

Industrial Hygiene and Environmental Consulting

1783 Highway 20, RR#2

Allanburg, Ontario

LOS 1A0

Phone: 1-888-271-2111

DESIGNATED SUBSTANCES ASSESSMENT

Parks Canada: Fort Mississauga – Front Gate and Sally Ports

SUBMITTED TO: PARKS CANADA

ISSUED: Thursday March 3, 2016

OESN PROJECT NUMBER: 00090.002

1.0 INTRODUCTION

1.1 OVERVIEW

In January 2016, Ontario Environmental & Safety Network Ltd. (OESN) was contracted by Parks Canada to collect samples from the front gates and sally ports of Fort Mississauga located in Niagara-on-the-Lake, Ontario for the determination of designated substances.

The purpose of sampling was to test and identify for designated substances as defined by the Occupational Health and Safety Act.

1.2 SCOPE OF WORK

The scope of work included the following work tasks and services:

1. Collection of bulk materials suspect for containing asbestos minerals in accordance with Ontario Regulation 278/05 for analysis of asbestos content.
2. Collection of bulk materials suspect for containing lead in accordance with the Occupational Health and Safety Act.
3. Prepare a report documenting site observations, analytical results, material details, material conditions and recommendations.

1.3 LEGISLATIVE REQUIREMENTS

This report has been written to comply with the hazard recognition, risk assessment and control requirements required by the Occupational Health & Safety Act of Ontario. Sampling and assessment was conducted in accordance with provincial regulations associated with *The Act*. Federal legislative requirements were referenced and applied to the assessment where it was applicable.

1.4 PROJECT SPECIFIC REQUIREMENTS

Building materials suspected of containing designated substances to be disturbed during project renovations were sampled and analyzed.

The following designated substances were considered during the assessment:

- Asbestos
- Lead
- Silica

2.0 ANALYTICAL RESULTS

2.1 ASBESTOS REGULATORY DISCUSSION

The regulated limit for establishing asbestos content in materials underneath in the Province of Ontario is 0.5% asbestos by dry weight¹.


2.2 ASBESTOS-CONTAINING MATERIALS

During the field inspection, it was determined three (3) different building materials had the potential for asbestos content. Samples were collected for mortar on brick, mortar on stone and parging on stone.

Each material was collected for analysis in accordance with the sampling requirements outlined in the Ministry of Labour’s Table 1 of O. Reg. 278/05 - Regulation respecting Asbestos on Construction Projects and in Buildings and Repair Operations (as amended).


Analysis **did not detect** asbestos minerals in any materials sampled.


2.3 NON ASBESTOS-CONTAINING MATERIALS

	Sample Identification 00090.002-W01 00090.002-W02 00090.002-W03 Sample Code HW-01
	Sample Location of Material Front Gate
	Sample Description Brick Mortar
	Analytical Result None Detected
	Quantity of Material -
	Condition of Material -

¹ Ontario Regulation 278/05 Designated Substance – Asbestos on Construction Projects and in Buildings and Repair Operations

2.3 NON ASBESTOS-CONTAINING MATERIALS – continued

	<p>Sample Identification 00090.002-W04 00090.002-W05 00090.002-W06</p> <p>Sample Code HW-02</p>
	<p>Sample Location of Material Front Gate</p>
	<p>Sample Description Stone Mortar</p>
	<p>Analytical Result None Detected</p>
	<p>Quantity of Material -</p>
	<p>Condition of Material -</p>

	<p>Sample Identification 00090.002-W07 00090.002-W08 00090.002-W09</p> <p>Sample Code HW-03</p>
	<p>Sample Location of Material Sally Ports</p>
	<p>Sample Description Parging inside Sally Ports</p>
	<p>Analytical Result None Detected</p>
	<p>Quantity of Material -</p>
	<p>Condition of Material -</p>

2.4 LEAD REGULATORY DISCUSSION

Industry best practice dictates that consideration needs to be given to any level of lead that may be disturbed through renovation or demolition for the purposes of worker health and safety.

2.5 LEAD-CONTAINING MATERIALS


During the field inspection, it was determined three (3) different building materials had the potential for lead content. Samples were collected for mortar on brick, mortar on stone and parging on stone.

Each material was collected for analysis in accordance with the Occupational Health and Safety Act.

All three (3) materials have an analytical result above the method of detection limit. These results indicate lead is present.

	<p>Sample Code L01</p>
	<p>Sample Location of Material Front Gate</p>
	<p>Sample Description Brick Mortar</p>
	<p>Analytical Result Above Detection Limit 16.2 ug/g dry</p>

	<p>Sample Code L02</p>
	<p>Sample Location of Material Front Gate</p>
	<p>Sample Description Stone Mortar</p>
	<p>Analytical Result Above Detection Limit 6.7 ug/g dry</p>

	<p>Sample Code L03</p>
	<p>Sample Location of Material Sally Ports</p>
	<p>Sample Description Parging inside Sally Ports</p>
	<p>Analytical Result Above Detection Limit 8.3 ug/g dry</p>

Section 2.4 – 2.5 Note 1: For a complete set of analytical data establishing lead content, refer to Appendix A: Analytical Results.

3.0 OBSERVATIONS

3.1 SILICA-CONTAINING MATERIALS

Brick and stone at the front gate as well as the mortars for each are assumed to contain crystalline silica.

The parging material and stone also identified within both Sally Ports is assumed to also contain crystalline silica.

3.2 MOULD

During the assessment, dark staining was visually observed on the interior walls of the magazines. A bulk sample of the materials where the staining was identified was not collected as the staining was assumed as fungal contamination (mould).

4.0 CONCLUSIONS

4.1 ASBESTOS-CONTAINING MATERIALS

Analytical testing has determined no asbestos minerals are present in the bulk materials sampled.

4.2 SILICA-CONTAINING MATERIALS

Brick, stone, parging, and mortar are assumed to contain crystalline silica. In order for silica to be a hazard, silica-containing particles that are small enough to be inhaled (i.e. respirable) must get into the air. In order to avoid the inhalation of silica, control methods should be in place prior to disturbance of the materials from construction activities.

4.3 LEAD-CONTAINING MATERIALS

Analytical testing has determined lead is present in the bulk materials sampled.

4.4 MOULD

During the assessment, dark staining was visually observed on the interior walls of the magazines.

5.0 RECOMMENDATIONS

Based on assessment findings and provincial asbestos legislative requirements, the following recommendations are provided:

1. The information contained in this report should be provided to all vendors (contractors) prior to conduction of any building maintenance or alteration activities.
2. Contractors performing alteration work to masonry materials should wear an air purifying half-face respirator with a 100-series particulate filter. The respirator must be fitted so that there is an effective seal between the worker's face and the respirator.

6.0 LIMITATIONS

The material condition findings are relevant for the date of our site visit and should not be relied upon to represent conditions at later dates.

The findings in this assessment are limited to the materials observed during the time of inspection. All materials were assessed at the discretion of the inspector.

7.0 FOLLOW-UP

OESN reserves the right to modify any findings reported as a result of insufficient background and historical information.

In the event of discovery of a material during operation, maintenance or alteration, bulk sampling of the material should occur by OESN to confirm designated substance or hazardous material content.

8.0 CLOSURE

The information presented in this Designated Substances Assessment Report is based on observations and analytical testing of bulk samples collected.

If you have any questions regarding the above information, please do not hesitate to contact our office at your convenience.

Please call our office if you have any questions regarding the content of this report.

Regards,

Reviewed by,



Trisha McPherson
Field Consultant
Hazardous Materials Division
Ontario Environmental & Safety Network Ltd.
tmcpherson@oesn.net

Jeff Drummond
Project Manager
Hazardous Materials Division
Ontario Environmental & Safety Network Ltd.
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Appendix A: Analytical Results



ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Ontario Environmental & Safety Network, LTD.

CLIENT PROJECT: 00090.002

CEI LAB CODE: A16-0221

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 01/29/16

TOTAL SAMPLES ANALYZED: 9

SAMPLES >1% ASBESTOS:

TEL: 866-481-1412

www.ceilabs.com



Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: 00090.002

CEI LAB CODE: A16-0221

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
00090.002-W01		A2064028	Gray	Brick Mortar	None Detected
00090.002-W02		A2064029	Gray	Brick Mortar	None Detected
00090.002-W03		A2064030	Gray	Brick Mortar	None Detected
00090.002-W04		A2064031	Gray	Stone Mortar	None Detected
00090.002-W05		A2064032	Gray	Stone Mortar	None Detected
00090.002-W06		A2064033	Gray	Stone Mortar	None Detected
00090.002-W07		A2064034	Gray	Parging	None Detected
00090.002-W08		A2064035	Gray	Parging	None Detected
00090.002-W09		A2064036	Gray	Parging	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Ontario Environmental & Safety Network, LTD.
 RR #2 1783 Highway 20C
 Allanburg, ON L0S 1A0

CEI Lab Code: A16-0221
Date Received: 01-28-16
Date Analyzed: 01-29-16
Date Reported: 01-29-16

Project: 00090.002

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
00090.002- W01 A2064028	Brick Mortar	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected
00090.002- W02 A2064029	Brick Mortar	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected
00090.002- W03 A2064030	Brick Mortar	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected
00090.002- W04 A2064031	Stone Mortar	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected
00090.002- W05 A2064032	Stone Mortar	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected
00090.002- W06 A2064033	Stone Mortar	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected
00090.002- W07 A2064034	Parging	Heterogeneous Gray Fibrous Bound	70% 30%	Silicates Binder	None Detected



ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Ontario Environmental & Safety Network, LTD.
RR #2 1783 Highway 20C
Allanburg, ON L0S 1A0

CEI Lab Code: A16-0221
Date Received: 01-28-16
Date Analyzed: 01-29-16
Date Reported: 01-29-16

Project: 00090.002

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS		ASBESTOS %
			Fibrous	Non-Fibrous	
00090.002- W08 A2064035	Parging	Heterogeneous	70%	Silicates	None Detected
		Gray	30%	Binder	
		Fibrous			
		Bound			
00090.002- W09 A2064036	Parging	Heterogeneous	70%	Silicates	None Detected
		Gray	30%	Binder	
		Fibrous			
		Bound			



LEGEND: Non-Anth = Non-Asbestiform Anthophyllite
 Non-Trem = Non-Asbestiform Tremolite
 Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

LIMIT OF DETECTION: <1% by visual estimation

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation.

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by CEI Labs, Inc. CEI Labs makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

ANALYST: *Sarah Talley*
Sarah Talley

APPROVED BY: *Tianbao Bai*
Tianbao Bai, Ph.D., CIH
Laboratory Director



⑨ A16-0221
A2064028
A2064036

Laboratory: **CEI**

Sample Date: **Jan. 27th 2016** Job Number: **00090.002**

Quotation#: _____

Chain of Custody Record

COC **1** of **1**

				Analysis					Results By:
HM #	Sample #	Sample ID	Location	PLM Bulk	PLM Point Count	PLM Gravimetric	TEM Bulk		
HW01	00090.002-W01	Brick Mortar	Front Gate	X					
HW01	00090.002-W02	↓	↓	X				<input type="checkbox"/> 4 hour	
HW01	00090.002-W03	↓	↓	X				<input type="checkbox"/> 24 hour	
HW02	00090.002-W04	Stone Mortar	Front Gate	X				<input checked="" type="checkbox"/> 2 B Days	
HW02	00090.002-W05	↓	↓	X				<input type="checkbox"/> 3 B Days	
HW02	00090.002-W06	↓	↓	X				<input type="checkbox"/> 5 B Days	
HW03	00090.002-W07	padding inside Sally ports	Sally port	X				<input type="checkbox"/> Other:	
HW03	00090.002-W08	↓	↓	X					
HW03	00090.002-W09	↓	↓	X					

Comments: _____ Method of Delivery: _____

Positive stop on analyses identified above with '*' Total # samples shipped: **9**

Relinquished By (Print & Sign): **T. Mapherson** Received by Driver/Depot: _____ Received at Lab: _____ Verified By: _____

Date/Time: **Jan. 27, 2016** Date/Time: _____ Date/Time: **1/28/16 9:10a** Date/Time: _____



Ontario Environmental & Safety Network Ltd.

Certificate of Analysis

Ontario Environmental & Safety Network Ltd. (St.)

184 Scott Street, Unit 8 & 9
St. Catharines, ON L2N 1H1
Attn: Lisa Tappay

Client PO:
Project: 00090.002 Fort Mississauga
Custody: 27698

Report Date: 2-Mar-2016
Order Date: 25-Feb-2016

Order #: 1609309

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Parcel ID	Client ID
1609309-01	L01 - Brick Mortar
1609309-02	L02 - Stone Mortar
1609309-03	L03 - Parging

Approved By:



Mark Foto, M.Sc.
Lab Supervisor

Certificate of Analysis

Report Date: 02-Mar-2016

Client: **Ontario Environmental & Safety Network Ltd. (St.)**

Order Date: 25-Feb-2016

Client PO:

Project Description: 00090.002 Fort Mississauga

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	1-Mar-16	2-Mar-16
Solids, %	Gravimetric, calculation	27-Feb-16	27-Feb-16

Certificate of Analysis

Report Date: 02-Mar-2016

 Client: **Ontario Environmental & Safety Network Ltd. (St.)**

Order Date: 25-Feb-2016

Client PO:

Project Description: 00090.002 Fort Mississauga

Client ID:	L01 - Brick Mortor	L02 - Stone Mortor	L03 - Parging	-
Sample Date:	25-Feb-16	25-Feb-16	25-Feb-16	-
Sample ID:	1609309-01	1609309-02	1609309-03	-
MDL/Units	Other	Other	Other	-

Physical Characteristics

% Solids	0.1 % by Wt.	100	100	100	-
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Metals

Lead	1.0 ug/g dry	16.2	6.7	8.3	-
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Certificate of Analysis

Report Date: 02-Mar-2016

 Client: **Ontario Environmental & Safety Network Ltd. (St.)**

Order Date: 25-Feb-2016

Client PO:

Project Description: 00090.002 Fort Mississauga
Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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Metals

Lead	ND	1.0	ug/g						
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Certificate of Analysis

Report Date: 02-Mar-2016

 Client: **Ontario Environmental & Safety Network Ltd. (St.)**

Order Date: 25-Feb-2016

Client PO:

Project Description: 00090.002 Fort Mississauga
Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	1.17	1.0	ug/g dry	16.2			173.0	30	QR-01
Physical Characteristics									
% Solids	82.5	0.1	% by Wt.	81.4			1.3	25	

Certificate of Analysis

Report Date: 02-Mar-2016

 Client: **Ontario Environmental & Safety Network Ltd. (St.)**

Order Date: 25-Feb-2016

Client PO:

Project Description: 00090.002 Fort Mississauga
Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Lead	727		ug/L	507	88.1	70-130			

Certificate of Analysis

Client: **Ontario Environmental & Safety Network Ltd. (St.)**

Client PO:

Report Date: 02-Mar-2016

Order Date: 25-Feb-2016

Project Description: **00090.002 Fort Mississauga**

Qualifier Notes:

QC Qualifiers :

QR-01 : Duplicate RPD is high, however, the sample result is less than 10x the MDL.

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Client Name: <u>Ontario Environmental Safety Network</u>	Project Reference: <u>00090002 Fort Mississauga</u>	TAT: <input checked="" type="checkbox"/> Regular <input type="checkbox"/> 3 Day
Contact Name: <u>Lisa Tappin</u>	Quote #	<input type="checkbox"/> 2 Day <input type="checkbox"/> 1 Day
Address: <u>184 Scott St. Units 819, St. Catharines, ON L2N 1H1</u>	PO #	Date Required: _____
Telephone:	Email Address: <u>l.tappin@oesn.net</u>	

Criteria: O. Reg. 153/04 (As Amended) Table ___ RSC Filing O. Reg. 558/00 PWQO CCME SUB (Storm) SUB (Sanitary) Municipality: _____ Other: _____

Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm Sanitary Sewer) P (Paint) A (Air) O (Other)

Required Analyses

Paracel Order Number:		Matrix	Air Volume	# of Containers	Sample Taken		Lead	Required Analyses											
<u>1609309</u>					Date	Time													
Sample ID/Location Name																			
1	<u>L01 - Brick Mortar</u>	0	-	1	<u>02/25/16</u>	-	X												
2	<u>L02 - Stone Mortar</u>	0	-	1	<u>02/25/16</u>	-	X												
3	<u>L03 - paving</u>	0	-	1	<u>02/25/16</u>	-	X												
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments: _____ Method of Delivery: PUP.

Relinquished By (Sign):	Received by Driver/Depot: <u>Niagara</u> <u>B. Homenick</u>	Received at Lab:	Verified By:
Relinquished By (Print): <u>T. McPherson</u>	Date/Time: <u>25 Feb 15 1:00</u>	Date/Time: <u>Feb 26/16 10:05</u>	Date/Time: <u>Feb 26/16</u>
Date/Time: <u>Feb. 25, 2016</u>	Temperature: _____ °C	Temperature: _____ °C	pH Verified <input type="checkbox"/> By: <u>N/A</u>

10:09a