



Hazardous Materials Survey

0000 Shelbourne Street Victoria, B.C.
June 14, 2016

Executive Summary

The client retained Canadian Haz-mat Environmental Group to complete a pre-demolition hazardous materials survey of 0000 Shelbourne Street Victoria, BC. On June 2, 2016 (28) samples for analysis of asbestos and (7) lead paint were taken from the residential property. **Asbestos was detected in 5 of the samples taken and 3 of the lead paint samples were found to be containing.**

Hazardous Material	Type and Location
Asbestos*	<p>3% Chrysotile – Under sink mastic</p> <p>2% Chrysotile – Bottom layer hallway flooring</p> <p>2% Chrysotile – Bottom layer bedroom flooring</p> <p>3% Chrysotile – Top layer bedroom 2 flooring</p> <p>5% Chrysotile – Roof vent mastic</p>
Lead	<p>3.9% by weight – White living room window sill</p> <p>0.037% by weight – White living room wall</p> <p>0.26% by weight – White exterior window</p>

***Warning:** *If during future renovation or demolition activities any potentially hazardous materials are discovered, all work must stop and a qualified person contacted to assess risk.*

Site Information

The single family detached home at 0000 Shelbourne Street was constructed in approximately 1908 and is a bungalow style in the community of Oak Bay. It occupies 760 sq. ft. with two bedrooms and one bathroom on a crawlspace. Electric baseboard heaters were noted throughout and a chimney is longstanding. The home sits on a large lot at 6400 sq. ft. with numerous sheds lining the property line, at the clients request no samples were taken from additional structures on the property.

Demolition/Renovation Scope

Our client presented two possible scenarios, the home will be completely demolished and a new structure built or the home will be renovated and a garden suite constructed in the rear section of the property. In either case, ***all hazardous materials outlined in this report must be safely removed and disposed of before any work or disturbance of materials may commence.***

WorkSafeBC Requirements

WorkSafeBC mandates that this survey be performed to determine the presence of hazardous materials including:

- Asbestos
- Lead
- Silica
- Mercury
- Hantavirus-Rodent Droppings
- Arsenic
- Radioactive Materials
- Mould
- PCB's
- Ozone Depleting Substances
- Urea Formaldehyde Foam Insulation
- Above Ground Tanks

Please see the supplementary hazardous materials information for a detailed description of each.

Scope of Work

To visually detect, sample and determine the presence of hazardous materials, as noted in the inspection notes below:

Material	Samples	Notes
Asbestos Building Constructed pre-1990, asbestos containing building materials may exist	(28) Samples were collected throughout the home from suspected asbestos containing materials	Drywall joint compound, chimney mortar, roofing materials, vent mastic, electrical cables insulation, flooring materials, wall texture, window putty and mastics were all collected
Lead Paints used pre-2006, lead content paint may have been applied.	(7) Lead paint samples were collected from the kitchen area	Lead samples were taken from the interior and the exterior of the home based on homogenous characteristics



Silica Visually detected-Concrete plaster and drywall	N/A	Please follow exposure control plans when disturbing
Mercury Thermostats observed	N/A	Follow BC Hazardous Waste guidelines for disposal
Hantavirus-Rodent Droppings None detected	N/A	
Arsenic None detected	N/A	
Radioactive Materials Smoke detectors observed	N/A	Follow BC Hazardous Waste guidelines for disposal
Mould None detected	N/A	
PCB's Limited inspection performed	N/A	Attic inspection was limited due to small entry hatch and blown insulation covering areas where PCB containing light ballasts are sometimes found.
Ozone Depleting Substances Observed refrigerator	N/A	Follow BC Hazardous Waste guidelines for disposal
Urea Formaldehyde UFFI Foam insulation detected	N/A	Spray foam insulation was used on exterior outlet and in addition of laundry nook
Above Ground Tank N/A	N/A	No underground tank detected in pre-purchase property scan - previously conducted and confirmed by client
Other Hazardous Materials None Detected	N/A	



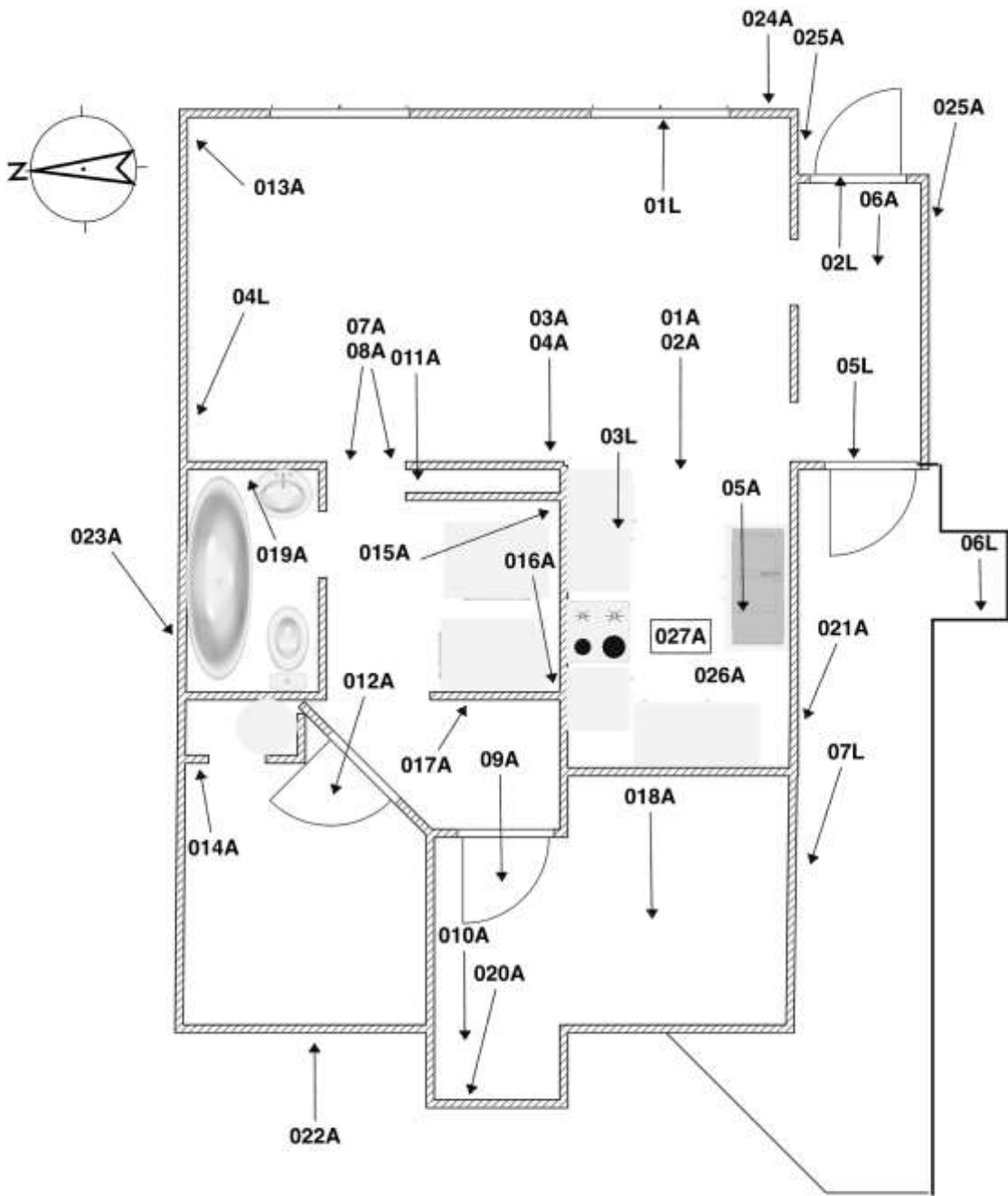
Sampling

A total of 35 samples were collected and are documented with location information in the table and floor plate map on following page:

<i>Asbestos Samples</i>	
01A	Top layer flooring kitchen
02A	Bottom layer flooring kitchen
03A	Chimney mortar
04A	Masonry compound/brick
05A	Under sink mastic
06A	Flooring front entry
07A	Bottom layer flooring hallway
08A	Top layer flooring hallway
09A	Bedroom bottom layer flooring
010A	Bedroom closet top layer
011A	Exposed plaster closet
012A	Bedroom 2 top layer flooring
013A	Plaster living room
014A	Plaster bedroom
015A	Djc added laundry nook
016A	Djc added laundry nook
017A	Djc added laundry nook
018A	Electrical cable insulation
019A	Ceramic tile and grout
020A	Fiberglass insulation backing paper
021A	White window putty
022A	Rear stucco
023A	Side stucco
024A	Front stucco
025A	Putty front stairs
026A	Roof shingle 3 layers
027A	Roof vent mastic
028A	Foundation wall mortar

<i>Lead in Paint Samples</i>	
01L	Living room sill (white)
02L	Front door (red)
03L	Kitchen cabinet (white)
04L	Living room wall (white)
05L	Rear door (black)
06L	Deck (green)
07L	Exterior window (white)





Asbestos Samples

28 samples were specifically taken for asbestos and analyzed by an accredited laboratory, after analysis, five of the samples were determined to be asbestos containing. Please see appendix A for detailed laboratory analysis findings. WorkSafe BC regulations define any building material containing over 0.5% asbestos to be contaminated.

Lead Samples

7 samples were specifically taken for lead content in paint and analyzed by an accredited laboratory. 3 of these samples, were identified to be above WorkSafeBC lead containing levels. WorkSafeBC defines lead containing surface coating materials by the federal Ministry of Health definition. Under the *Hazardous Products Act*, as paint or other similar material that dries to a solid film that contains over 90 mg/kg (0.009%) dry weight of lead. Please see appendix A for detailed laboratory analysis findings. Any untested painted surfaces are presumed lead-containing unless sampled and found to be non-lead containing.

Limitations

Entry to the attic space in the home was limited due to a small entry hatch and access being partially blocked by a hot water tank (and platform) that prevented egress. A visual inspection for vermiculite was performed and none was detected around the entry hatch (4 areas were explored down to the sub surface) but the entire attic could not be inspected. Knob and tube style wiring was noted in the attic and blown insulation obstructed a visual inspection for any PCB containing light ballasts. The crawlspace could not be entered as the entry was too small.



Regulations and Requirements

Prior to the performance of any work that may disturb asbestos containing materials it is a regulatory requirement that a qualified person perform a Risk Assessment. This requirement is in compliance with the WorkSafeBC occupational Health & Safety Regulation.

WorkSafeBC regulation requires that contractors working with: asbestos, lead-based, silica containing materials, or hantavirus have an Exposure Control Plan in place including site specific work procedures prior to work commencing.

Critical Notes

Vermiculite insulation or other potentially asbestos containing or hazardous materials may still exist in areas not inspected, within false ceilings, or within wall cavities and around chimneys. If these are discovered, work must stop in those areas until the materials are properly identified.

Asbestos cement piping was sometimes used for perimeter drains, storm drains and sewer lines. This product may be buried on the property.

Silica testing was not carried out, but this material will be present in concrete, cement, mortar, ceramic tile and possibly in drywall filler compounds. Silica containing stucco is found on the exterior of the building. Precautions must be put in place during demolition and renovation activities to ensure that workers are not exposed to silica containing dust and debris.

Synthetic fibre insulation may exist in ceiling and wall cavities. Removal of these materials should be conducted wearing proper respiratory protection and protective clothing.

Recommendations

1. Have a qualified abatement contractor remove and dispose of all asbestos containing vinyl flooring throughout the home.
2. A qualified abatement contractor must remove and dispose of all asbestos containing mastic (roof vents, chimney and under sink). Do not disturb without following proper work procedures prepared by a qualified person.



3. Any building materials containing lead paint above concentrations that Worksafe BC has identified as lead containing (0.009% by weight), must be removed by qualified abatement contractors. It is recommended that TCLP (Toxicity Characteristic Leaching Procedure) testing be performed before disposal. Areas identified by similar colour or location characteristic are assumed to be lead containing. Lead may also be present in piping throughout the home. No sample was taken to prevent damage to plumbing systems.
4. Wear proper personal protective equipment and follow BC Hazardous waste disposal guidelines when removing foam insulation.

Abatement Contractor Selection

When selecting an abatement contractor, it is important to ensure they are registered with WorkSafeBC. It's best to select an experienced contractor who is in good standing with WorkSafeBC. A qualified contractor will produce worker training records and certificates when asked. Copies of this report must be provided to contractors engaged to work in the building.

Closure

This survey may not be duplicated, published or used in any manner without written consent of Canadian Haz-Mat Environmental Group. The data and findings in this report are only valid as of the date of investigation. Re-evaluation will be required for any other concerns as time and occurrence of future events may warrant further exploration. No warranty or guarantee is given based on the findings outlined in this report.

Signature, Chem. Eng. Tech.
AHERA Building Inspector
Certificate #3508-16-C13-25855
Exp Date: 2/24/2017

Signature, CRSP
AHERA Building Inspector
Certificate #3508-16-C13-25854
Exp Date: 2/24/2017



Asbestos Sample Photo Documentation



01A/02A-Kitchen Flooring

03A-Chimney mortar



04A-Masonry Compound

05A-Undersink Mastic
(3% Chrysotile)





06A-Front Entry Flooring



07A-Bottom Layer Flooring hallway
(2% Chrysotile)



08A-Top layer Flooring Hallway



09A-Bottom Layer Flooring Bedroom
(2% Chrysotile)



010A-Bedroom Closet Top Layer



011A-Exposed Plaster Closet



012A-Bedroom 2 Top Layer Flooring
(3% Chrysotile)



013A-Plaster Living Room



014A-Plaster Bedroom



015A-DJC Laundry Nook



016A-DJC Laundry Nook



017A-DJC Laundry Nook



018A-Electrical Cable Insulation



019A-Ceramic Tile/Grout



020A-Fibreglass Insulation Paper Backing



021A-White Window Putty



022A-Rear Stucco



023A-Side Stucco



024A-Front Stucco



025A-Putty Front Stairs



026A-Roof Shingle (3 Layers)

027A-Roof Vent Mastic
(5% Chrysotile)



028A-Foundation Wall Mortar

Intentionally Blank

Lead in Paint Sample Photo Documentation

	
<p>01L-Living Room Sill (White) (3.9% by weight)</p>	<p>02L-Front Door (Red)</p>
	
<p>03L-Kitchen Cabinet (White)</p>	<p>04L-Living Room Wall (White) (0.037% by weight)</p>



	
<p>05L-Rear Door (Black)</p>	<p>06L-Deck (Green)</p>
	<p>Intentionally Blank</p>
<p>07L-Exterior Window (White) (0.26% by weight)</p>	



Appendix A: Lab Results
Continued on following pages





Bulk Asbestos Analysis



By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 600/M 4-82-020



Customer: Canadian Haz-Mat Environmental
1111 Tulip Ave.
Victoria, BC V8Z7z2

Lab Order ID: 1610982
Analysis ID: 1610982_PLM
Date Received: 6/6/2016
Date Reported: 6/7/2016

Project: Shelbourne Survey

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
06A - B	flooring front entry	None Detected		100% Other	White Non Fibrous Homogeneous
1610982PLM_32	mastic				Dissolved
07A - A	bottom layer flooring hallway	2% Chrysotile		98% Other	Green Non Fibrous Homogeneous
1610982PLM_7	tile				Dissolved
07A - B	bottom layer flooring hallway	None Detected	30% Cellulose	70% Other	Brown, Black Non Fibrous Homogeneous
1610982PLM_33	mastic/felt				Dissolved
08A - A	top layer flooring hallway	None Detected	20% Cellulose	80% Other	White Non Fibrous Homogeneous
1610982PLM_8	vinyl sheet flooring				Ashed, Dissolved
08A - B	top layer flooring hallway	None Detected		100% Other	Yellow Non Fibrous Homogeneous
1610982PLM_34	mastic				Dissolved
09A - A	bedroom bottom layer flooring	2% Chrysotile		98% Other	Beige Non Fibrous Homogeneous
1610982PLM_9	tile				Dissolved
09A - B	bedroom bottom layer flooring	None Detected	30% Cellulose	70% Other	Brown, Black Non Fibrous Homogeneous
1610982PLM_35	mastic/felt				Dissolved
010A - A	bedroom closet top layer	None Detected	20% Cellulose	80% Other	White Non Fibrous Homogeneous
1610982PLM_10	vinyl sheet flooring				Dissolved

Disclaimer: Due to the nature of the EPA 600 method, asbestos may not be detected in samples containing low levels of asbestos. We strongly recommend that analysis of floor tiles, vermiculite, and/or heterogeneous soil samples be conducted by TEM for confirmation of "None Detected" by PLM. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. government. Analytical uncertainty available upon request. Scientific Analytical Institute participates in the NVLAP Proficiency Testing program. Unless otherwise noted blank sample correction was not performed. Estimated MDL is 0.1%.

Philip Szabo (42)

Analyst

Approved Signatory



Bulk Asbestos Analysis



By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 600/M4-82-020



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Victoria, BC V8Z7z2

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Date Reported: 6/7/2016

Project: Shelbourne Survey

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Lab Sample ID	Lab Notes				Treatment
010A - B	bedroom closet top layer	None Detected		100% Other	Yellow Non Fibrous Homogeneous
1610982PLM_36	mastic				Dissolved
011A	exposed plaster closet	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_11					Dissolved
012A - A	bedroom 2 top layer flooring	3% Chrysotile		97% Other	Tan Non Fibrous Homogeneous
1610982PLM_12	tile				Dissolved
012A - B	bedroom 2 top layer flooring	None Detected	30% Cellulose	70% Other	Black Non Fibrous Homogeneous
1610982PLM_37	mastic/felt				Dissolved
013A - A	plaster living room	None Detected		100% Other	Tan Non Fibrous Homogeneous
1610982PLM_13	skim				Dissolved
013A - B	plaster living room	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_38	plaster				Dissolved
014A - A	plaster bedroom	None Detected		100% Other	Tan Non Fibrous Homogeneous
1610982PLM_14	skim				Dissolved
014A - B	plaster bedroom	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_39	plaster				Dissolved

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Analysis ID: 1610982_PLM
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Date Reported: 6/7/2016

Project: Shelbourne Survey

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
015A	djc added laundry nook	None Detected		100% Other	White Non Fibrous Homogeneous
1610982PLM_15					Dissolved
016A	djc added laundry nook	None Detected	5% Cellulose	95% Other	Gray, White Non Fibrous Homogeneous
1610982PLM_16					Dissolved
017A	djc added laundry nook	None Detected	5% Cellulose	95% Other	Gray, White Non Fibrous Homogeneous
1610982PLM_17					Dissolved
018A	electrical cable insulation	None Detected	90% Cellulose	10% Other	Tan, Black Fibrous Homogeneous
1610982PLM_18					Dissolved
019A - A	ceramic tile and grout	None Detected		100% Other	White, Red Non Fibrous Homogeneous
1610982PLM_19	ceramic tile				Dissolved
019A - B	ceramic tile and grout	None Detected		100% Other	White Non Fibrous Homogeneous
1610982PLM_40	grout				Dissolved
020A	fibreglass insulation backing paper	None Detected	90% Cellulose	10% Other	Tan, Black Fibrous Homogeneous
1610982PLM_20					Dissolved
021A	white window putty	None Detected		100% Other	White Non Fibrous Homogeneous
1610982PLM_21					Ashed, Dissolved

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Philip Szabo (42)

Analyst

Approved Signatory



Bulk Asbestos Analysis



By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 600/M4-82-020



Customer: Canadian Haz-Mat Environmental
1111 Tulip Ave.
Victoria, BC V8Z7z2

Lab Order ID: 1610982
Analysis ID: 1610982_PLM
Date Received: 6/6/2016
Date Reported: 6/7/2016

Project: Shelbourne Survey

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
022A	rear stucco	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_22					Dissolved
023A	side stucco	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_23					Dissolved
024A	front stucco	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_24					Dissolved
025A	putty front stairs	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_25					Dissolved
026A - A	roof shingle 3 layers	None Detected	5% Cellulose	95% Other	Green Non Fibrous Homogeneous
1610982PLM_26	shingle 1				Dissolved
026A - B	roof shingle 3 layers	None Detected	5% Cellulose	95% Other	Red Non Fibrous Homogeneous
1610982PLM_41	shingle 2				Dissolved
026A - C	roof shingle 3 layers	None Detected	60% Cellulose	40% Other	Black Fibrous Homogeneous
1610982PLM_42	felt				Dissolved
027A	roof vent mastic	5% Chrysotile		95% Other	Black Non Fibrous Homogeneous
1610982PLM_27					Dissolved

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Philip Szabo (42)

Analyst

Approved Signatory



Bulk Asbestos Analysis



By Polarized Light Microscopy
EPA Method: 600/R-93/116 and 600/M4-82-020



Customer: Canadian Haz-Mat Environmental
1111 Tulip Ave.
Victoria, BC V8Z7z2

Lab Order ID: 1610982
Analysis ID: 1610982_PLM
Date Received: 6/6/2016
Date Reported: 6/7/2016

Project: Shelbourne Survey

Sample ID	Description	Asbestos	Fibrous Components	Non-Fibrous Components	Attributes
Lab Sample ID	Lab Notes				Treatment
028A	foundation wall mortar	None Detected		100% Other	Gray Non Fibrous Homogeneous
1610982PLM_28					Dissolved

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Philip Szabo (42)

Analyst

Approved Signatory

Scientific Analytical Institute, Inc. 4604 Dundas Dr. Greensboro, NC 27407 (336) 292-3888

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Analysis for Lead Concentration in Paint Chips

by Flame Atomic Absorption Spectroscopy
EPA SW-846 3050B/6010C/7420



Customer: Canadian Haz-Mat Environmental
1111 Tulip Ave.
Victoria, BC V8Z7z2

Lab Order ID: 1610980
Analysis ID: 1610980_PBP
Date Received: 6/6/2016
Date Reported: 6/8/2016

Project: Shelbourne Survey

Sample ID	Description	Mass	Concentration	Concentration
<i>Lab Sample ID</i>	<i>Lab Notes</i>	<i>(g)</i>	<i>(ppm)</i>	<i>(% by weight)</i>
01L	living room window sill white	0.0547	38000	3.9%
1610980PBP_1				
02L	front door red	0.0515	< 78	< 0.008%
1610980PBP_2				
03L	kitchen cabinet white	0.0421	< 38	< 0.004%
1610980PBP_3				
04L	living room wall white	0.0254	370	0.037%
1610980PBP_4				
05L	rear door black	0.0411	< 39	< 0.004%
1610980PBP_5				
06L	deck green	0.0358	< 45	< 0.004%
1610980PBP_6				
07L	exterior window putty	0.0610	2600	0.26%
1610980PBP_7				

Unless otherwise noted blank sample correction was not performed on analytical results. Scientific Analytical Institute participates in the AIHA ELPAT program. ELPAT Laboratory ID: 173190. This report relates only to the samples tested and may not be reproduced, except in full, without the written approval of SAI. Analytical uncertainty available upon request. The quality control samples run with the samples in this report have passed all EPA required specifications unless otherwise noted. RL: (Report Limit for an undiluted 50ml sample is 4µg Total Pb).

Daniel Olson (7)

Analyst

Laboratory Director