April 30, 2017

University of Toronto
255 McCaul Street, Level 4
Toronto, Ontario M5T 1W7

Attn: Mr. Irfan Miraj, P.Eng., MHSc.
Manager, Hazardous Construction Materials Group

Re: Results of PCM and TEM Air Monitoring Program
April 24-28, 2017
University of Toronto – Medical Sciences Building
1 King's College Circle, Toronto, Ontario

1.0 INTRODUCTION

Safetech Environmental Limited (SEL) has been retained from April 24 to April 28, 2017 to provide air monitoring services for the University of Toronto's Medical Sciences Building located at 1 King's College Circle, Toronto, Ontario M5S 1A8. Air sampling has been performed at the request of Mr. Irfan Miraj, Manager, Hazardous Construction Materials Group, to determine if airborne asbestos fibre concentrations are within acceptable and applicable limits. This report provides detail of air sampling conducted from April 24-28, 2017.

From April 24 to April 28, SEL has collected a total of 67 representative samples, 18 location specific samples and 10 outdoor samples:

- Representative samples refer to locations that were uniformly selected and also upon occupant request. These "building-wide" air samples provide an overview of air quality with regard to airborne fibres.
- Location samples refer to samples taken pre- and post-asbestos clean-up in locations where asbestos-containing dust (>0.5%) were present.
- Outdoor reference samples were collected because asbestos fibres are naturally occurring.

2.0 SUMMARY OF CONCLUSIONS

The Medical Sciences Building air quality is not being negatively impacted by the presence of asbestos-containing building materials existing within the building. The building is deemed to be safe for general occupancy. In addition, although construction related work is being conducted at various locations within the Medical Sciences Building it does not appear that airborne fibres are being drawn into the heating, ventilation and air conditioning systems and negatively impacting the quality of air.

SEL has based above conclusions on the facts briefly described below:

- Of the 67 representative samples; all 67 samples indicate that at the time of sampling the airborne fiber concentrations were well below the TWA (time weighted average) of 0.1 fibers per cubic centimeter (f/cc), in accordance with Ontario Regulation 490/09, Designated Substances and also below 50% TWA; an action level followed by SEL.

- Of the 18 location specific samples; all 18 samples indicate that at the time of sampling the airborne fiber concentrations were well below the TWA (time weighted average) of 0.1 fibers per cubic centimeter (f/cc), in accordance with Ontario Regulation 490/09, Designated Substances and also below 50% TWA; an action level followed by SEL.

- All 10 outdoor samples also indicated that at the time of sampling the airborne fiber concentrations were well below 0.1f/cc.

Please refer to Appendix A detailed spread sheets and technical reports of aforementioned samples. As explained in next section (3.1), other non-asbestos fibres and particles may interfere and result in higher fibre counts. Therefore the results shown in Appendix A do not reflect airborne concentrations of asbestos alone but for the purpose of this assessment, it is compared to the TWA for asbestos. Actual airborne asbestos fibre concentration may be lower than the values in Appendix A.

3.0 METHODOLOGY

3.1 Air Monitoring for Airborne Fibres

Phase contrast microscopy (PCM) air samples were retrieved within designated locations. The air samples were collected using a 25-mm three-piece filter cassettes containing a 0.8 µm cellulose ester membrane filter and equipped with a 50-mm electrically conductive extension cowl. The filter cassettes were attached to a high volume air sampling pump calibrated with a filter cassette in line to a known flow rate.

The air sampling pumps were calibrated to a flow rate of approximately 15 litres per minute. The air samples were collected using 25 mm three piece cassette with 50 mm electrically conductive extension cowl and mixed cellulose ester filter, 0.8 µm (recommended 0.45 to 1.2 in method) effective pore size, and back-up pad. The air samples were analyzed in accordance with U.S. National Institute of Occupational Safety and Health (NIOSH) Manual of Analytical Methods, Method 7400, Issue 2: Asbestos and other Fibres by PCM (August 15, 1994), using the asbestos fibre counting rules.

The quantitative working range of this method is 0.04 to 0.5 fibre/cc for a 1000 L air sample. The Limit of Detection (LOD) depends on sample volume and quantity of interfering dust, and is < 0.01 fibre/cc for atmospheres free of interferences. The method gives an index of airborne fibres. Fibres less than approximately 0.25 µm in diameter will not be detected by this method. In addition, other airborne fibres and particles that fall within the counting range criteria may act as possible interferences. Demolition and construction related work areas where high levels of dust are present might overload the membrane and/or interfere with the analysis. As required by NIOSH Method 7400, blank filters were submitted for analysis to ensure that no contamination of the filters occurred during sampling or analytical procedures. Analytical results, as reported in the result table of this report have been field blank corrected.

3.2 Transmission Electron Microscopy

Where PCM results indicate airborne fibres to be greater than 50% of the TWA, a secondary analysis of air samples was conducted using NIOSH Method 7402, Issue 2: Asbestos by TEM (August 15, 1994). This method is used to determine asbestos fibres in the optically visible range and has the ability to distinguish asbestos fibres from other types of fibres (e.g. clothing fibres). It is intended to complement the results obtained by phase contrast microscopy (NIOSH Method 7400).

In accordance with this method, a sample is analyzed at a magnification of 10,000 times. Only fibres with an aspect ratio of >3:1 and only those fibres greater than 5 µm in length are counted. The quantitative working range of this method is 0.04 to 0.5 fibres per cubic centimetre (f/cc) for a 1000 litre (L) air sample. The Limit of Detection (LOD) depends on sample volume and quantity of interfering dust, and is < 0.01 fibres per cubic centimetre (f/cc) for atmospheres free of interferences. Other amphibole particles that have asbestos ratios greater than 3:1 and elemental compositions similar to the asbestos minerals may interfere in the TEM analysis. Some non-amphibole minerals may give electron diffraction patterns similar to amphiboles. High concentrations of background dust may also interfere with fibre identification.

4.0 LIMITATIONS

The investigation, assessments and recommendations detailed in this report were carried out in a manner consistent with the level of care and skill normally exercised by reasonable members of the environmental and industrial hygiene consulting profession currently practicing under similar conditions in the area. Furthermore, the investigation, assessments and recommendations in this report have been made based on conditions observed at the time of the assessment and are limited to the areas investigated.

In preparing this report, Safetech Environmental Limited (SEL) relied on information supplied by others. Except as expressly set-out in this report, SEL has not made any independent verification of such information.

The analytical method used meets the requirements of O.Reg. 278/05. However, it is important to note that this method is not specific to the identification of asbestos fibres. All particles with a length greater than 5 micrometres, less than 3 micrometres in diameter and a length to diameter ratio of 3 to 1 or greater are included in the count. Fibres with diameters less than about 0.3 micrometres cannot be detected using this method regardless of length.

This report has been prepared for the sole use of the person or entity to who it is addressed. No other person or entity is entitled to use or rely upon this report without the express written consent of Safetech Environmental Limited and the person or entity to who it is addressed. Any use that a third party makes of this report, or any reliance based on conclusions and recommendations made, are the responsibility of such third parties. SEL accepts no responsibility for damages suffered by third parties as a result of actions based on this report.

Should you have any questions regarding this project, please contact our office.
Sincerely,

SAFETECH ENVIRONMENTAL LIMITED

Josh Hamilton
OH&S Technician

D. Glenn Smith, BA, CRSP, AMRT
Senior Project Manager

Appendices:

Appendix A – PCM Air Sample Spreadsheets – SEL
Appendix B – PCM Location Specific Report
Appendix C – Pump Calibration Sheets
Appendix D – PCM Analysis Example Calculation Sheet

Appendix A
PCM AIR SAMPLE SPREADSHEET-SEL

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 3, University of Toronto, April 28, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
3	3365	Physiology	Central	2017-04-767	8	15.03	9:37	11:18	101	1518	5	0.001	SC/GS	Yes	Not Occupied
3	3369K	Hallway	Central	2017-04-768	9	15.07	9:47	11:21	94	1417	6	0.002	SC/GS	Yes	Occupied.
3	3249K	Hallway	Central	2017-04-769	10	15.02	9:56	11:33	97	1457	9	0.003	SC/GS	Yes	Occupied.
3	3266	Study Room	Central	2017-04-770	7	15.01	10:01	11:38	97	1456	3	0.001	SC/GS	Yes	Not Occupied
3	3344	Lab	Central	2017-04-771	6	15.01	10:18	11:49	91	1366	5	0.002	SC/GS	Yes	Not Occupied
3	3348K	Hallway	Central	2017-04-772	2	14.97	10:21	11:53	92	1377	4	0.001	SC/GS	Yes	Occupied.
3	3336	Lab	Central	2017-04-773	1	15.02	10:33	11:55	82	1232	3	0.001	SC/GS	Yes	Occupied.
3	3320K	Hallway	Central	2017-04-774	5	15.01	10:38	11:58	80	1201	4.5	0.002	SC/GS	Yes	Occupied.
3	3329K	Hallway	Central	2017-04-775	10	15.02	12:06	13:29	83	1247	5.5	0.002	SC/GS	Yes	Occupied.
3	3234	Elevator Lobby	Central	2017-04-776	7	15.01	12:10	13:36	86	1291	3	0.001	SC/GS	Yes	Occupied.
3	3324K	Hallway	Central	2017-04-777	9	15.07	12:26	13:44	78	1175	3.5	0.001	SC/GS	Yes	Occupied.
3	3201K	Hallway	Central	2017-04-778	8	15.03	12:22	13:47	85	1276	2	0.001	SC/GS	Yes	Occupied.
3	3151K	Hallway	Central	2017-04-779	2	14.97	12:33	13:54	81	1213	5	0.002	SC/GS	Yes	Occupied.
3	3374K	Hallway	Central	2017-04-780	6	15.04	12:37	13:58	81	1218	6	0.002	SC/GS	Yes	Occupied.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 3, University of Toronto, April 28, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
	Exterior Control	NA	South of Medical Sciences Building	2017-04-781	1	15.02	12:54	14:26	92	1382	1	0.001	SC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-782	5	15.01	12:59	14:31	92	1381	2.5	0.001	SC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-783	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-784	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-785	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-786	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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Interpretation of Results

1) Within Ontario, the Occupational Health and Safety Act - Ontario Regulation 490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.

2) For each area tested compare the "Results f/cc" column to your area and how it compares to the above noted regulation.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 4, University of Toronto, April 27, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
4	4180	Lab	Central	2017-04-747	1	15.05	9:20	11:03	103	1550	4	0.001	SC/GS	Yes	Not Occupied
4	4374K	Hallway	Central	2017-04-748	5	14.96	9:26	11:06	100	1496	2.5	0.001	SC/GS	Yes	Occupied.
4	4289K	Hallway	Central	2017-04-749	8	14.97	9:31	11:09	98	1467	4	0.001	SC/GS	Yes	Occupied.
4	4282	Lab	Central	2017-04-750	9	15.04	9:36	11:12	96	1444	3.5	0.001	SC/GS	Yes	Not Occupied
4	4279	Lecture Room	Central	2017-04-751	2	14.97	9:41	11:18	97	1452	3	0.001	SC/GS	Yes	Not Occupied
4	4388K	Hallway	Central	2017-04-752	10	15.06	9:48	11:21	93	1401	4.5	0.001	SC/GS	Yes	Occupied.
4	4384	Lab	Central	2017-04-753	7	15.07	9:52	11:24	92	1386	2.5	0.001	SC/GS	Yes	Not Occupied
4	4384K	Hallway	Central	2017-04-754	6	15.02	9:56	11:28	92	1382	7	0.002	SC/GS	Yes	Occupied.
4	4355	Media Prep Room	Central	2017-04-755	1	15.05	11:41	13:42	121	1821	2.5	0.001	SC/GS	Yes	Occupied.
4	4344	Lab	Central	2017-04-756	5	14.96	11:48	13:44	116	1735	7	0.002	SC/GS	Yes	Not Occupied
4	4369K	Hallway	Central	2017-04-757	10	15.06	11:53	13:47	114	1717	4	0.001	SC/GS	Yes	Occupied.
4	4255K	Hallway	Central	2017-04-758	7	15.07	11:58	13:50	112	1688	2.5	0.001	SC/GS	Yes	Occupied.
4	4349K	Hallway	Central	2017-04-759	8	14.97	12:10	13:56	106	1587	7	0.002	SC/GS	Yes	Occupied.
4	4243K	Hallway	Central	2017-04-760	9	15.04	12:15	13:58	103	1549	3	0.001	SC/GS	Yes	Occupied.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 4, University of Toronto, April 27, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
	Exterior Control	NA	South of Medical Sciences Building	2017-04-761	2	14.97	12:22	14:17	115	1722	3	0.001	SC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-762	6	15.02	12:28	14:12	104	1562	2.5	0.001	SC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-763	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-764	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-765	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-766	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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Interpretation of Results

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2) For each area tested compare the "Results f/cc" column to your area and how it compares to the above noted regulation.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 5, University of Toronto, April 26, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
5	5272	Janitorial Room	Central	2017-04-727	2	15.02	9:50	11:23	93	1397	4.5	0.001	SC/GS	Yes	Not Occupied
5	5376K	Hallway	Central	2017-04-728	6	15.03	9:55	11:26	91	1368	5.5	0.002	SC/GS	Yes	Occupied.
5	5254	Lab	Central	2017-04-729	1	15.02	10:22	11:31	69	1036	1.5	0.001	SC/GS	Yes	Not Occupied
5	5251	Centrifuge Room	Central	2017-04-730	5	14.91	10:26	11:35	69	1029	3	0.001	SC/GS	Yes	Not Occupied
5	5369K	Hallway	Central	2017-04-731	7	14.99	10:31	11:40	69	1034	3	0.001	SC/GS	Yes	Occupied.
5	5368	Lab	Central	2017-04-732	9	15.05	10:39	11:50	71	1069	5	0.002	SC/GS	Yes	Not Occupied
5	5363	Office	Central	2017-04-733	10	15.07	10:46	11:56	70	1055	4	0.002	SC/GS	Yes	Occupied.
5	5350K	Hallway	Central	2017-04-734	8	15.02	10:52	12:01	69	1036	4	0.002	SC/GS	Yes	Occupied.
5	5334	Lab	Central	2017-04-735	1	15.02	12:06	13:33	87	1307	3.5	0.001	SC/GS	Yes	Not Occupied
5	5331	Cell Culture	Central	2017-04-736	5	14.91	12:10	13:36	86	1282	3	0.001	SC/GS	Yes	Occupied.
5	5223	Janitorial Room	Central	2017-04-737	7	14.99	12:15	13:40	85	1274	7	0.002	SC/GS	Yes	Not Occupied
5	5322K	Hallway	Central	2017-04-738	8	15.02	12:19	13:46	87	1307	7	0.002	SC/GS	Yes	Occupied.
5	5222K	Hallway	Central	2017-04-739	9	15.05	12:26	13:48	82	1234	3	0.001	SC/GS	Yes	Occupied.
5	5348K	Hallway	Central	2017-04-740	10	15.07	12:30	13:53	83	1251	5.5	0.002	SC/GS	Yes	Occupied.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-741	6	15.03	12:47	14:02	75	1127	1.5	0.001	SC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-742	2	15.02	14:15	15:29	74	1111	2	0.001	SC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-743	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-744	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-745	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-746	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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Interpretation of Results

1) Within Ontario, the Occupational Health and Safety Act - Ontario Regulation 490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.

2) For each area tested compare the "Results f/cc" column to your area and how it compares to the above noted regulation.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 6, University of Toronto, April 25, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
6	6334	Lab	Central	2017-04-706	4	14.99	11:28	12:44	76	1139	4.5	0.002	SC/GS	Yes	Occupied.
6	6363	Instrument Room	Central	2017-04-707	8	15.06	11:35	12:46	71	1069	6	0.002	SC/GS	Yes	Not Occupied
6	6369	Service Elevator Lobby	Central	2017-04-708	10	15.02	11:40	12:50	70	1051	3	0.001	SC/GS	Yes	Occupied.
6	6276	Janitor Closet	Central	2017-04-709	2	15	11:45	12:55	70	1050	2	0.001	SC/GS	Yes	Not Occupied
6	6270	Lab	Central	2017-04-710	6	15.05	11:54	13:04	70	1054	5	0.002	SC/GS	Yes	Not Occupied
6	6254K	Hallway	Central	2017-04-711	9	14.93	12:00	13:12	72	1075	8	0.003	SC/GS	Yes	Occupied.
6	6249	Equipment Room	Central	2017-04-712	7	15.1	12:05	13:16	71	1072	3	0.001	SC/GS	Yes	Not Occupied
6	6238	Lab	Central	2017-04-713	1	15.01	12:10	13:21	71	1066	4	0.002	SC/GS	Yes	Not Occupied
6	6236	Mail Room	Central	2017-04-714	5	15.09	12:13	13:23	70	1056	9.5	0.004	SC/GS	Yes	Occupied.
6	6331	Glasswashing Room	Central	2017-04-715	8	15.06	13:31	14:46	75	1130	6	0.002	SC/GS	Yes	Not Occupied
6	6201K	Hallway	Central	2017-04-716	10	15.02	13:36	14:50	74	1111	4.5	0.002	SC/GS	Yes	Occupied.
6	6221	Meeting Room	Central	2017-04-717	1	15.01	13:48	15:00	72	1081	1.5	0.001	SC/GS	Yes	Not Occupied
6	6218	Lab	Central	2017-04-718	5	15.09	13:52	15:03	71	1071	3.5	0.001	SC/GS	Yes	Not Occupied
6	6202	Administration Room	Central	2017-04-719	7	15.1	13:58	15:07	69	1042	4	0.002	SC/GS	Yes	Occupied.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 6, University of Toronto, April 25, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
6	6212	Lab	Central	2017-04-720	9	14.93	14:03	15:11	68	1015	2	0.001	SC/GS	Yes	Occupied.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-721	6	15.05	14:11	15:23	72	1084	2	0.001	SC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-722	2	1/15/1900 0:00	14:15	15:29	74	1110	4.5	0.001	SC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-723	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-724	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-725	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-726	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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Interpretation of Results

1) Within Ontario, the Occupational Health and Safety Act - Ontario Regulation 490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.

2) For each area tested compare the "Results f/cc" column to your area and how it compares to the above noted regulation.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 3, University of Toronto, April 24, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
3	3366	Lab	Central	2017-04-690	2	15	12:11	14:29	138	2070	5.5	0.001	SC/GS	Yes	Occupied.
3	3360	Lab	Central	2017-04-691	6	15.11	12:27	14:34	127	1919	5	0.001	SC/GS	Yes	Occupied.
3	3260	Lab	Central	2017-04-692	1	14.94	12:34	14:37	123	1838	16.5	0.004	SC/GS	Yes	Construction Area.
3	3378	Student Room	Central	2017-04-693	5	14.99	12:41	14:44	123	1844	6.5	0.002	SC/GS	Yes	Occupied.
3	3318	Lab	Central	2017-04-694	7	14.99	13:02	14:45	103	1544	4.5	0.001	SC/GS	Yes	Occupied.
3	3316	Lab	Central	2017-04-695	9	14.98	13:07	14:47	100	1498	5	0.001	SC/GS	Yes	Occupied.
3	3384	Lab	Central	2017-04-696	8	15.04	13:14	14:54	100	1504	6.5	0.002	SC/GS	Yes	Construction Area.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-700	7	14.99	15:28	16:44	76	1139	3	0.001	SC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-701	9	14.98	15:34	16:48	74	1109	2.5	0.001	SC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-702	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-703	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-704	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-705	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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Interpretation of Results

1) Within Ontario, the Occupational Health and Safety Act - Ontario Regulation 490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.

2) For each area tested compare the "Results f/cc" column to your area and how it compares to the above noted regulation.

Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 2, University of Toronto, April 24, 2017

Floor	Room	Description	Sample Location	Sample Number	Pump Number	Litres Per Minute	Time On	Time Off	Duration	Total Litres	Total Fibres	Results f/cc	Analyst	Within Acceptable Limits	Comments
2	2284	Lab	Central	2017-04-697	10	14.98	13:21	15:01	100	1498	6.5	0.002	SC/GS	Yes	Not Occupied.
2	2294	Men's Washroom	Central	2017-04-698	10	14.98	15:11	16:35	84	1258	11	0.004	SC/GS	Yes	Occupied.
2	2388K	Hallway	Central	2017-04-699	8	15.04	15:15	16:38	83	1248	4	0.001	SC/GS	Yes	Occupied.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-700	7	14.99	15:28	16:44	76	1139	3	0.001	SC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-701	9	14.98	15:34	16:48	74	1109	2.5	0.001	SC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-702	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-703	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-704	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-705	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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Interpretation of Results

1) Within Ontario, the Occupational Health and Safety Act - Ontario Regulation 490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.

2) For each area tested compare the "Results f/cc" column to your area and how it compares to the above noted regulation.

Appendix B
LOCATION SPECIFIC REPORT

TABLE I
Results of Air Testing Associated with Asbestos Abatement
3rd Floor DTL Renovation Phase 1
University of Toronto, Medical Sciences Building
April 24-26, 2017

Date	SEL Sample #	Location/Description	Time On	Time Off	Volume (Liters)	Result (Fibres/cc)
April. 24	2017-04-076	Within Room 3382 (Outside Enclosure)	10:45AM	12:45PM	1800	0.001
April. 24	2017-04-077	Adjacent to Room 2378	10:40AM	11:50AM	1050	0.001
April. 24	2017-04-078	Adjacent to Room 2382	10:40AM	11:50AM	1050	0.002
April. 24	2017-04-079	Adjacent to Room 4378	11:55AM	1:05PM	1050	0.002
April. 24	2017-04-080	Adjacent to Room 4282	11:55AM	1:05PM	1050	0.001
April. 25	2017-04-085	Inside Room 3382C (Cold Room) Type 3 Work Area	7:45AM	10:45AM	2700	0.002
	2017-04-086					0.002
	2017-04-087					0.002
April. 25	2017-04-088	Within Room 3384 (Outside Enclosure)	1:30PM	3:30PM	1800	0.002
April. 25	2017-04-089	Adjacent to Room 2378	1:40PM	2:50PM	1050	0.001
April. 25	2017-04-090	Adjacent to Room 2382	1:40PM	2:50PM	1050	0.001
April. 25	2017-04-091	Adjacent to Room 4378	2:55PM	5:10PM	2025	0.003
April. 25	2017-04-092	Adjacent to Room 4382	2:55PM	5:10PM	2025	0.001
April. 25	2017-04-093	Within Room 3382A (Type 2 Work Area)	5:20PM	6:30PM	1050	0.001
April. 25	2017-04-094	Within Room 3384A (Type 2 Work Area	5:20PM	6:30PM	1050	0.001
April. 26	2017-04-098	Inside Room 3384E (Cold Room) Type 3 Work Area	8:00AM	10:40AM	2400	0.002
	2017-04-099				2400	0.002
	2017-04-100				2400	0.003

Appendix C
PUMP CALIBRATION SHEET

safeTECH ENVIRONMENTAL LTD.

Pump Calibration Form

Calibration Device: BIOS DryCal DC Lite HV

Date: April 24, 2017

Name: Josh Hamilton

Temperature: 22°C

Barometric Pressure: 101.7 kPa

Pump Number	Flow Rate (L/min)			Average Flow Rate (L/min)	Average Flow Rate (L/min) +10%	Average Flow Rate (L/min) - 10%
	Trial #1	Trial #2	Trial #3			
MSB -1	14.88	14.95	15.00	14.94	16.44	13.44
MSB-2	15.01	15.00	15.00	15.00	16.50	13.50
MSB -3						
MSB -4						
MSB-5	14.94	14.99	15.02	14.99	16.49	13.49
MSB -6	15.21	15.06	15.07	15.11	16.61	13.61
MSB -7	15.00	14.99	14.99	14.99	16.49	13.49
MSB-8	15.10	15.02	15.00	15.04	16.54	13.54
MSB -9	14.97	14.98	14.99	14.98	16.48	13.48
MSB -10	14.96	14.96	15.01	14.98	16.48	13.48

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safeTECH ENVIRONMENTAL LTD.

Pump Calibration Form

Calibration Device: BIOS DryCal DC Lite HV

Date: April 25, 2017

Name: Josh Hamilton

Temperature: 22°C

Barometric Pressure: 101.7 kPa

Pump Number	Flow Rate (L/min)			Average Flow Rate (L/min)	Average Flow Rate (L/min) +10%	Average Flow Rate (L/min) - 10%
	Trial #1	Trial #2	Trial #3			
MSB -01	15.01	15.01	15.00	15.01	16.51	13.51
MSB-02	15.00	15.01	15.00	15.00	16.50	13.50
MSB -03	15					
MSB -04	15.00	14.99	14.99	14.99	16.49	13.49
MSB-05	15.08	15.10	15.08	15.09	16.59	13.59
MSB -06	15.04	15.07	15.05	15.05	16.55	13.55
MSB -07	15.14	15.14	15.03	15.10	16.60	13.60
MSB-08	15.11	15.05	15.03	15.06	16.56	13.56
MSB -09	14.92	14.99	14.88	14.93	16.43	13.43
MSB -10	15.04	15.01	15.00	15.02	16.52	13.52

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Pump Calibration Form

Calibration Device: BIOS DryCal DC Lite HV

Date: April 26, 2017

Name: Josh Hamilton

Temperature: 22°C

Barometric Pressure: 102 KPa

Pump Number	Flow Rate (L/min)			Average Flow Rate (L/min)	Average Flow Rate (L/min) +10%	Average Flow Rate (L/min) - 10%
	Trial #1	Trial #2	Trial #3			
MSB -1	15.01	15.03	15.03	15.02	16.52	13.52
MSB-2	15.03	15.04	15.03	15.03	16.53	13.53
MSB -3	15.00	15.01	15.01	15.01	16.51	13.51
MSB -4	14.99	14.91	14.96	14.95	16.45	13.45
MSB-5	14.89	14.88	14.96	14.91	16.41	13.41
MSB -6	15.01	15.05	15.03	15.03	16.53	13.53
MSB -7	15.00	14.99	14.99	14.99	16.49	13.49
MSB-8	15.03	15.01	15.01	15.02	16.52	13.52
MSB -9	15.07	15.04	15.05	15.05	16.55	13.55
MSB -10	15.09	15.06	15.07	15.02	16.57	13.57

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Pump Calibration Form

Calibration Device: BIOS DryCal DC Lite HV

Date: April 27, 2017

Name: Josh Hamilton

Temperature: 22°C

Barometric Pressure: 102 KPa

Pump Number	Flow Rate (L/min)			Average Flow Rate (L/min)	Average Flow Rate (L/min) +10%	Average Flow Rate (L/min) - 10%
	Trial #1	Trial #2	Trial #3			
MSB -1	15.05	15.07	15.04	15.05	16.55	13.55
MSB-2	14.91	15.01	15.00	14.97	16.47	13.47
MSB -3	15.02	15.03	15.01	15.02	16.52	13.52
MSB -4	15.10	15.02	14.99	15.04	16.54	13.54
MSB-5	14.90	14.98	15.00	14.96	16.46	13.46
MSB -6	15.04	15.02	15.01	15.02	16.52	13.52
MSB -7	15.16	15.03	15.03	15.07	16.57	13.57
MSB-8	14.90	14.99	15.01	14.97	16.47	13.47
MSB -9	15.08	15.01	15.03	15.04	16.54	13.54
MSB -10	15.12	15.06	15.01	15.06	16.56	13.56

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safeTECH ENVIRONMENTAL LTD.

Pump Calibration Form

Calibration Device: BIOS DryCal DC Lite HV

Date: April 28, 2017

Name: Josh Hamilton

Temperature: 22°C

Barometric Pressure: 102 kPa

Pump Number	Flow Rate (L/min)			Average Flow Rate (L/min)	Average Flow Rate (L/min) +10%	Average Flow Rate (L/min) - 10%
	Trial #1	Trial #2	Trial #3			
MSB -1	15.01	15.02	15.04	15.02	16.52	13.52
MSB-2	14.90	15.12	14.95	14.97	16.47	13.47
MSB -3	14.90	15.07	15.00	14.98	16.48	13.48
MSB -4	15.17	14.99	14.99	15.05	16.55	13.55
MSB-5	14.97	15.05	15.00	15.01	16.51	13.51
MSB -6	15.07	15.04	15.02	15.04	16.54	13.54
MSB -7	15.01	15.01	15.02	15.01	16.51	13.51
MSB-8	15.05	15.04	15.01	15.03	16.53	13.53
MSB -9	15.15	15.04	15.02	15.07	16.57	13.57
MSB -10	14.98	15.05	15.03	15.02	16.52	13.52

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Appendix D
PCM ANALYSIS EXAMPLE CALCULATION SHEET

safeTECH ENVIRONMENTAL LTD.

PCM Air Sample Analysis

Project Name:	UofT Medical Sciences Building		
Project Number:	119917		
Sample ID:	2017-04-21	Sample Type:	Ambient
Sample Collected By:	JH	Date:	April 21 2017
Sample Analyzed By:	JC/GS	Date:	April 21 2017
Sample Location:	Exterior - South of MSB		
Start Time:	14:11	Sample Duration (min)	72
Finish Time:	15:23	Flow Rate (L/min)	15.05

Volume (V)	2 L	
Total Fibres Counted in Sample (FCS)	2 fibres	
Total Fields Counted in Sample (FLS)	100 fields	
Reticle Field Area (RFA)	0.00801 mm²	
Area of Filter (AF)	385 mm²	
NIOSH 7400 Counting Rules Used	A	
Fibre Density (E)	— fibres/mm²	E = (FCS/FLS)/RFA
Fibre Concentration (C)	0.001 fibres/cc	C = (E*385)/(V*1000)

1	—	11	—	21	—	31	—	41	—	51	—	61		71		81		91	
2	—	12	—	22	—	32	—	42	—	52	/	62		72		82		92	
3	—	13	/	23	—	33	—	43	—	53	/	63		73		83		93	
4	—	14	—	24	—	34	—	44	—	54	/	64		74		84		94	
5	—	15	—	25	—	35	—	45	—	55	/	65		75		85		95	
6	—	16	—	26	—	36	—	46	/	56	—	66		76		86		96	
7	—	17	—	27	—	37	—	47	—	57	—	67		77		87		97	
8	—	18	—	28	—	38	—	48	—	58	/	68		78		88		98	
9	/	19	—	29	—	39	—	49	—	59	/	69		79		89		99	
10	/	20	/	30	/	40	/	50	—	60	/	70		80		90		100	

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