”, must be completely absent from the sample.

Sample No. AOC-02: Basement

The air sample collected from the Basement (Sample No. AOC-02) had a total concentration that was similar to the outdoor reference sample (440 spores/m³ versus 430 spores/m³ outdoors).

The sample consisted of common outdoor moulds in very low concentrations. “Toxic black moulds” were not found in the air sample. The air quality has not been impacted by mould growth.

Sample No. AOC-03: Master Bedroom

The air sample collected from the Master Bedroom (Sample No. AOC-03) had a total concentration that was less than the outdoor reference sample (260 spores/m³ versus 430 spores/m³ outdoors).

The sample consisted of common outdoor moulds in very low concentrations. "Toxic black moulds" were not detected in the air sample. The air quality has not been impacted by mould growth.

4.0 Conclusions

Asbestos-containing materials were identified in home in good condition. These materials can remain in place as long as they are not disturbed. It is our understanding that the buyer wishes to perform renovations in the Living Room and Kitchen area, as such remedial actions are required.

The air quality in the home is extremely good. No remedial actions are required.

5.0 Recommendations

1. Following **Type 3 Asbestos Precautions** as outlined in Ontario Regulation 278/05 "Asbestos on Construction Projects and in Buildings and Repair Operations" made under the Occupational Health and Safety Act, isolate the **Living Room and Kitchen (approximately 200 ft²)** and perform the following:
 - 1.1. A notice of project shall be submitted by the contractor to the Ministry of Labour prior to the commencement of the project (Section 11);
 - 1.2. Ensure that the ventilation system in the work area is shut off;
 - 1.3. Prior to beginning work, ensure that all visible dust is removed from the work area using a vacuum equipped with a HEPA filter;
 - 1.4. Construct an enclosure with a three-chamber decontamination facility consisting of a "clean room", shower room and a "dirty room" using wood or metal framing between the asbestos work area and remaining building area to support polyethylene sheeting enclosures. Free standing enclosure shall have completely sealed polyethylene top. The enclosure must be maintained and inspected at regular intervals until the completion of contaminated work (Section 18(3));
 - 1.5. Establish negative pressure in the enclosure using D.O.P. tested negative pressure units venting outdoors, maintaining a negative pressure of -0.02" of water column (measured continuously with a monometer) until the completion of contaminated work (Section 18(4));

- 1.6. Workers are required to wear a minimum air purifying full-facepiece respirator with N-100, R-100 or P-100 particulate filter as per Table 2 in O. Reg. 278/05;
- 1.7. Workers must wear protective clothing within the work area. Protective clothing must be removed when leaving the work area and shall not be reused;
- 1.8. Provide soap, water and towels for the workers to shower when exiting the enclosure;
- 1.9. All asbestos-containing materials must be wetted before and during the work to control the spread of dust and fibers. Remove the **popcorn finish (140 ft²) and drywall wall** with the use of hand tools only;
- 1.10. HEPA vacuum and wet wipe all surfaces upon the completion of the remedial work;
- 1.11. Once all asbestos-containing materials are removed and all surfaces are cleaned, apply a lockdown agent;
- 1.12. All waste must be double-bagged in pre-labelled 6 mil asbestos disposal bags. Dispose of all asbestos-containing waste at a landfill licensed to accept asbestos waste, as per Ontario Regulation 347/90 under the Environmental Protection Act;
- 1.13. When the lockdown agent has dried, Air Clearance testing by LEAP Management Inc. or another competent environmental consultant following Section 18 (6) is required prior to dismantling of the enclosure and reinstating new materials.

6.0 Limitations

This assessment and report was completed in accordance with industry accepted environmental methodologies referred to in the Occupational Health and Safety Act and contains all of the limitations inherent in these methodologies. No other warranties, expressed or implied, are made as to the professional services provided under the terms of our contract and included in this report.

The conclusions and recommendations of this assessment report are based on the conditions at the time of the investigation and partly on the concerns and information provided by the Client. All sampling results only apply to the conditions of the site at the date and time of the investigation and cannot predict future conditions. Concealed conditions may exist and may differ from the conditions encountered and inspected during the investigation. This report is intended for Client use only and LEAP Management Inc. is not responsible for third party use of this report. LEAP Management Inc. is not responsible for any damages due to decisions made based on the conclusions presented in this report.

The services performed and outlined in this report were based, in part, upon visual observations of the site and attendant structures. Our opinion cannot be extended to portions of the site that were unavailable for direct observation, beyond the control of LEAP Management Inc. The objective of this report is to assess environmental conditions of the site, within the context of our contract and existing environmental regulations within the applicable jurisdiction.

6.1 Closing

I hope this report has met your needs at this time. Please feel free to contact me for any of your environmental concerns.

Best regards,



Lilja Palsson, B.Sc., Dip. Eng., CRSP

LEAP Management Inc.

lilja@leapmgt.com

T: 647.340.7577

Attachment 1: Laboratory Analysis



Sporometrics Inc.

219 Dufferin Street, Suite 20C, Toronto, ON M6K 1Y9 - t.416-516-1660 - f.416-516-1670 - www.sporometrics.com

RESULTS OF LABORATORY ANALYSES: JOB NO. 29398.00

To:	Lilja Palsson	Date of report:	2018/02/02
Company:	Leap Management Inc.	Date of sampling:	2018/01/31
Client Project:	3389 (Stonedale)	Analyst:	Yaima Arocha-Rosete
Client Address:	252 Gladstone Ave., Toronto, ON M6J 3L6	Date Received:	2018/01/31

SPORE TRAP SAMPLE NO.: ^a	AOC-01	AOC-02	AOC-03	-	-	-
Location:	Outdoor	Basement Rec Room	Master Bedroom			
Serial #:	1878675	1878669	1878670			
Expiry date:	2018/02	2018/02	2018/02			
Volume (L):	75	75	75			
Magnification (x):	600	1000	1000			
Background (rating)^b:	3+	4+	4+			
No. of transects enumerated:	10	10	10			
FUNGAL IDENTIFICATION^c:	COMPOSITION (raw count) approx. elements / m³ ^d					
<i>Aspergillus / Penicillium</i> NOS	(2) 110	(1) 87	(1) 87			
basidiospores NOS	(4) 210	(2) 170	(2) 170			
<i>Cladosporium</i> NOS	(1) 53	(1) 87	-			
hyphal fragments, pigmented	(1) 53	(1) 87	-			
SUMMARY DATA^e:						
TOTAL (raw count)	8	5	3			
LOD (elements / m³)	53	87	87			
TOTAL (elements / m³)	430	440	260			

AIHA LAP, LLC LAB NO: 171117

Samples were received in satisfactory condition and tested in accordance with SOP 5.4.1.1.2 These results relate only to the samples tested.

^a Analysis compliant with ASTM D7391-09 *Standard Test Method for Categorization and Quantification of Airborne Fungal Structures in an Inertial Impaction Sample by Optical Microscopy*. Note that samples with excessive spore counts or background (4+ or higher) are unsuitable for ASTM compliant analysis.

^b Rating (amount of trace occluded with particulate matter): 0+ = no particulate matter detected, 1+ = >0 to approx. 5%, 2+ = approx. 5% to 25%, 3+ = approx. 25% to 75%, 4+ = approx. 75% to 90%, 5+ = >90%. Negative bias increases with increasing background rating.

^c Identification to genus level, taxonomic group or morphological category, where appropriate; NOS = Not otherwise specified.

^d Evaluated in Nomarski Differential Interference Contrast (DIC) microscopy; tr = observed outside of enumerated transects; - = not detected.

^e Total elements / m³ expressed at two significant digits; LOD = Limit of detection; NFEO = No fungal elements observed.



Sporometrics Inc.

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Client Address:	252 Gladstone Ave., Toronto, ON M6J 3L6	Date Received:	2018/01/31

END OF REPORT

Examined By



Yaima Arocha-Rosete, PhD
Analyst

Released By



Mike Saleh, MHSc
Analyst





Laboratory Analysis Report

To:

Lilja Palsson
 Leap Management Inc.
 252 Gladstone Avenue
 Toronto, Ontario
 M6J 3L6

EMC LAB REPORT NUMBER: A36979

Job/Project Name: Stonedale

Analysis Method: Polarized Light Microscopy – EPA 600

Date Received: Jan 31/18

Analyst: Philip Chung, *Analyst*

Reviewed By: Fajun Chen, Ph.D., *Laboratory Director*

Job No: 3389

Number of Samples: 9

Date Reported: Feb 2/18

Client's Sample ID	Lab Sample No.	Description/Location	Sample Appearance	SAMPLE COMPONENTS (%)		
				Asbestos Fibres	Non-asbestos Fibres	Non-fibrous Material
ASB-01A	A36979-1	BSMT laundry, VSF	Grey, vinyl sheet backing	ND	60	40
ASB-01B	A36979-2	BSMT laundry, VSF	Grey, vinyl sheet backing	ND	60	40
ASB-01C	A36979-3	BSMT laundry, VSF	Grey, vinyl sheet backing	ND	60	40
ASB-02A	A36979-4	Closet under stairs, DJC	Off-white, joint compound	Chrysotile	1	99
ASB-02B	A36979-5	1 st FL hall, DJC	NA	NA		
ASB-02C	A36979-6	2 nd FL hall, DJC	NA	NA		
ASB-03A	A36979-7	Living room, popcorn	White, texture coat	Chrysotile	5	95
ASB-03B	A36979-8	Living room, popcorn	NA	NA		
ASB-03C	A36979-9	Living room, popcorn	NA	NA		

Note:

1. Bulk samples are analyzed using Polarized Light Microscopy (PLM) and dispersion staining techniques. The analytical procedures are in accordance with EPA 600/R-93/116 method.
2. The results are only related to the samples analyzed. ND = None Detected (no asbestos fibres were observed), NA = Not Analyzed (analysis stopped due to a previous positive result).
3. This report may not be reproduced, except in full without the written approval of EMC Scientific Inc. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.
4. The Ontario Regulatory Threshold for asbestos is 0.5%. The limit of quantification (LOQ) is 0.5%.

EMC Scientific Inc. 5800 Ambler Drive • Suite 100 • Mississauga • Ontario • LAW 4J4 • T. 905 629 9247 • F. 905 629 2607
 EMC Scientific Inc. is Accredited by NVLAP (NVLAP Code 201020-0) for Bulk Asbestos Analysis

Attachment 2: Selected Photographs

Please note that the following photographs are examples of environmental issues that may be discovered during a Healthy Homes inspection.



Photo 1: Elevated moisture readings on the flooring of the Master Bedroom.

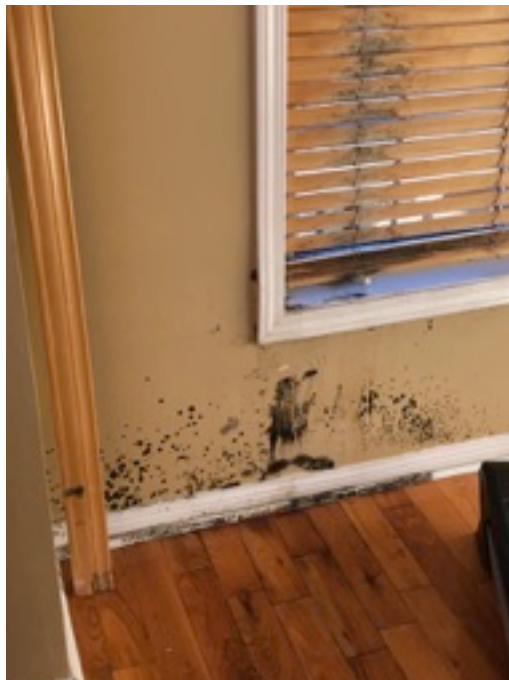


Photo 2: Heavy mould growth noted under the window of the Bedroom.



Photo 3: Mould growth noted inside the closet of Bedroom 2.

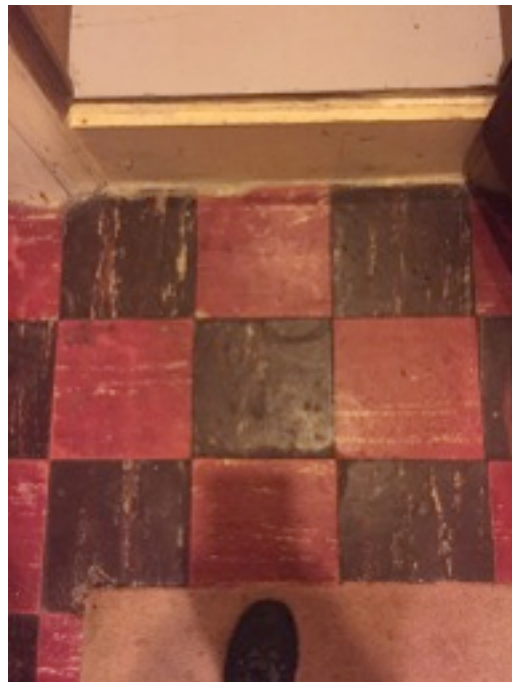


Photo 4: Asbestos-containing vinyl floor tiles in the Basement.



Photo 5: Relative humidity was noted to be 29.6%, which is considered to be dry (comfort parameters are above 30%).



Photo 6: Asbestos pipe insulation noted in poor condition.



Photo 7: Asbestos-containing duct paper insulation insulating supply air ducts throughout the home.