SURE Hazmat and Testing

August 2nd, 2016

City of Vancouver
Real Estate and Facilities Management
Suite 300 - 515 West 10th Avenue
Vancouver, BC
V5Z 4A8

Attention: **Ramon Blandino**
Hazardous Materials Technician

Reference: **Pre-Renovation Asbestos Roofing Materials Investigation**
2090 West 5th Avenue, Vancouver, BC

Sure Hazmat and Testing has, in accordance with your request, completed an investigation for hazardous materials and to identify any immediate hazards to workers during the planned roof renovation of the building located at 2090 West 5th Avenue in Vancouver, BC.

The site consists of a multiple storey, wood framed triplex. The scope of the renovation includes a full roof replacement and repair to damaged plaster ceiling finishes in the Top Floor Southwest Bedroom. Sure Hazmat and Testing's scope of work included testing of roofing materials at all levels and interior plaster finishes in the Top Floor Southwest Bedroom only. We report the following:

Representative samples of suspect asbestos-containing building materials were collected and analyzed. A total of twelve (12) samples were collected and analyzed for the presence of asbestos fibres. One (1) sample was collected and submitted for analysis of lead content.

Analytical Methodology

Asbestos

Samples were submitted to Asbestos Analytical Services Ltd. For analysis. Samples were analyzed in accordance with the NIOSH 9002 PLM Bulk Sampling Analytical Method using polarized light microscopy and dispersion staining techniques. The detection limit of this method is listed as <1%. A copy of our Asbestos Bulk Results spreadsheet is attached to this report for your information and records. All records should be retained for a period of ten years as required by WorkSafe BC.

Lead-Based Finishes

Suspect leaded paint finishes were submitted to Maxxam Analytics for analysis of lead content. For leaded paint finishes, samples were digested using nitric acid/hydrogen peroxide followed by analysis using Inductively Coupled Plasma Spectroscopy (ICAP) and/or Inductively Coupled Plasma/Mass Spectroscopy (ICPMS).

The federal *Hazardous Products Act* (HPA) under Surface Coating Materials regulation defines leaded paint or lead-based surface coating materials with a total lead concentration of 0.009% or 90 µg/g. This is the current accepted standard by WorkSafe BC for identification of lead-based paint. Paint finishes that contain lead equal to or greater than 90 µg/g are considered to present a risk to pregnant women & children and a risk assessment must be conducted by a qualified person prior to the performance of any work that impacts lead-based paint finishes in work areas with high risk individuals in adjacent occupied areas.

Asbestos-Containing Material Results

Six (6) samples of black and grey mastic were collected from exterior flashings. All six samples were determined to be asbestos-containing.

Non-Asbestos Material Results

Three (3) samples of skim coat and plaster were collected from the Top Floor Southwest Bedroom ceiling and all three samples were determined to be non-asbestos.

Three (3) samples of asphalt shingles were collected from various areas of the Roof. All three samples were determined to be non-asbestos. Asphalt shingles were present directly on top of plywood sheathing.

Other Hazardous Materials

Lead-Based Finish Results

The results of the suspect paint finishes testing are as follows:

Table 1 – Paint Sample Results

Sample #	Sample Location	Lead Concentration (µg/g)	HPA Standard Level (µg/g)
L01	Interior Plaster Ceiling – Top Floor Southwest Bedroom	**305**	90

Note: Bold values exceed standard level

The concentration of lead was above the HPA standard level of 90 µg/g for the interior plaster ceiling paint. The paint was observed to be in very poor condition.

Conclusions and Recommendations

Asbestos

Asbestos-containing materials are present in the following locations:

- Black/Grey mastic present on flashings and edge of roof shingles and fascia board.

All asbestos-containing materials must be removed prior to demolition activities by a qualified hazardous materials contractor using appropriate work procedures as defined by WorkSafe BC.

The survey was based on the client's renovation plans for a replacement of the roof of the Residence. If any materials not included in this investigation are too be impacted by renovation activities Sure Hazmat and Testing must be contacted to investigate.

Lead

Lead based finishes are present in the following locations:

- Interior plaster paint

The presence of lead based finishes does not pose an immediate hazard to building occupants when present in good condition and left undisturbed.

This section is intended to aid in compliance with WorkSafe BC regulations as stated in the WorkSafe BC publication "Lead-Containing Paints and Coatings Preventing Exposure in the Construction Industry" and is not intended to replace a Risk Assessment conducted on site by a qualified person prior to the start of lead abatement work.

As per the WorkSafe BC publication "Lead-Containing Paints and Coatings Preventing Exposure in the Construction Industry" all lead-containing waste materials must be sampled and analyzed using the standard Toxicity Characteristic Leaching Procedure (TCLP). This procedure is designed to determine the leachability of lead in liquid and solid wastes.

For manual demolition of plaster finishes with lead-based finishes, the following safe work procedures should be followed, at a minimum:

- Supply appropriate notification to WorkSafe BC,
- Personal Protective Equipment must include full-face Powered Air Purifying (PAPR) respiratory protection fitted with P100 filters and approved disposable coveralls with head and foot covers,
- Complete isolation of the work area by means of a full polyethylene enclosure,
- Use of lead hazard or appropriate warning tape and warning signs around the perimeter of the work area,
- Use of HEPA-filtered, DOP tested negative air unit, exhausted outside the building,
- Creation of a negative pressure atmosphere within the work area,
- HEPA-equipped vacuum for local exhaust ventilation and to ensure removal of all lead-based materials,
- Mist the peeling paint with water before scraping,
- Remove waste by wet sweeping or HEPA-vacuuming – dry sweeping is not permitted,
- Hand and face wash station,
- Air monitoring is recommended on the first day of work, one day per week, and any time work procedures are significantly changed.

WorkSafe-BC Requirements

This section is intended to aid in compliance with WorkSafe BC regulations, and is not intended to replace a Risk Assessment conducted on site by a qualified person prior to the start of asbestos abatement work.

Prior to the performance of any work that impacts asbestos-containing materials, it is a regulatory requirement that a qualified person perform a Risk Assessment. This requirement is in compliance with the WorkSafe-BC Occupational Health & Safety (OH&S) Regulation *Part 6 "Substance Specific Requirements";* specifically Section 6.6 subsections (1), (2), (3) and (4). The following recommendations are presented:

During the removal of asbestos-containing flashing mastic, **Moderate Risk** asbestos safe work procedures must be followed, including the following at a minimum:

- Supply appropriate notification to WorkSafe BC,
- Personal Protective Equipment must include tight-fitting half face piece respiratory protection fitted with P100 filters and approved disposable coveralls with head and foot covers,
- Application of amended water to the asbestos materials being disturbed,
- Use of asbestos barrier tape and warning signs around the perimeter of the work area,
- HEPA-equipped vacuum for local exhaust ventilation and to ensure removal of all asbestos materials,
- Hand and face wash station,
- Air monitoring.

To comply with Part 6 of the WorkSafe-BC OH&S Regulation, specifically Section 6.32 relating to documentation, the client should acquire copies of the asbestos abatement contractor's Notice of Project (NOP), abatement procedures, air monitoring results and any documentation issued to WorkSafe-BC. These documents are required to be stored and held for 10 years.

Limitations

This report is intended for the exclusive use of the client **(City of Vancouver)** to determine the likely locations of asbestos prior to the planned renovations to the building. This report is non-compliant with WorkSafeBC section 20.112 for full building Hazardous Materials Demolition. For compliance additional inspection(s) and destructive sampling is required, prior to any additional renovations outside the scope of work or demolition activities. **This report is not a Specification or Scope of Work and the use of this document as such will be at the sole risk of the user.**

The contents of this report were based on a site visit conducted by Sure Hazmat and Testing personnel. Please note that some asbestos products may not have been accessible on the day of our survey and may remain unidentified. Asbestos products are sometimes used behind wall partitions, on mechanical systems located in pipe chases, in sub-floors or other concealed areas, and assumptions have been made as to the likely contents of those areas. Should a suspect material be encountered, all work must be stopped and Sure Hazmat will investigate immediately. Hazardous materials investigation does not include investigation for the presence of subsurface contamination or underground storage tanks.

If further clarification is required, please contact our office. Thank you for having Sure Hazmat and Testing perform this work for you.

Prepared by:

Ryan Verhelst, B.Sc, *Project Co-ordinator*
Sure Hazmat and Testing

Reviewed by:

Deepuk Kalkat, *Project Manager*
Sure Hazmat and Testing

Encl. AASL Laboratory Bulk Report
Site Photos

Ref: 10310-R02

Photo # 1 – Asbestos-containing mastic

Photo # 2 – Asbestos-containing mastic

Asbestos Analytical Services Ltd.
7 - 2883 East Kent Avenue N., Vancouver, BC, V5S 3T9

ASBESTOS ANALYSIS REPORT

AASL Report #: **B01528**
Project Location: 2090 West 5th Avenue, Vancouver, BC
Analyst: Gabrielle Sutton
Reference #s: 10310
Report Date: 2AUG2016
Number of Samples: 12
Method: NIOSH Method 9002

# B01528	Sample	Sub-Sample	Sample Description / Location	Results	ASB
1 **	**08**	Single Phase - black pebbles / black-brown fibrous	Shingle, Roof, Southwest, Upper Level	Asbestos Fibres Not Detected 30 - 50 % Cellulose Fibres > 50 % Non-Fibrous	---
2 **	**09**	Single Phase - black pebbles / black-brown fibrous	Shingle, Roof, Northeast	Asbestos Fibres Not Detected 30 - 50 % Cellulose Fibres > 50 % Non-Fibrous	---
3 **	**10**	Single Phase - black-brown fibrous	Shingle, Roof, North Central	Asbestos Fibres Not Detected 40 - 60 % Cellulose Fibres > 40 % Non-Fibrous	---
4. 1	**11**	Layer 1 - thin light grey (paint)	Grey Mastic, Roof, South	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
4. 2 **	11	Layer 2 - black-brown fibrous tar	Grey Mastic, Roof, South	10 - 30 % Chrysotile Asbestos > 75 % Non-Fibrous	**T**
5. 1	**12**	Layer 1 - thin light grey (paint)	Grey Mastic, Roof, South	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
5. 2 **	12	Layer 2 - black-brown fibrous tar	Grey Mastic, Roof, South	10 - 30 % Chrysotile Asbestos > 75 % Non-Fibrous	**T**
6. 1	**13**	Layer 1 - thin light grey (paint)	Grey Mastic, Roof, South	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
6. 2 **	13	Layer 2 - black-brown fibrous tar	Grey Mastic, Roof, South	10 - 30 % Chrysotile Asbestos > 75 % Non-Fibrous	**T**
7 **	**14**	Single Phase - black-brown fibrous tar	Black Mastic, Roof, South	10 - 30 % Chrysotile Asbestos > 75 % Non-Fibrous	**T**
8 **	**15**	Single Phase - black-brown fibrous tar	Black Mastic, Roof, South	10 - 30 % Chrysotile Asbestos > 75 % Non-Fibrous	**T**
9 **	**16**	Single Phase - black-brown fibrous tar	Black Mastic, Roof, South	10 - 30 % Chrysotile Asbestos > 75 % Non-Fibrous	**T**

# B01528	Sample	Sub-Sample	Sample Description / Location	Results	ASB
10. 1	**17**	Layer 1 - thin light grey (paint)	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
10. 2 *	17	Layer 2 - white, hard	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
10. 3 *	17	Layer 3 - grey cementitious	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 1 - 5 % Animal Hair > 95 % Non-Fibrous	---
11. 1	**18**	Layer 1 - thin light grey (paint)	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
11. 2 *	18	Layer 2 - white, hard	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
11. 3 *	18	Layer 3 - grey cementitious	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 1 - 5 % Animal Hair > 95 % Non-Fibrous	---
12. 1	**19**	Layer 1 - thin light grey (paint)	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
12. 2 *	19	Layer 2 - white, hard	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 90 - 100 % Non-Fibrous	---
12. 3 *	19	Layer 3 - grey cementitious	Plaster, Ceiling, Southwest Bedroom, Top Floor	Asbestos Fibres Not Detected 1 - 5 % Animal Hair > 95 % Non-Fibrous	---

Comments

Samples analyzed in accordance with NIOSH Laboratory Method 9002
American Industrial Hygiene Association (AIHA) BAPAT Program Laboratory Number 204301
Estimated Limit of Detection is <0.5 %
ASB = Asbestos present/absent in material
T = Asbestos Present
AASL Asbestos Analytical Services Ltd. will not accept any responsibility as to the manner of interpretation or application of these results.

* Sample preparation included grinding process.
** Sample preparation included ashing process.

Analyst: ***Original Signed By***
Gabrielle Sutton, B.A.
Date: August 2, 2016

Original Signed By
Reviewed By: Gabrielle Sutton, B.A.

Your Project #: CITY OF VANCOUVER
Site Location: 2090 W. 5TH AVE.
Your C.O.C. #: 487041-109-01

Attention:Ryan Verhelst

Sure Hazmat & Testing
101-4268 Lozells Avenue
BURNABY, BC
CANADA V5A 0C6

Report Date: 2016/07/27
Report #: R2223840
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B661413
Received: 2016/07/26, 12:40

Sample Matrix: PAINT
Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by ICP-AES (acid extr. solid)	1	2016/07/27	2016/07/27	BBY7SOP-00018	EPA 6010c R3 m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.
* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Graham Rudkin, Project Manager, Environmental
Email: GRudkin@maxxam.ca
Phone# (604)638-5926 Ext:5926

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This report has been generated and distributed using a secure automated process.
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Analytics International Corporation o/a Maxxam Analytics Burnaby: 4606 Canada Way V5G 1K5 Telephone(604) 734-7276 Fax(604) 731-2386

Maxxam Job #: B661413
Report Date: 2016/07/27

Sure Hazmat & Testing
Client Project #: CITY OF VANCOUVER
Site Location: 2090 W. 5TH AVE.
Sampler Initials: RV

LEAD IN PAINT CHIPS (PAINT)

Maxxam ID		PC4676		
Sampling Date		2016/07/22		
COC Number		487041-109-01		
	UNITS	**L01-PLASTER CEILING**	**RDL**	**QC Batch**
Total Metals by ICP				
Total Lead (Pb)	mg/kg	305	3.0	8341699
RDL = Reportable Detection Limit				

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Maxxam Job #: B661413
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GENERAL COMMENTS

Results relate only to the items tested.

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Maxxam Job #: B661413
Report Date: 2016/07/27

QUALITY ASSURANCE REPORT

Sure Hazmat & Testing
Client Project #: CITY OF VANCOUVER
Site Location: 2090 W. 5TH AVE.
Sampler Initials: RV

			Method Blank		RPD		QC Standard	
QC Batch	Parameter	Date	Value	UNITS	Value (%)	QC Limits	% Recovery	QC Limits
8341699	Total Lead (Pb)	2016/07/27	<3.0	mg/kg	NC	35	94	80 - 120

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

QC Standard: A sample of known concentration prepared by an external agency under stringent conditions. Used as an independent check of method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

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Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel:(604) 734 7276 Toll-Free:800-563-6266 Fax:(604) 731 2386 www.maxxam.ca

Chain Of Custody Record

Page of

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name	#4212 Sure Hazmat & Testing	Company Name		Quotation #	B01683	Maxxam Job #	Bottle Order #:
Contact Name	Karen Smith	Contact Name	RYAN VERHELST	P.O. #		B661413	487041
Address	101-4268 Lozells Avenue BURNABY BC V5A 0C6	Address		Project #		Chain Of Custody Record	Project Manager
Phone	(604) 444-0204 Fax: (604) 420-9559	Phone	778-899-2959 Fax:	Project Name	CITY OF VANCOUVER	C#487041-109-01	Graham Rudkin
Email	ksmith@surehazmat.com	Email	RVERHELST@SUREHAZMAT.COM	Site #	2090 W. 5TH AVE.		
				Sampled By	RV.		

Regulatory Criteria:
- [ ] CSR
- [ ] CCME
- [ ] BC Water Quality
- [ ] Other

Special Instructions

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT: [X]
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
1 DAY [ ] 2 Day [ ] 3 Day [ ] Date Required: [ ]
Rush Confirmation Number: (call lab for #)

	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	Lead (in Paint)	Lead (in Glazing/Tile/Other Solid)	TCLP Lead Leachate	Lead (in Swab)	Lead (in Air)	PCBs in Oil	Respirable Silica (Quartz)	# of Bottles	Comments
1		101- PLASTER Ceiling	July 22/2016				✓								
2															
3															
4															
5															
6															
7															
8															
9															
10															

B661413_COC

* * RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only: Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
R- Valente	16/07/26	1240	KEN ROBILLO	16/07/26	12:40		[ ]	N/A	[ ] Yes [ ] No

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

White: Maxxam Yellow: Client

Maxxam Analytics International Corporation o/a Maxxam Analytics

N/A