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Geotechnical Engineering
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June 1, 2021
File: PE5190-LET.01

Dentech Holdings Ltd.
797 Richmond Road
Ottawa, Ontario
K2A 0G7

Attention: **Mr. Joe Tallis**

Subject: **Designated Substance Survey**
797 Richmond Road
Ottawa, Ontario

Dear Sir,

Further to your request and authorization, Paterson Group (Paterson) conducted a Designated Substance Survey (DSS) for the property addressed 797 Richmond Road, in the City of Ottawa, Ontario. This letter report summarizes our findings and results of the DSS.

1.0 BACKGROUND

The subject site is situated on the north side of Richmond Road, approximately 70 m west of Cleary Avenue, in the City of Ottawa, Ontario. The subject site is currently occupied by a single storey, slab-on-grade denture care centre, constructed in the early 1980's.

It is our understanding that the subject building is to be demolished in the near future as part of a site redevelopment program. The purpose of this investigation was to identify any potential designated substances within the subject building.

2.0 SITE INSPECTION AND OBSERVATIONS

A representative from Paterson Group conducted a site inspection of the subject building on May 17, 2021. At that time, a visual inspection was carried out for materials containing the following designated substances: acrylonitrile, arsenic, asbestos, benzene, coke oven emissions, ethylene oxide, isocyanates, lead, mercury, silica, and vinyl chloride, as well as the following substances: ozone depleting substances (ODSs) and polychlorinated biphenyls (PCBs).

Building materials such as buried services, roofing materials, floor levelling compounds, caulking, and sealants, which have historically contained asbestos, were not included in this survey since they are generally inaccessible, used in a random fashion, and have a low risk of asbestos fibre release.

2.1 Acrylonitrile

Acrylonitrile is prescribed as a designated substance under Ontario Regulation (O. Reg.) 490/09 of the Occupational Health and Safety Act. It is a volatile, flammable liquid that is used to make many chemicals such as plastics, rubber, and synthetic fibres. Acrylonitrile may be present in stable form in surface coatings (e.g. paints), building material adhesives, and plastics. The above noted products are not considered to pose a concern, provided they are not subjected to extreme heat, such as a torch. Exposure to acrylonitrile is unlikely and not suspected within the subject building.

2.2 Arsenic

Arsenic is prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. Arsenic has many industrial uses, such as the hardening of copper and lead alloys, and can also be found in older lead-based paints. Similar to acrylonitrile, arsenic may also be present in stable form within building material adhesives and some metal alloys. Based on the limited quantity of potentially arsenic containing materials within the subject building, it is not expected that the arsenic concentration in the air will exceed its maximum allowable Time Weighted Average Exposure Value (TWAEV).

2.3 Asbestos

Asbestos is prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. Asbestos-containing materials (ACMs) are defined under O. Reg. 278/05 of the Occupational Health and Safety Act as having a concentration of 0.5% or more by dry weight of fibrous asbestos (i.e. chrysotile, amosite, crocidolite and/or other amphiboles). Asbestos was commonly used in residential and commercial construction between 1930 and 1980.

A total of eleven (11) bulk samples of potentially asbestos containing materials were obtained from the subject building during the May 17, 2021 inspection and submitted to Paracel Laboratories in Ottawa, Ontario for analysis. The potential asbestos containing materials were analyzed to determine the presence, type, and content of asbestos, as shown in Table 1 below. The laboratory certificates of analysis have been appended to this letter.

Table 1 – Summary of Asbestos Testing
797 Richmond Road
May 17, 2021

Sample No.	Description	Colour	Location	Fibrous Asbestos Content	Other Materials
DWJC1	Drywall Joint Compound	Off-White	Front Operating Room Wall	None	100% Non-Fibres
DWJC2			Front Laboratory Room Wall	None	100% Non-Fibres
DWJC3			Rear Laboratory Room Wall	None	100% Non-Fibres
DWJC4			Rear Hallway Wall	None	100% Non-Fibres
DWJC5			Rear Washroom Wall	None	100% Non-Fibres
SUSP1	Suspended Ceiling Tiles	Grey	Front Laboratory Ceiling	None	30% Cellulose 30% MMVF 40% Non-Fibres
SUSP2			Rear Washroom Ceiling	None	30% Cellulose 30% MMVF 40% Non-Fibres
SUSP3			Rear Storage Room Ceiling	None	30% Cellulose 30% MMVF 40% Non-Fibres
VFT1	Vinyl Floor Tiles (20 x 20 cm)	Brown	Rear Utility Room Floor	None	100% Non-Fibres
VFT2				None	100% Non-Fibres
VFT3				None	100% Non-Fibres

Notes:
- MMVF – Man Made Vitreous Fibres (i.e., Fiberglass, Mineral Wool, Rockwool, Glasswool).
- **Bold** – Results exceed the asbestos-containing definable limit.

Drywall Joint Compound

Drywall joint compound was identified throughout the majority of the subject building. Five (5) samples of the drywall joint compound were submitted for laboratory analysis. No asbestos was identified in any of the samples analyzed, and as a result, the drywall joint compound is not considered to be an asbestos containing material.

Suspended Ceiling Tiles

Suspended ceiling tiles were identified throughout the majority of the subject building. Three (3) samples of the suspended ceiling tiles were submitted for laboratory analysis via positive stop. No asbestos was identified in any of the samples analyzed, and as a result, the suspended ceiling tiles are not considered to be an asbestos containing material.

Vinyl Floor Tiles

One (1) type of vinyl floor tile was identified within the rear utility room of the subject building. Three (3) samples of the vinyl floor tiles were submitted for laboratory analysis via positive stop. No asbestos was identified in any of the samples analyzed, and as a result, the vinyl floor tiles are not considered to be an asbestos containing material.

Insulation

No insulation materials were identified within the subject building at the time of the site inspection.

2.4 Benzene

Benzene is prescribed as a designated substance under O. Reg 490/09 of the Occupational Health and Safety Act. Benzene is used in the manufacturing of many products including plastics, rubbers, resins, and synthetic fibres. It is also used as a solvent in printing and paints as well as in petroleum products, such as gasoline and diesel. Benzene may be present in older paints, sealants, and roofing materials, some of which may be present in the subject building. Benzene is not considered to be a concern, since it typically vaporizes rapidly from most products shortly after manufacturing or application, however, the above noted materials should not be subjected to extreme heat without proper worker respiratory protection.

2.5 Coke Oven Emissions

Coke oven emissions are prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. Coke oven emissions are not typically found outside of the metal extraction industry. No sources of coke oven emissions are suspected or were observed within the subject building.

2.6 Ethylene Oxide

Ethylene oxide is prescribed as a designated substance under O. Reg 490/09 of the Occupational Health and Safety Act. Ethylene oxide is used in large volumes as a chemical intermediate in the manufacturing of many industrial products including textiles, detergents, foam, antifreeze, solvents, and adhesives. Based on the limited quantity of potentially ethylene oxide containing materials within the subject building, ethylene oxide is not considered to pose a concern.

2.7 Isocyanates

Isocyanates are prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. Isocyanates are the raw materials from which all polyurethane products are made. They are used widely in the manufacturing of foams, plastics, adhesives, synthetic fibres, and coatings; such as paints and varnishes, some of which are present in the subject building. Over time, isocyanates will volatize out of these materials, but will only be present in trace amounts and are not expected to reach hazardous air concentrations. As a result, isocyanates are not considered to pose a concern.

2.8 Lead

Lead is prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. For the purposes of this report, the commonly used value of 90 ppm [Surface Coatings Material Regulation (SOR/2005-109) – October 2010] will serve as the lead-containing definable limit. Lead concentrations will be categorized into three (3) classes, lead-based (greater than 5000 ppm), lead-containing (between 90 ppm and 5000 ppm) and non-lead containing (less than 90 ppm).

Lead may be present in older paints, plastics, lead caulking in bell joints for cast iron piping systems, lead solder in copper piping systems, electrical equipment, and ceramics. Painted surfaces on the interior of the subject building were observed at the time of the site inspection and three (3) paint samples were obtained and submitted to Paracel Laboratories in Ottawa, Ontario for lead content analysis. The sample locations and lead content can be found below in Table 2. The laboratory certificate of analysis is appended to this letter.

Table 2 – Summary of Lead Testing
797 Richmond Road
May 17, 2021

Sample No.	Location	Colour	Lead-Containing Definable Limit (µg/g)	Lead Content (µg/g)
PT1	Rear Laboratory Room Wall	Blue	90	<20
PT2	Rear Storage Room Wall	White	90	<20
PT3	Front Laboratory Room	Brown	90	<20

Notes:
- **Bold** - Results exceed the lead-containing definable limit.

Based on the analytical test results, no lead-containing paints were identified within the subject building.

2.9 Mercury

Mercury is prescribed as a designated substance under O.Reg 490/09 of the Occupational Health and Safety Act. Mercury may be present in thermostats, barometers, and hydrometers, along with other laboratory measuring devices. It may also be present in older lead-based paints and many types of light fixtures, including fluorescent tubes. Any mercury containing equipment must be disposed of according to O. Reg. 347, as amended by O. Reg. 558, if it is being decommissioned.

2.10 Vinyl Chloride

Vinyl chloride is prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. Vinyl chloride is the parent compound of polyvinyl chloride (PVC) which is used in many consumer and industrial plastic products. It is also used extensively in the glass, rubber, and paper industries. Vinyl chloride may be present in stable form within pipes, plastics, vinyl's, and interior finishes such as paints and varnishes throughout the subject building. The health hazard associated with vinyl chloride comes primarily from the inhalation of fumes. In most applications, vinyl chloride is considered to be stable as long as it is not subjected to extreme heat. As a result, vinyl chloride is not expected to be a concern as long as materials are not subjected to extreme heat.

2.11 Silica

Silica is prescribed as a designated substance under O. Reg. 490/09 of the Occupational Health and Safety Act. Silica or silicon dioxide is the basic component of sand, quartz, and granite rock. Silica is expected to be present within any concrete and cement parging in the subject building. Typical handling procedures include wetting materials prior to, and during, any demolition activities that are required to control dust.

2.12 Ozone Depleting Substances (ODSs)

Potential sources of ODSs observed on-site include fire extinguishers and a refrigerator. These appliances appeared to be in good condition at the time of the site inspection and should be regularly serviced by a licensed contractor or removed prior to any large-scale demolition activities.

2.13 Polychlorinated Biphenyls (PCBs)

No potential sources of PCBs were observed in the subject building at the time of the visual inspection.

3.0 SURVEY SUMMARY AND RECOMMENDATIONS

Based on our survey, no asbestos containing materials (ACMs) were identified in the subject building. The possible presence of limited quantities of acrylonitrile, arsenic, benzene, ethylene oxide, isocyanates, and silica in the aforementioned building materials do not pose a concern, provided precautionary measures are followed during future proposed demolition works.

Lead

Lead may be present in the solder used for the copper plumbing system. This does not pose a concern to construction workers, provided it is not heated or pulverized. Appropriate procedures for working with lead on construction sites should be developed and implemented during any renovations, demolition, or maintenance activities. Further information on precautionary measures can be obtained from the document entitled, *"Guideline – Lead on Construction Projects"*, prepared by the Occupational Health and Safety Branch of the Ontario Ministry of Labour and dated April 2011.

Silica

Silica is expected to be present in various building materials, including concrete and cement parging. When potential silica containing materials (as identified in this report) are to be disturbed, precautions should be taken to minimize dust creation, such as wetting surfaces, as well as to protect workers, such as providing appropriate dust masks. Further information can be obtained from the document entitled, *"Guideline – Silica on Construction Projects"* prepared by the Occupational Health and Safety Branch of the Ontario Ministry of Labour and dated April 2011.

4.0 STATEMENT OF LIMITATIONS

A designated substance survey was completed for the building located at 797 Richmond Road, in the City of Ottawa, Ontario. The results of the survey are based on our visual observations made at the time of the site inspection in conjunction with our analytical test results. Should any conditions be encountered at the subject properties that differ from our findings, we request that we be notified immediately in order to allow for a reassessment.

This report was prepared for the sole use of Dentech Holdings Ltd. Permission and notification from Dentech Holdings Ltd. and Paterson Group will be required prior to the release of this report to any other party.

We trust that this submission will satisfy your present requirements. If you have any questions regarding this report, please contact our office.

Regards,

Paterson Group Inc.



Nick Sullivan, B.Sc.



Eric Leveque, B.A.

Report Distribution:

- ❑ Dentech Holdings Ltd.
- ❑ Paterson Group Inc.

Attachments:

- ❑ Laboratory Certificates of Analysis

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Nick Sullivan

Client PO: 32053
Project: PE5190
Custody: 52028

Report Date: 25-May-2021
Order Date: 17-May-2021

Order #: 2121115

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

Paracel ID	Client ID
2121115-01	DWJC1
2121115-02	DWJC2
2121115-03	DWJC3
2121115-04	DWJC4
2121115-05	DWJC5
2121115-06	SUSP1
2121115-07	SUSP2
2121115-08	SUSP3
2121115-09	VFT1
2121115-10	VFT2
2121115-11	VFT3

Approved By:

Harling Sierra
Senior Analyst

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising, shall be limited to the amount paid by you for this work, and that our employees or agents shall not under any circumstances be liable to you in connection with this work.

PARACEL LABORATORIES LTD.

Order #: 2121115

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32053

Report Date: 25-May-2021

Order Date: 17-May-2021

Project Description: PE5190

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

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2121115-01	17-May-21	Off-white	Drywall Joint Compound	No	**Client ID: DWJC1**	
					Non-Fibers	100
2121115-02	17-May-21	Off-white	Drywall Joint Compound	No	**Client ID: DWJC2**	
					Non-Fibers	100
2121115-03	17-May-21	Off-white	Drywall Joint Compound	No	**Client ID: DWJC3**	
					Non-Fibers	100
2121115-04	17-May-21	Off-white	Drywall Joint Compound	No	**Client ID: DWJC4**	
					Non-Fibers	100
2121115-05	17-May-21	Off-white	Drywall Joint Compound	No	**Client ID: DWJC5**	
					Non-Fibers	100
2121115-06	17-May-21	Grey	Suspended Ceiling Tile	No	**Client ID: SUSP1** [AS-PRE]	
					Cellulose	30
					MMVF	30
					Non-Fibers	40
2121115-07	17-May-21	Grey	Suspended Ceiling Tile	No	**Client ID: SUSP2** [AS-PRE]	
					Cellulose	30
					MMVF	30
					Non-Fibers	40
2121115-08	17-May-21	Grey	Suspended Ceiling Tile	No	**Client ID: SUSP3** [AS-PRE]	
					Cellulose	30
					MMVF	30
					Non-Fibers	40
2121115-09	17-May-21	Brown	Vinyl Floor Tile	No	**Client ID: VFT1**	
					Non-Fibers	100
2121115-10	17-May-21	Brown	Vinyl Floor Tile	No	**Client ID: VFT2**	
					Non-Fibers	100

PARACEL LABORATORIES LTD.

Order #: 2121115

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32053

Report Date: 25-May-2021

Order Date: 17-May-2021

Project Description: PE5190

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

Paracel ID	Sample Date	Colour	Description	Asbestos Detected	Material Identification	% Content
2121115-11	17-May-21	Brown	Vinyl Floor Tile	No	**Client ID: VFT3**	
					Non-Fibers	100

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

Analysis Summary Table

Analysis	Method Reference/Description	Lab Location		Analysis Date
Asbestos, PLM Visual Estimation	AppE to SubE of 40CFR Part753 and EPA/600/R-93/116	3 - Calgary	CALA A3990	25-May-21

Calgary Lab: 1423 45 Ave NE, Unit F Calgary, AB, T2E 2P3

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

None

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2121115

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Chain of Custody
(Lab Use Only)
No 52028

Page 1 of 1

Client Name: Paterson Group	Project Reference: PE5190
Contact Name: Nick Sullivan	Quote #:
Address: 154 Colonnade Rd. S.	PO #: 32053
Telephone: 613-226-7381	Email Address: nsullivan@patersongroup.ca

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: / Sample ID	Sampling Date	Air Volume (L)	Analysis Required	Asbestos - Bulk: Identify Distinct Building Materials to Be Analyzed (if not specified, all materials identified will be analyzed) *	Positive Stop?
1	DWJC1	May 17/21		PLM	Drywall Joint Compound	☐
2	DWJC2					☐
3	DWJC3					☐
4	DWJC4					☐
5	DWJC5					☐
6	SUSP1				Suspended Ceiling Tile	☒
7	SUSP2					☒
8	SUSP3					☒
9	VFT1				Vinyl Floor Tile (Brown)	☒
10	VFT2					☒
11	VFT3					☒
12						☐

* If left blank, all distinct materials identified in the samples will be analyzed and reported separately as per EPA 600/R-93/116. Additional charges will apply.

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): N. Sullivan	Received at Depot: M. DeLouse	Received at Lab:	Verified By:
Relinquished By (Print): Nick Sullivan			
Date/Time: May 17/2021	Date/Time: 17/05/21 3:01 PM	Date/Time: 2021.5.17 16:20	Date/Time: 2021.5.17 16:20

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Certificate of Analysis

Paterson Group Consulting Engineers

154 Colonnade Road South
Nepean, ON K2E 7J5
Attn: Nick Sullivan

Client PO: 32052
Project: PE5190
Custody: 131591

Report Date: 25-May-2021
Order Date: 17-May-2021

Order #: 2121144

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

Paracel ID	Client ID
2121144-01	PT1
2121144-02	PT2
2121144-03	PT3

Approved By:



Dale Robertson, BSc
Laboratory Director

Any use of these results implies your agreement that our total liabilty in connection with this work, however arising shall be limited to the amount paid by you for this work, and that our employees or agents shall not under circumstances be liable to you in connection with this work

Certificate of Analysis

Report Date: 25-May-2021

Client: Paterson Group Consulting Engineers

Order Date: 17-May-2021

Client PO: 32052

Project Description: PE5190

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-OES	based on MOE E3470, ICP-OES	21-May-21	25-May-21

Qualifier Notes:

QC Qualifiers :

QR-04 : Duplicate results exceeds RPD limits due to non-homogeneous matrix.

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.

Certificate of Analysis

Client: Paterson Group Consulting Engineers

Client PO: 32052

Report Date: 25-May-2021

Order Date: 17-May-2021

Project Description: PE5190

Sample Results

Lead

Matrix: Paint

Paracel ID	Client ID	Sample Date	Units	MDL	Result
2121144-01	PT1	17-May-21	ug/g	20	<20
2121144-02	PT2	17-May-21	ug/g	20	<20
2121144-03	PT3	17-May-21	ug/g	20	<20

Laboratory Internal QA/QC

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Matrix Blank									
Lead	**ND**	**20**	**ug/g**						
Matrix Duplicate									
Lead	**290000**	**2000**	**ug/g**	**191000**			**41.20**	**30**	**QR-04**
Matrix Spike									
Lead	228	20.00	ug/g	ND	91.0	70-130			

PARACEL LABORATORIES LTD.

Paracel ID: 2121144

Paracel Order Number (Lab Use Only)	Chain Of Custody (Lab Use Only)
2121144	№ 131591

Client Name: Paterson Group
Contact Name: Nick Sullivan
Address: 154 Colonnade Rd. S.
Telephone: 613-226-7381

Project Ref: PE5190
Quote #:
PO #: 32052
E-mail: nsullivan@patersongroup.ca

Page 1 of 1

Turnaround Time
☐ 1 day ☐ 3 day
☐ 2 day ☒ Regular
Date Required:

Regulation 153/04
☐ Table 1 ☐ Res/Park ☐ Med/Fine
☐ Table 2 ☐ Ind/Comm ☐ Coarse
☐ Table 3 ☐ Agri/Other
☐ Table
For RSC: ☐ Yes ☐ No

Other Regulation
☐ REG 558 ☐ PWQO
☐ CCME ☐ MISA
☐ SU - Sani ☐ SU - Storm
Mun:
☐ Other:

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

	Sample ID/Location Name	Matrix	Air Volume	# of Containers	Sample Taken Date	Sample Taken Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	Lead Paint Analysis
1	PT1	P		1	May 17/21	PM								X
2	PT2	↓		1	↓	↓								X
3	PT3	↓		1	↓	↓								X
4														
5														
6														
7														
8														
9														
10														

Comments:

Method of Delivery: PARACEL COURIER

Relinquished By (Sign): N. Sullivan	Received By Driver/Depot: A. Fleure	Received at Lab: SCOT	Verified By: SCOT
Relinquished By (Print): Nick Sullivan	Date/Time: 17/05/21 3:01	Date/Time: May 17/21 4:30	Date/Time: May 17/21 6:16p
Date/Time: May 17/2021	Temperature: °C	Temperature: 18.1 °C	pH Verified: ☐ By: N/A