

Health Canada
51 Chardon Driveway
Building #17, Tunney's Pasture
Ottawa ON K1A 0K9

January 15, 2019

Attention: Mark Strachan

Subject: Project-Specific Designated Substances Survey
Partial Roofing Systems Replacements
Sir Fredrick Banting Building
251 Sir Frederick Banting Driveway, Ottawa, Ontario

DST File No.: GV-OT-035393

1.0 INTRODUCTION

DST Consulting Engineers Inc. (DST) was retained by Health Canada to prepare a project-specific Designated Substance Report (DSR) for the Partial Roofing Systems Replacements project, scheduled to be completed at the Sir Fredrick Banting Building (SFB), 251 Sir Frederick Banting Driveway, Ottawa, Ontario.

The Designated Substances Report is required under the *Ontario Occupational Health and Safety Act* in order to identify designated substances that may be present within the project areas. The *Canada Labour Code* also stipulates under *Part II, Section 124* that every employer shall ensure that the health and safety at work of every person employed by the employer is protected. By having a DSR conducted, the Project Manager will be able to inform his or her employees, contractors, and tenants of any designated substances that may be present and possibly disturbed throughout the duration of the project.

DST staff completed a visual inspection of building materials for the presence of suspected designated substances and hazardous materials in the work area on December 20, 2018.

2.0 SCOPE OF WORK

The survey implemented by DST included the 11 designated substances listed in Section 30 of the *Occupational Health and Safety Act, R.S.O. 1990, Chapter 0.1*. Designated Substances, as identified under the Ontario Occupational Health and Safety Act, are as follows:

- Acrylonitrile,
- Arsenic,
- Asbestos,
- Benzene,
- Coke Oven Emissions,
- Ethylene Oxide,
- Isocyanates,
- Lead,
- Mercury,
- Silica, and
- Vinyl Chloride.

Other Hazardous Materials that are not classified as Designated Substances, but were included as part of the survey and considered pertinent due to applicable regulations, best practice guidelines and/or potential risks to human health and/or the environment, are:

- Polychlorinated Biphenyls (PCBs),
- Halocarbons,
- Mould, and
- Other hazardous materials, as deemed pertinent.

3.0 METHODOLOGY

The purpose of the survey program was to identify designated substances and hazardous materials that may be disturbed during future work operations. The survey was limited to areas and materials that could potentially be disturbed or impacted by the renovation project, as per project drawings provided to DST and on-site discussions with the Health Canada site representative. The survey did not include a full building designated substances survey. The survey was limited to materials anticipated to be disturbed as part of the project. The survey was non-destructive in nature.

Materials suspected of containing designated substances were visually identified, based on the surveyor's knowledge of the historical composition of building products. Visual identification of materials suspected to contain asbestos was supported by the collection and analysis of a limited number of representative samples, where applicable. Materials suspected of containing designated substances other than asbestos were identified by appearance, age, and knowledge of historical applications.

In Ontario, a material is defined as an Asbestos-Containing Material (ACM) if the material has a minimum asbestos content of 0.5 per cent (%) by dry weight, as per *Ontario Regulation (O. Reg.) 278/05 Asbestos on Construction Projects and in Buildings and Repair Operations* enabled under the *Occupational Health and Safety Act (R.S.O. 1990, Chapter 0.1)*, as amended. ACMs can be divided into two categories: friable and non-friable material. A friable ACM is a material that can be crumbled, powdered, or pulverized by hand pressure and can readily release fibres when disturbed. Common applications of friable ACMs are sprayed or trowelled surfacing materials (e.g. sprayed fireproofing and textured coatings) as well as mechanical and thermal insulation. Non-friable materials are materials that will generally release fibres only when cut or shaped. Common non-friable ACMs include vinyl floor products, caulking applications, asbestos textile products and asbestos cement products (transite). Some of these products may become friable with time or when disturbed.

Bulk samples of suspected ACMs collected by DST were analyzed for their asbestos content at Paracel Laboratories. The bulk asbestos samples were analyzed using Polarised Light Microscopy (PLM). This analytical method complies with the United States Environmental Protection Agency (U.S. EPA) Method 600/R-93/116 dated July 1993, which is the regulatory approved protocol for bulk asbestos analysis in Ontario. The laboratories followed a "positive-

stop” analysis methodology and stopped analyzing a sample set if any one of the series of samples proved to be positive for the presence of asbestos. Therefore, additional samples collected by DST in order to satisfy the bulk sampling requirements of *O.Reg. 278/05, as amended*, were not analyzed if a sample layer in a sample layer series was identified as asbestos-containing.

Bulk asbestos analytical results are included in Appendix A.

4.0 FINDINGS

The following sections outline the complete findings of all accessible designated substances and hazardous building materials that were assessed within the project area.

4.1. Asbestos

This section presents the findings of bulk asbestos building material samples collected from and applicable to the project area, based on visual observations at the time of the site survey.

Bulk sampling and laboratory analysis has determined that the following materials contain regulated amounts of asbestos:

- Non-friable base tar with paper layer of roofing material on Roofs 101 and 201 contains 25% Chrysotile asbestos (Samples 35393-SFB-01A-C).

Based upon a review of the most recent asbestos-reassessment completed for the subject building, no ACMs have been identified associated with the roof drain insulation on the undersides of the subject roofs. However, this should be verified in advance of disturbance of roof drain piping insulation.

4.2. Silica

Based on the historical composition of building materials, silica is assumed to be present in:

- Roofing materials layers;
- Brick and mortar; and
- Concrete and cement.

4.3. Other Designated Substances and Hazardous Materials

The following Designated Substances and Hazardous Materials were neither observed, nor suspected of being present, in forms or quantities expected to have an impact on future work operations associated with the project:

- Acrylonitrile,
- Arsenic,
- Benzene,
- Coke Oven Emissions,
- Ethylene Oxide,

- Isocyanates,
- Lead,
- Vinyl Chloride,
- Mercury,
- Halocarbons,
- PCBs,
- Mould, and
- Other Hazardous materials (as deemed pertinent).

5.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the site investigation, sampling and analysis, the following Designated Substances and Hazardous Materials are present in forms and quantities expected to have an impact on future work operations associated with the project:

- Asbestos
- Silica.

DST's recommendations for each material, which are based upon both regulatory compliance and best practice guidelines, are included in the following sections below.

5.1. Asbestos

The disturbance of ACMs on construction and demolition projects is governed by the *Canada Occupational Health and Safety Regulations*, *PSPC Asbestos Management Standard*, and in the province of Ontario is governed by *O.Reg. 278/05*, as amended. These regulations classify all asbestos disturbances as Low Risk (Type 1), Moderate Risk (Type 2), or High Risk (Type 3), each of which has defined precautionary measures. All asbestos materials are subject to specific handling and disposal precautions, and must be removed prior to demolition. The Ontario Ministry of Labour (MoL) must be notified of any project involving removal of more than a minor amount (e.g. typically 1 square metre) of friable asbestos material. In the event of conflict between regulations, the more stringent procedures apply.

The removal of non-friable material (compound at pipe hangars and penetrations) can be completed using Low-Risk procedures, provided only non-powered hand tools are used and the material is wetted during removal. If these conditions cannot be met, then more stringent (Moderate Risk or High-Risk) procedures are required.

The breaking, cutting, drilling, abrading, grinding, sanding, or vibrating of non-friable asbestos-containing materials, if the work is done by means of a power tool that is attached to a dust-collecting device equipped with HEPA filters, can be performed using Moderate Risk asbestos work procedures. The breaking, cutting, drilling, abrading, grinding, sanding, or vibrating of non-friable asbestos-containing materials, if the work is done by means of a power tool that is not attached to a dust-collecting device equipped with HEPA filters, requires High Risk asbestos work procedures.

The transport and disposal of asbestos waste is governed by *O. Reg. 347/90 – General – Waste Management*, as amended. This regulation requires that asbestos waste be sealed in appropriately labelled, double containers resistant to puncture and tears. The waste must be disposed at a licensed waste disposal site.

The time weight average exposure limit (TWAEEL) for airborne asbestos is prescribed by *O.Reg. 490/09 Designated Substances*, as amended and the *Canada Labour Code, Occupational Health and Safety Regulations*. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne asbestos levels that exceed this TWAEEL.

The following recommendations apply to ACMs and suspected ACMs:

- Appropriate work procedures and precautionary measures must be used, as outlined in *O.Reg. 278/05, PSPC Asbestos Management Standard, and the Canada Occupational Health and Safety Regulations*, as amended, when performing work that may disturb ACMs or suspected ACMs, including prior to building demolition.
- Disturbance and/or removal of ACMs must be appropriately recorded as part of the building's Asbestos Management Plan.
- Before undertaking any work activity that involves asbestos-containing materials, an Asbestos Exposure Control Plan shall be developed, in accordance with the requirements of the *Canada Occupational Health and Safety Regulations*, which includes classification of asbestos specific work activities, onsite labelling of ACMs, and education/training of applicable federal employees specific to ACMs.
- If ACMs or suspected ACMs become damaged and worker exposure to the material is likely to occur, the damaged material must be repaired or removed following work procedures outlined in *O. Reg. 278/05, PSPC Asbestos Management Standard, and Canada Labour Code, Occupational Health and Safety Regulations, as amended*.
- Disposal of asbestos waste is controlled by the Ontario Environmental Protection Act, *Regulation 347/90, General – Waste Management*, as amended. This regulation requires that asbestos waste be sealed in double containers resistant to puncture and tears, and appropriately labelled. The waste must be disposed at a licensed waste disposal site. Proper notification must be issued to the site representative prior to transportation of waste. The transport of the waste to the disposal site is controlled by the federal *Transportation of Dangerous Goods Act, 1992 (TDGA)* and Ontario Dangerous Goods Transportation Act.

DST made attempts to evaluate the project areas to identify hazardous materials present. In spite of these efforts, some ACMs may be concealed and not observed at the time of the survey. As such, should any previously unidentified suspect ACMs be encountered as part of future work, these materials are to be treated as ACMs and handled accordingly, unless sampling proves otherwise. Materials that have not been analyzed, but are visibly similar to other materials identified as asbestos-containing, must be considered asbestos-containing unless proven otherwise by laboratory analysis.

5.2. Silica

The Occupational Health and Safety Branch of the Ontario MoL has published *Guideline: Silica on Construction Projects*. This document classifies all silica disturbances as Type 1, Type 2 or Type 3 work, and assigns different levels of respiratory protection and work procedures for each classification. In the absence of specific legislation for silica on construction projects, this guideline would serve as a reasonable, peer reviewed standard for work procedures.

The TWael for airborne silica is prescribed by Ontario Regulation 490/09 *Designated Substances*, as amended. Work procedures and personal protective equipment must be used to ensure that workers are not exposed to airborne silica levels that exceed this TWael.

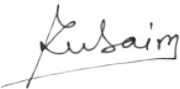
As a general rule, it is preferable to use more stringent dust suppression techniques and engineering controls as opposed to relying on respiratory protection to control worker exposure. Respiratory protection should only be relied on as a last resort when dust suppression techniques and engineering controls fail to control worker exposure to silica.

6.0 CLOSURE

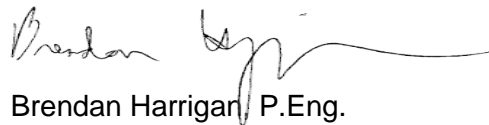
A Limitations of Report section, which forms an integral part of this report, is attached.

We trust that the information contained herein meets your needs. Should you have any questions or comments, please do not hesitate to contact us.

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LIMITATIONS OF REPORT

This report is intended for client use only. Any use of this document by a third party, or any reliance on or decisions made based on the findings described in this report, are the sole responsibility of such third parties, and DST Consulting Engineers Inc. accepts no responsibility for damages, suffered by any third party as a result of decisions made or actions conducted based on this report. No other warranties are implied or expressed.

The data, conclusions and recommendations which are presented in this report, and the quality thereof, are based on a scope of work authorized by the client. The sampling program included asbestos bulk sampling in select representative areas for laboratory analysis. Note, however, that no scope of work, no matter how exhaustive, can guarantee to identify all contaminants. This report therefore cannot warranty that all building conditions are represented by those identified at specific locations.

Recommendations, when included, are made in good faith and are based on several successful experiences. If either the condition of the building or the health of the occupants changes in the future with respect to potential indoor air quality issues, the case should be reviewed and appropriate measures taken.

Mould growth may occur anywhere within a building at any time, should conditions be favorable. It is therefore essential to maintain buildings, surfaces, appliances and furnishings under conditions which are not favorable to mould incubation and growth (warm, dry, and clean).

Note also that standards, guidelines and practices related to environmental investigations may change with time. Those which were applied at the time of this investigation may be obsolete or unacceptable at a later date.

Any comments given in this report on potential remediation problems and possible methods are intended only for the guidance of the designer. The scope of work may not be sufficient to determine all of the factors that may affect construction, clean-up methods and/or costs. Contractors bidding on this project or undertaking clean-ups should, therefore, make their own interpretation of the factual information presented and draw their own conclusions as to how the conditions may affect their work.

Any results from an analytical laboratory or other consultant, sub-contractor reported herein have been carried out by others, and DST Consulting Engineers Inc. cannot warranty their accuracy. Similarly, DST cannot warranty the accuracy of information supplied by the client.

APPENDIX A

Laboratory Certificate of Analysis – Bulk Asbestos

Certificate of Analysis

DST Consulting Engineers Inc. (Ottawa)

203-2150 Thurston Dr.
Ottawa, ON K1G 5T9
Attn: Brendan Harrigan

Client PO:

Project: GV OT 035393

Custody: 32093

Report Date: 8-Jan-2019

Order Date: 20-Dec-2018

Revised Report

Order #: 1851484

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

Parcel ID	Client ID
1851484-01	35393-SFB 01-A
1851484-02	35393-SFB 01-B
1851484-03	35393-SFB 01-C

Approved By:



Heather S.H. McGregor, BSc

Laboratory Director - Microbiology

Certificate of Analysis
 Client: **DST Consulting Engineers Inc. (Ottawa)**
 Client PO:

Report Date: 08-Jan-2019
 Order Date: 20-Dec-2018
 Project Description: **GV OT 035393**

Asbestos, PLM Visual Estimation **MDL - 0.5%**

Parcel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
1851484-01	20-Dec-18	Black	Black Asphalt, Roof	Yes	Client ID: 35393-SFB 01-A	
						[AS-PRE]
					Chrysotile	25
					MMVF	1
					Non-Fibers	74
1851484-02	20-Dec-18				Client ID: 35393-SFB 01-B	
					not analyzed	
1851484-03	20-Dec-18				Client ID: 35393-SFB 01-C	
					not analyzed	

* MMVF: Man Made Vitreous Fibers: Fiberglass, Mineral Wool, Rockwool, Glasswool

** Analytes in bold indicate asbestos mineral content.

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location	NVLAP Lab Code *	Analysis Date
Asbestos, PLM Visual Estimation	by EPA 600/R-93/116	! - Ottawa West Lal	200812-0	21-Dec-18

* Reference to the NVLAP term does not permit the user of this report to claim product certification , approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

Qualifier Notes

Sample Qualifiers :

AS-PRE: Due to the difficult nature of the bulk sample (interfering fibers/binders), additional NOB preparation was required prior to analysis

Work Order Revisions | Comments

Revision 1a-Revised report includes only select samples.



Chain of Custody
(Lab Use Only)
No: 32093

Page ___ of ___

Client Name: DST Consulting Engineers
 Contact Name: Brendan Harrigan
 Address: 203-2150 Thurston Drive, Ottawa, ON
 Telephone: 613-295-6519
 Project Reference: GVOT-035393
 Quote #:
 PO #:
 Email Address: bharrigan@dstgroup.com

Turnaround Time:
 Immediate 1 Day
 4 Hour 2 Day
 8 Hour 3 Day
 Regular
 Date Required: _____

ASBESTOS & MOLD ANALYSIS

Matrix: Air Bulk Tape Lift Swab Other
 Regulatory Guideline: ON QC AB SK Other: _____
 Analyses: Microscopic Mold Culturable Mold Bacteria GRAM PCM Asbestos PLM Asbestos Chatfield Asbestos TEM Asbestos

Paracel Order Number: 1851484		Asbestos - Bulk				
Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Identify Distinct Building Materials to Be Analyzed * see below	Combine Identified Materials? **see below	Positive Stop?
1	35393-SFB 01-A	Dec 20/18	PLM	Black Asphalt, Roof	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2	35393-SFB 01-B	Dec 20/18	PLM	Black Asphalt, Roof	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3	35393-SFB 01-C	Dec 20/18	PLM	Black Asphalt, Roof	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4	35393-LCDC 01-A	Dec 20/18	PLM	4 Ply, Med Bid, Roof	<input type="checkbox"/>	<input checked="" type="checkbox"/>
5	35393-LCDC 01-B	Dec 20/18	PLM	4 Ply, Med Bid, Roof	<input type="checkbox"/>	<input checked="" type="checkbox"/>
6	35393-LCDC 01-C	Dec 20/18	PLM	4 Ply, Med Bid, Roof	<input type="checkbox"/>	<input type="checkbox"/>
7					<input type="checkbox"/>	<input type="checkbox"/>
8					<input type="checkbox"/>	<input type="checkbox"/>
9					<input type="checkbox"/>	<input type="checkbox"/>
10					<input type="checkbox"/>	<input type="checkbox"/>
11					<input type="checkbox"/>	<input type="checkbox"/>
12					<input type="checkbox"/>	<input type="checkbox"/>

* If left blank, Paracel will analyze all materials identified during analysis ** If left blank, Paracel will analyze all materials as individual samples (at additional cost) per EPA 600/R-93/116
 Comments: _____
 Method of Delivery: walk-in

Relinquished By (Sign): Chelsea Green	Received at Depot: Kim Stewart	Received at Lab: Karen Cull	Verified By: Karen Cull
Date/Time: Dec 20/18 4:13 pm	Date/Time: Dec 20/18 4:14	Date/Time: Dec 21/18 9:37	Date/Time: Dec 21/18 10:02