

April 17, 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 10-15, 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 10 to April 15, 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 10-15, 2017.

From April 10 to April 15, SEL has collected a total of 149 representative samples, 0 location specific samples and 12 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 149 representative samples; all 149 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 12 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  $\mu$ m 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  $\mu$ m 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  $\mu$ m 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 - Pump Calibration Sheets

Appendix C – PCM Analysis Example Calculation Sheet



Appendix A PCM AIR SAMPLE SPREADSHEET-SEL

## Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 5, University of Toronto, April 15, 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	5316	Lab	Central	2017-04-553	19	15.04	9:17	10:33	76	1143	6	0.002	SC	Yes	
5	5312	Shaft	Central	2017-04-554	18	15.02	9:17	10:33	76	1142	7	0.003	SC	Yes	
5	5322	Shaft	Central	2017-04-555	4	14.99	9:22	10:36	74	1109	4	0.002	SC	Yes	
5	5348K	Corridor	Central	2017-04-556	5	15.01	9:22	10:36	74	1111	8.5	0.003	SC	Yes	
5	5323/5323A	Shaft	Central	2017-04-557	8	15.02	9:26	10:43	77	1157	3	0.001	SC	Yes	
5	5324K	Corridor	Central	2017-04-558	6	15.07	9:26	10:43	77	1160	6	0.002	SC	Yes	
5	5331C/A	Shaft	Central	2017-04-559	1	15	9:30	10:54	84	1260	1	0.001	SC	Yes	
5	5331	Lab	Central	2017-04-560	17	15.01	9:30	10:54	84	1261	2	0.001	SC	Yes	
5	5334C	Shaft	Central	2017-04-561	12	14.99	9:34	10:57	83	1244	5	0.002	SC	Yes	
5	5334	Lab	Central	2017-04-562	11	14.95	9:34	10:57	83	1241	6	0.002	SC	Yes	
5	5340	Shaft	Central	2017-04-563	9	15	9:39	11:00	81	1215	4	0.001	SC	Yes	
5	5342	Lab	Central	2017-04-564	2	15.04	9:39	11:00	81	1218	5	0.002	SC	Yes	
5	5348	Shaft	Central	2017-04-565	7	14.98	9:44	11:04	80	1198	3.5	0.001	SC	Yes	
5	5348K	Corridor	Central	2017-04-566	3	15.03	9:44	11:04	80	1202	7	0.003	SC	Yes	
5	5349/5349A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Restricted Access and No Other Access Point
5	5358C	Shaft	Central	2017-04-567	14	15	9:50	11:12	82	1230	6	0.002	SC	Yes	
5	5358	Lab	Central	2017-04-568	13	15	9:50	11:12	82	1230	3	0.001	SC	Yes	

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 5, University of Toronto, April 15, 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	5363A/5355B	Shaft	Central	2017-04-569	15	14.99	9:55	11:15	80	1199	5.5	0.002	SC	Yes	
5	5363	Office	Central	2017-04-570	16	15.04	9:55	11:15	80	1203	8	0.003	SC	Yes	
5	5368B	Shaft	Central	2017-04-571	7	14.98	11:08	12:20	72	1079	2	0.001	SC	Yes	
5	5368	Lab	Central	2017-04-572	3	15.03	11:08	12:20	72	1082	5.5	0.001	SC	Yes	
Exterior Sample	North Side Exterior	North Side Exterior	North Side Exterior	2017-04-585	7	14.98	12:40	14:22	102	1528	5	0.001	SC	Yes	Exterior sample for comparison.
Exterior Sample	South Side Exterior	South Side Exterior	South Side Exterior	2017-04-586	3	15.03	12:31	14:19	108	1623	4.5	0.001	SC	Yes	Exterior sample for comparison.
Field Blank	N/A	N/A	N/A	2017-04-597	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-598	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-599	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.

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<u>Interpretation of Results</u>

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



### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 4, University of Toronto, April 15, 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	4372	Shaft	Central	2017-04-573	11	14.95	11:57	1:10	73	1091	4	0.002	JC	Yes	No access from lab only access from corrdior
4	4369K	Corridor	Central	2017-04-574	12	14.99	11:57	1:10	73	1094	2.5	0.001	JC	Yes	
4	4358	Lab	Central	2017-04-575	2	15.04	12:01	1:13	72	1083	5	0.002	JC	Yes	
4	4358C	Shaft	Central	2017-04-576	9	15	12:01	1:13	72	1080	2	0.001	JC.	Yes	
4	4351/4351A	Shaft	Central	2017-04-577	14	15	12:05	1:16	71	1065	3	0.001	JC.	Yes	No access from lab only access from corrdior
4	4350K	Corridor	Central	2017-04-578	13	15	12:05	1:16	71	1065	1.5	0.001	JC	Yes	
4	4348	Shaft	Central	2017-04-579	16	15.04	12:08	1:19	71	1068	2	0.001	JC	Yes	
4	4344	Lab	Central	2017-04-580	15	14.99	12:08	1:19	71	1064	3.5	0.001	JC	Yes	
4	4340	Shaft	Central	2017-04-581	8	15.02	12:13	1:26	73	1096	3.5	0.001	JC	Yes	
4	4342	Lab	Central	2017-04-582	6	15.07	12:13	1:26	73	1100	5	0.002	JC	Yes	
4	4334D	Shaft	Central	2017-04-583	1	15	12:18	1:28	70	1050	4	0.002	JC	Yes	
4	4334	Lab	Central	2017-04-584	17	15.01	12:18	1:28	70	1051	4	0.002	JC	Yes	
4	4331	Lab	Central	2017-04-587	1	15	1:37	2:50	73	1095	4	0.002	JC	Yes	
4	4331A/B	Shaft	Central	2017-04-588	17	15.01	1:37	2:50	73	1096	5	0.002	JC	Yes	
4	4324K	Corridor	Central	2017-04-589	8	15.02	1:40	2:54	74	1111	6	0.002	JC	Yes	
4	4323/4323A	Shaft	Central	2017-04-590	6	15.07	1:40	2:54	74	1115	4	0.002	JC	Yes	No access from lab only access from corridor
4	4318	Lab	Central	2017-04-591	16	15.04	1:44	2:56	72	1083	2	0.001	JC	Yes	
4	4322	Shaft	Central	2017-04-592	15	14.99	1:44	2:56	72	1079	1	0.001	JC	Yes	

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 4, University of Toronto, April 15, 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	4312	Shaft	Central	2017-04-593	2	15.04	2:04	3:15	71	1068	2	0.001	JC	Yes	No access from lab only access from corridor
4	4322K	Corridor	Central	2017-04-594	9	15	2:04	3:15	71	1065	1.5	0.001	JC	Yes	
4	4306D	Shaft	Central	2017-04-595	11	14.95	2:11	3:22	71	1061	3.5	0.001	JC	Yes	
4	4306	Lab	Central	2017-04-596	13	15	2:11	3:22	71	1065	3	0.001	JC	Yes	
Exterior Sample	North Side Exterior	North Side Exterior	North Side Exterior	2017-04-585	7	14.98	12:40	14:22	102	1528	5	0.001	JC	Yes	Exterior sample for comparison.
Exterior Sample	South Side Exterior	South Side Exterior	South Side Exterior	2017-04-586	3	15.03	12:31	14:19	108	1623	4.5	0.001	JC	Yes	Exterior sample for comparison.
Field Blank	N/A	N/A	N/A	2017-04-597	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-598	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-599	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	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.



## Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 6, University of Toronto, April 14, 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	6342	Lab	Central	2017-04-507	11	15	10:01	11:21	80	1200	4.5	0.002	JC	Yes	
6	6340	Shaft	Central	2017-04-508	12	14.96	10:01	11:21	80	1197	1	0.001	JC	Yes	
6	6312	Shaft	Central	2017-04-509	1	15.04	10:14	11:28	84	1263	6	0.002	JC	Yes	
6	6321K	Corridor	Central	2017-04-510	17	14.94	10:14	11:28	84	1255	5.5	0.002	JC	Yes	
6	6322	Shaft	Central	2017-04-511	9	14.99	10:19	11:31	83	1244	2	0.001	JC	Yes	
6	6321K	Corridor	Central	2017-04-512	2	15	10:19	11:32	84	1260	6.5	0.002	JC	Yes	
6	6323	Shaft	Central	2017-04-513	18	14.99	10:24	11:36	72	1079	2	0.001	JC	Yes	
6	6324K	Corridor	Central	2017-04-514	19	14.99	10:24	11:35	71	1064	3.5	0.001	JC	Yes	
6	6348	Shaft	Central	2017-04-515	3	15.01	10:34	11:46	72	1081	1.5	0.001	JC	Yes	
6	6348K	Corridor	Central	2017-04-516	7	15.02	10:34	11:45	71	1066	3.5	0.001	JC	Yes	
6	6345A/6349	Shaft	Central	2017-04-517	16	15.01	10:39	11:55	76	1141	5	0.002	JC	Yes	
6	6250K	Corridor	Central	2017-04-518	15	15.02	10:39	11:53	74	1111	3.5	0.001	JC	Yes	
6	6364	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Restricted Access. Keys would not open.
6	6369K	Corridor	Central	2017-04-519	8	15	10:49	12:09	80	1200	3	0.001	JC	Yes	
6	6372	Shaft	Central	2017-04-520	6	15.03	10:49	12:09	80	1202	2	0.001	JC	Yes	
6	6356D	Shaft	Central	2017-04-521	4	15.06	10:56	12:14	78	1175	2.5	0.001	JC	Yes	
6	6356	Lab	Central	2017-04-522	5	15.01	10:56	12:13	77	1156	3	0.001	JC	Yes	

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 6, University of Toronto, April 14, 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	6363B/6355B	Shaft	Central	2017-04-523	14	15.02	11:02	12:18	76	1142	4	0.002	JC	Yes	
6	6355	Office	Central	2017-04-524	13	14.9	11:02	12:18	76	1132	2.5	0.001	JC	Yes	
6	6230B	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Restricted Access. Keys would not open.
6	6306	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Restricted Access. Keys would not open.
Exterior Sample	North Side Exterior	North Side Exterior	North Side Exterior	2017-04-525	6	15.03	15:00	14:10	70	1052	5	0.002	JC	Yes	Exterior sample for comparison.
Exterior Sample	South Side Exterior	South Side Exterior	South Side Exterior	2017-04-526	8	15	15:08	14:18	70	1050	1	0.001	JC	Yes	Exterior sample for comparison.
Field Blank	N/A	N/A	N/A	2017-04-527	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-528	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-529	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-530	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.

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<u>Interpretation of Results</u>

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



### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 7, University of Toronto, April 14, 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
7	7372	Shaft	Central	2017-04-531	11	15	13:23	14:35	72	1080	4	0.002	SC	Yes	
7	7374K	Corridor	Central	2017-04-532	12	14.96	13:23	14:35	72	1077	3.5	0.001	SC	Yes	
7	7364	Shaft	Central	2017-04-533	7	15.02	13:27	14:38	71	1066	6	0.003	sc	Yes	
7	7369K	Corridor	Central	2017-04-534	3	15.01	13:27	14:38	71	1066	9	0.004	SC	Yes	
7	7358D	Shaft	Central	2017-04-535	16	15.01	13:33	14:43	70	1051	3	0.001	SC	Yes	
7	7358	Lab	Central	2017-04-536	15	15.02	13:33	14:43	70	1051	5.5	0.002	SC	Yes	
7	7349/7349A	Shaft	Central	2017-04-537	6	15.03	13:40	14:57	77	1157	5	0.002	SC	Yes	
7	7350K	Corridor	Central	2017-04-538	8	15	13:40	14:57	77	1155	7.5	0.003	SC	Yes	
7	7348	Shaft	Central	2017-04-539	13	14.9	13:44	15:00	76	1132	8.5	0.003	SC	Yes	
7	7347K	Corridor	Central	2017-04-540	14	15	13:44	15:00	76	1140	9	0.003	SC	Yes	
7	7340	Shaft	Central	2017-04-541	1	15.04	13:51	15:05	74	1113	7	0.003	sc	Yes	
7	7347K	Corridor	Central	2017-04-542	5	15.01	13:53	15:05	73	1096	6	0.002	sc	Yes	
7	7334D	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Restricted Access. Keys would not open door.
7	7322	Shaft	Central	2017-04-543	9	14.99	13:57	15:09	72	1079	6	0.003	SC	Yes	
7	7302K	Corridor	Central	2017-04-544	2	15	13:57	15:09	72	1080	9	0.003	SC	Yes	
7	7312	Shaft	Central	2017-04-545	4	15.06	14:02	15:15	73	1099	10	0.004	SC	Yes	
7	7302K	Corridor	Central	2017-04-546	17	14.94	14:01	15:15	74	1106	7	0.003	SC	Yes	
7	7323/7323A	Shaft	Central	2017-04-547	18	14.99	14:08	15:26	78	1169	4	0.001	sc	Yes	
7	7307	Lab	Central	2017-04-548	19	14.99	14:08	15:26	78	1169	3	0.001	SC	Yes	

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 7, University of Toronto, April 14, 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 Sample	North Side Exterior	North Side Exterior	North Side Exterior	2017-04-525	6	15.03	15:00	14:10	70	1052	5	0.002	SC	Yes	Exterior sample for comparison.
Exterior Sample	South Side Exterior	South Side Exterior	South Side Exterior	2017-04-526	8	15	15:08	14:18	70	1050	1	0.001	SC	Yes	Exterior sample for comparison.
7	7308	Lab	Central	2017-04-549	1	15.04	15:24	16:35	71	1068	6	0.002	SC	Yes	
7	7308D	Shaft	Central	2017-04-550	17	14.94	15:24	16:35	71	1061	4	0.002	sc	Yes	
7	7331B	Shaft	Central	2017-04-551	11	15	15:45	16:55	70	1050	10	0.004	sc	Yes	
7	7331	Lab	Central	2017-04-552	12	14.96	15:47	16:58	71	1062	3.5	0.001	SC	Yes	
7	7355	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Restricted Access. Keys would not open door.
Field Blank	N/A	N/A	N/A	2017-04-527	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-528	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-529	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.
Field Blank	N/A	N/A	N/A	2017-04-530	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Required as per NIOSH Method 7400.

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



#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 7, University of Toronto, April 13, 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
7	7366	Lab	Central	2017-04-487	1	8.05	9:48	17:15	447	3556	4	0.001	JC/GS	Yes	Occupied
7	7366A	Office	Central	2017-04-488	4	8.01	9:50	17:14	444	3556	6	0.001	JC/GS	Yes	Occupied
7	7366B	Office	Central	2017-04-489	5	8.02	9:53	17:17	444	3561	6.5	0.001	JC/GS	Yes	Occupied
	Exterior Control	NA	North of Medical Sciences Building	2017-04-501	6	15.05	15:51	16:59	68	1023	2.5	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-502	8	15.01	15:56	17:04	68	1021	2	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-503	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-504	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-505	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-506	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.

### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 4, University of Toronto, April 13, 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	4204	Lab	Central	2017-04-496	6	15.07	13:59	15:29	90	1356	13.5	0.004	JC/GS	Yes	Occupied
4	4212	Lab	Central	2017-04-497	7	15.04	14:08	15:32	84	1263	10.5	0.004	JC/GS	Yes	Occupied
4	4240	Lab	Central	2017-04-498	3	15.01	14:13	15:36	83	1246	11.5	0.004	JC/GS	Yes	Occupied
4	4256	Lab	Central	2017-04-499	9	15.06	14:17	15:41	84	1265	14	0.005	JC/GS	Yes	Not Occupied.
4	4336	Lab	Central	2017-04-500	2	15.03	14:27	15:45	78	1172	10.5	0.004	JC/GS	Yes	Occupied
	Exterior Control	NA	North of Medical Sciences Building	2017-04-501	6	15.05	15:51	16:59	68	1023	2.5	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-502	8	15.01	15:56	17:04	68	1021	2	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-503	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-504	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-505	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-506	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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490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.



### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 3, University of Toronto, April 13, 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	3380	Glasswashing Room	Central	2017-04-491	9	15.06	10:54	12:19	85	1280	7	0.002	JC/GS	Yes	Occupied
3	3371	Office	Central	2017-04-492	3	15.01	11:04	12:22	78	1171	5.5	0.003	JC/GS	Yes	Occupied
3	3388B	Office	Central	2017-04-493	2	15.03	11:17	12:27	70	1052	5	0.002	JC/GS	Yes	Not Occupied.
3	3398	Storage	Central	2017-04-494	8	15.01	11:31	13:22	111	1666	12.5	0.003	JC/GS	Yes	Not Occupied.
3	3294	Men's Washroom	Central	2017-04-495	7	15.04	12:16	13:29	73	1098	4.5	0.002	JC/GS	Yes	Occupied
	Exterior Control	NA	North of Medical Sciences Building	2017-04-501	6	15.05	15:51	16:59	68	1023	2.5	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-502	8	15.01	15:56	17:04	68	1021	2	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-503	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-504	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-505	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-506	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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## Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 2, University of Toronto, April 13, 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	2394	Men's Washroom	Central	2017-04-490	7	15.04	10:34	12:05	91	1369	11	0.004	JC/GS	Yes	Occupied
	Exterior Control	NA	North of Medical Sciences Building	2017-04-501	6	15.05	15:51	16:59	68	1023	2.5	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-502	8	15.01	15:56	17:04	68	1021	2	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-503	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-504	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-505	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-506	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.

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 7, University of Toronto, April 12, 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
7	7366	Lab	Central	2017-04-467	1	8.09	9:14	16:46	452	3657	9.5	0.001	JC/GS	Yes	Occupied
7	7366B	Office	Central	2017-04-468	4	8.13	9:18	16:48	450	3659	7	0.001	JC/GS	Yes	Occupied
7	7366A	Office	Central	2017-04-469	5	7.97	9:20	16:50	450	3587	9	0.001	JC/GS	Yes	Occupied
	Exterior Control	NA	North of Medical Sciences Building	2017-04-481	3	15.05	15:08	16:36	88	1324	3	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-482	6	15.01	15:13	16:40	87	1306	4	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-463	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-484	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-485	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-486	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.

### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 3, University of Toronto, April 12, 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	3397	Interlab B	Central	2017-04-470	3	15.05	10:21	11:55	94	1415	4	0.001	JC/GS	Yes	Occupied.
3	3272	Interlab A	Central	2017-04-471	6	15.01	10:28	12:03	95	1426	6	0.002	JC/GS	Yes	Occupied.
3	3396	Staff Room	Central	2017-04-472	7	15.04	10:37	11:52	75	1128	5.5	0.002	JC/GS	Yes	Occupied.
3	3207	Office	Central	2017-04-473	2	15.03	11:02	12:12	70	1052	6	0.002	JC/GS	Yes	Occupied.
3	3205	Office	Central	2017-04-474	8	15.06	11:05	12:14	69	1039	5	0.002	JC/GS	Yes	Not Occupied.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-481	3	15.05	15:08	16:36	88	1324	3	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-482	6	15.01	15:13	16:40	87	1306	4	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-483	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-484	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-485	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-486	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.



### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 2, University of Toronto, April 12, 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	2380	Lab	Central	2017-04-476	6	15.02	13:24	14:41	77	1157	3	0.001	JC/GS	Yes	Not Occupied.
2	2376	Interlab B	Central	2017-04-477	2	15.03	13:31	14:46	75	1127	10	0.004	JC/GS	Yes	Occupied.
2	2377	Lab	Central	2017-04-478	8	15.06	13:36	14:49	73	1099	7	0.003	JC/GS	Yes	Not Occupied.
2	2397	Interlab D	Central	2017-04-479	7	15.03	13:44	14:59	75	1127	5	0.002	JC/GS	Yes	Not Occupied.
2	2386	Interlab A	Central	2017-04-480	9	14.96	13:49	14:59	70	1047	2	0.001	JC/GS	Yes	Occupied.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-481	3	15.05	15:08	16:36	88	1324	3	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-482	6	15.01	15:13	16:40	87	1306	4	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-483	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-484	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-485	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-486	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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## Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 1, University of Toronto, April 12, 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
1	1211	Technical Shops	Central	2017-04-475	3	15.05	13:14	14:36	82	1231	4.5	0.002	JC/GS	Yes	Dust, dirt and debris observed throughout.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-481	3	15.05	15:08	16:36	88	1324	3	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-482	6	15.01	15:13	16:40	87	1306	4	0.001	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-483	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-484	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-485	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-486	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.

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 7, University of Toronto, April 11, 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
7	7366	Lab	Central	2017-04-444	1	8.05	10:22	16:46	324	2608	3	0.001	JC/GS	Yes	Occupied
7	7366B	Office	Central	2017-04-445	4	8.08	10:27	13:35	308	2498	10.5	0.002	JC/GS	Yes	Occupied
7	7366A	Office	Central	2017-04-446	5	7.98	10:30	13:33	303	2418	9.5	0.002	JC/GS	Yes	Occupied
	Exterior Control	NA	North of Medical Sciences Building	2017-04-461	3	15.06	15:39	16:48	69	1039	3	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-462	6	15.04	15:47	16:58	71	1068	4	0.002	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-463	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-464	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-465	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-466	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.

### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 3, University of Toronto, April 11, 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	3376	Storage Room	Central	2017-04-456	6	15.03	13:48	15:35	107	1608	4	0.001	JC/GS	Yes	Not Occupied.
3	3378A	Office	Central	2017-04-457	7	14.99	13:57	15:57	120	1799	8	0.002	JC/GS	Yes	Occupied.
3	3380A	Glass Storage	Central	2017-04-458	8	15.02	14:04	16:02	118	1772	4.5	0.001	JC/GS	Yes	Not Occupied.
3	3392	Women's Washroom	Central	2017-04-459	2	15.03	14:40	16:05	85	1278	6	0.002	JC/GS	Yes	Not Occupied.
3	3378B	Office	Central	2017-04-460	9	15.05	14:40	15:58	78	1174	3	0.001	JC/GS	Yes	Not Occupied.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-461	3	15.06	15:39	16:48	69	1039	3	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-462	6	15.04	15:47	16:58	71	1068	4	0.002	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-463	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-464	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-465	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-466	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

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490/09 Designated Substances adopts the ACGIH TWA of 0.1 fibres/cc.



#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 2, University of Toronto, April 11, 2017

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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	2180	Lab	Central	2017-04-447	3	15.06	10:47	12:11	84	1265	6	0.002	JC/GS	Yes	Not Occupied.
2	2184	Lab	Central	2017-04-448	6	15.04	10:50	12:14	84	1263	4.5	0.002	JC/GS	Yes	Not Occupied.
2	2279	Lab	Central	2017-04-449	7	15.01	10:56	12:21	85	1276	2.5	0.001	JC/GS	Yes	Not Occupied.
2	2295	Interlab E	Central	2017-04-450	8	15.06	11:01	12:17	76	1145	7.5	0.003	JC/GS	Yes	Occupied.
2	2288A	Vacant	Central	2017-04-451	2	15	11:08	12:25	77	1155	4	0.002	JC/GS	Yes	Not Occupied.
2	2381	Lab	Central	2017-04-452	9	15	11:13	12:28	75	1125	4	0.002	JC/GS	Yes	Not Occupied.
2	2288	Office	Central	2017-04-453	2	15	12:33	14:15	102	1530	4.5	0.001	JC/GS	Yes	Occupied.
2	2392	Women's Washroom	Central	2017-04-454	9	15	13:16	14:26	70	1050	17.5	0.007	JC/GS	Yes	Not Occupied.
2	2398	Cooler	Central	2017-04-455	3	15.06	13:21	15:22	121	1822	3	0.001	JC/GS	Yes	Not Occupied.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-461	3	15.06	15:39	16:48	69	1066	1039	0.001	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-462	6	15.04	15:47	16:58	71	1068	4	0.002	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-463	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-464	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-465	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-466	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

Safetech Environmental Limtied 3045 Southcreek Road, #14 Mississauga, Ontario L4X 2X7

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.

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#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 7, University of Toronto, April 10, 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
7	7366	Lab	Central	2017-04-431	1	15.02	13:34	16:55	201	3019	8.5	0.001	JC/GS	Yes	Occupied
7	7366A	Office	Central	2017-04-432	4	14.95	13:45	16:57	192	2870	7.5	0.001	JC/GS	Yes	Occupied
7	7366B	Office	Central	2017-04-433	5	14.91	13:47	17:00	193	2878	6	0.001	JC/GS	Yes	Occupied
	Exterior Control	NA	South of Medical Sciences Building	2017-04-438	8	15.02	15:24	16:42	78	1172	17	0.006	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-439	7	14.99	15:30	16:45	75	1124	12	0.005	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-440	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-441	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-442	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-443	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.

### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 4, University of Toronto, April 10, 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	4382	Lab	Central	2017-04-434	3	15.01	14:54	16:20	86	1291	4	0.001	JC/GS	Yes	Occupied
4	4284	Lounge	Central	2017-04-435	6	15.03	15:01	16:23	82	1232	5.5	0.002	JC/GS	Yes	Occupied
4	4176	Lab	Central	2017-04-436	2	15.02	15:07	16:30	83	1247	6	0.002	JC/GS	Yes	Not Occupied.
4	4180	Lab	Central	2017-04-437	9	15.05	15:13	16:27	74	1114	3	0.001	JC/GS	Yes	Not Occupied.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-438	8	15.02	15:24	16:42	78	1172	17	0.006	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-439	7	14.99	15:30	16:45	75	1124	12	0.005	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-440	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-441	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-442	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-443	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

Safetech Environmental Limtied 3045 Southcreek Road, #14 Mississauga, Ontario L4X 2X7

Tel: 905 624-2722 www.safetechenv.com 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 10, 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	3173	Computer Room	Central	2017-04-429	3	15.01	13:16	14:40	84	1261	4	0.001	JC/GS	Yes	Not Occupied.
3	3394	Staff Room	Central	2017-04-430	6	15.03	13:24	14:44	80	1202	7	0.03	JC/GS	Yes	Not Occupied.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-438	8	15.02	15:24	16:42	78	1172	17	0.006	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-439	7	14.99	15:30	16:45	75	1124	12	0.005	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-440	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-441	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-442	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-443	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.

#### Phase Contrast Microscopy Air Sampling Program, Medical Sciences Building, Floor 2, University of Toronto, April 10, 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	2378	Lab	Central	2017-04-416	1	15.02	10:19	11:50	91	1367	4.5	0.001	JC/GS	Yes	Not Occupied.
2	2383	Lab	Central	2017-04-417	3	15	10:25	11:52	87	1305	4.5	0.002	JC/GS	Yes	Not Occupied.
2	2287	Lab	Central	2017-04-418	6	15.03	10:29	11:55	96	1443	2.5	0.001	JC/GS	Yes	Not Occupied.
2	2278	Lab	Central	2017-04-419	4	14.95	10:35	11:58	83	1241	3	0.001	JC/GS	Yes	Not Occupied.
2	2268	Interlab C	Central	2017-04-420	5	14.91	10:40	12:00	80	1193	11.5	0.004	JC/GS	Yes	Occupied.
2	2178	Lab	Central	2017-04-421	8	15.02	10:47	12:05	78	1172	4	0.001	JC/GS	Yes	Not Occupied.
2	2174	Interlab F	Central	2017-04-422	7	14.99	10:51	12:07	76	1139	2.5	0.001	JC/GS	Yes	Not Occupied.
2	2182	Lab	Central	2017-04-423	2	15.03	10:59	12:11	72	1082	3.5	0.001	JC/GS	Yes	Not Occupied.
2	2284K	Hallway	Central	2017-04-424	9	15.05	11:03	12:23	80	1204	14.5	0.005	JC/GS	Yes	Occupied.
2	2172	Lecture Room	Central	2017-04-425	8	15.02	12:16	14:25	129	1938	2	0.001	JC/GS	Yes	Not Occupied.
2	2173	Lecture Room	Central	2017-04-426	7	14.99	12:20	14:27	127	1904	5.5	0.001	JC/GS	Yes	Not Occupied.
2	2292	Caretaker Room	Central	2017-04-427	9	15.05	12:29	14:32	123	1851	8.5	0.002	JC/GS	Yes	Not Occupied.
2	2394	Seminar Room	Central	2017-04-428	2	15.03	12:35	14:30	125	1879	6	0.001	JC/GS	Yes	Not Occupied.
	Exterior Control	NA	South of Medical Sciences Building	2017-04-438	8	15.02	15:24	16:42	78	1172	17	0.006	JC/GS	Yes	Exterior sample for comparison.
	Exterior Control	NA	North of Medical Sciences Building	2017-04-439	7	14.99	15:30	16:45	75	1124	12	0.005	JC/GS	Yes	Exterior sample for comparison.
6	Field blank	NA	NA	2017-04-440	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-441	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-442	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.
6	Field Blank	NA	NA	2017-04-443	NA	NA	NA	NA	NA	NA	0	Not applicable	Not applicable	Not applicable	Required as per NIOSH Method 7400.

Safetech Environmental Limbi 3045 Southcreek Road, #14 Mississauga, Ontario L4X 2X7 Interpretation of Results

1) Within Ontario, the Occupational Health and Safety Act - Ontario Regulation
490/99 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.

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# Appendix B PUMP CALIBRATION SHEETS



Calibration Device: BIOS DryC	alb	LILE I
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Date:

Name:

Temperature:

Barometric Pressure:

Pump	Flov	Flow Rate (L/min)			Average Flow Rate	Average Flow Rate
Number	Trial #1	Trial #2	Trial #3	Flow Rate (L/min)	(L/min) +10%	(L/min) -
MSB -1	15.03	15.03	15.01	15.02	16.52	13.52
MSB-2	15.04	15.03	15.03	15.03	16-53	13.53
MSB -3	15.01	15.01	15,00	15-01	16.51	13.51
MSB -4	14.96	14.99	14.91	14,95	16.45	13.45
MSB-5	14.89	14.88	14.96	14.91	16.41	13.41
MSB -6	15.05	15 03	15.01	15.03	16-53	13.53
MSB -7	14.99	15.00	14.99	14.99	16.49	13.49
MSB-8	15-01	15-03	15.01	15.02	16.52	13.52
MSB -9	15.05	15.05	15.05	15.05	16.55	13.5-5
MSB -10						
				**		







Calibration Device:

BIOS DryCal DC Lite HV

Date:

Name:

Temperature:

Barometric Pressure: 101-8 KPa

Dumn	Flov	v Rate (L	/min)	Average Flow	Average Flow Rate	Average Flow Rate
Pump Number	Trial #1	Trial #2	Trial #3	Rate (L/min)	(L/min) +10%	(L/min) - 10%
MSB -1	8-06	8.05	.8.05	8.05	8.85	7.24
MSB-2	HOP H.	108-612	15.02	15.00	73416.50	13.50
MSB -3	15.07	15.09	15,01	15.06	16-56	13.56
MSB -4	8-08	8-08	8.07	8.08	8-89	7.27
MSB-5	7.99	7.99	7.97	7.98	9.78	7.18
MSB -6	15:05	15.02	15.04	15.04	16.54	13.54
MSB -7	15-01	15.01	15.02	15.01	16.51	13.51
MSB-8	15.07	15.09	15,02	15.06	16-56	13-5-6
MSB -9	15.01	14.97	15-02	15.00	16-50	13.50
MSB -10						
	U <u>r</u>					
						20.00 AND 20.00







Calibration	Dovice:	BI
Calibration	Device.	וטו

BIOS DryCal DC Lite HV

Date:

April 12, 2017

Name:

gash Homilton

Temperature:

22°C

Barometric Pressure:

102 4

Pump	Flow Rate (L/min)			Average Flow	Average Flow Rate	Average Flow Rate
Number	Trial #1	Trial #2	Trial #3	Rate (L/min)	(L/min) +10%	(L/min) - 10%
MSB -1	8-09	6.09	8.10	8.09		
MSB-2	15.05	15.01	15.02	15,03		
MSB -3	15-10	15.02	15.03	15.05		
MSB -4	8.12	8.14	8-13	8-13		
MSB-5	7-98	7.98	7.95	7.97		
MSB -6	1496	15.04	15.02	15.01		<
MSB -7	15-12	14.90	15.03	1504		
MSB-8	15.07	15,04	15.06	15.06		
MSB -9	14.89	15.01	15.02	14.96		
MSB -10						







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BIOS DryCal DC Lite HV

Date:

Name:

Temperature:

Barometric Pressure:

Dump	Flov	Flow Rate (L/min)			Average Flow Rate	Average Flow Rate
Pump Number	Trial #1	Trial #2	Trial #3	Flow Rate (L/min)	(L/min) _+10%	(L/min) - 10%
MSB -1	7.92	8.12	8.05	8.05	g. 86	7.26
MSB-2	15.04	15.06	15.02	15.03	16.53	13.53
MSB -3	14.75	15.02	15:01	15.01	16.51	13-51
MSB -4	805	7-97	8.01	8.01	8.81	7-21
MSB-5	7.98	8.05	8.03	8.02	9-22	7.22
MSB -6	15:17	15.02	15.02	1507	16.57	13.52
MSB -7	15.05	15-02	15.05	15.04	16.54	13.54
MSB-8	15.62	14.97	15.01	15-01	16-51	13.51
MSB -9	15.07	15.08	15.02	15.06	16-56	13.56
MSB -10			1			







Calibration Device:	BIOS DryCal DC Lite HV
Date:	April 14, 2017
Name:	Anthony Filme
Temperature:	12°C
Barometric Pressure	103 kPa

Pump	Flov	v Rate (L	/min)	Average	Average Flow Rate	Average Flow Rate
Number	Trial #1	HA HO HO NAIG	1	(L/min) +10%	(L/min) - 10%	
MSB -1	15.04	15,03	15.04	15.04		
MSB-2	14.99	15.01	15.00	15.00		
MSB -3	15.00	15,01	15.01	15.01		
MSB -4	15.00	15.00	15.05	15.06		
MSB-5	15.00	14,96	15.01	15,01		
MSB -6	15.03	15.04	15.03	15,03		
MSB -7	15.01	15.01	15,03	15.02		
MSB-8	14.99	15.00	15.00	15.00		
MSB -9	15.00	14,99	14.99	14.99		
MSB -10						





FAX 905.624.4306

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Calibration Device:	BIOS DryCal DC Lite HV

Date:

Name:

April 15" 2017 Anthony Fiume Temperature:

Barometric Pressure:

Pump	Flow Rate (L/min)			Average Flow	Average Flow Rate	Average Flow Rate
Number	Trial #1	Trial #2	Trial #3	Rate (L/min)	(L/min) +10%	(L/min) - 10%
MSB -1	14.99	13.00	14.99	15.00		
MSB-2	15.04	15:03	15.04	15.04		
MSB -3	1500	15.63	15.03	15.63		
MSB -4	15.01	15,04	14,99	14.99		
MSB-5	14,31	15.61	13.00	15.01		
MSB -6	15 67	15.63	15.07	15.07		
MSB -7	15 .0	14.96	14,99	14.98		
MSB-8	15.04	15.07	15.01	15,02		
MSB -9	15.00	15,00	15.00	15.00		
MSB -10						
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Calibration I	Device:	BIOS	DryCal	DC	Lite	ΗV
Campiation	JU 1100.		DiyOai	$\mathcal{L}$		110

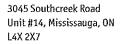
Date: April 15", 2017

Name: Arthory Firms

Temperature: 9°C

Barometric Pressure: 102.1 KPa

Pump	Flov	Flow Rate (L/min)			Average Flow Rate	Average Flow Rate
Number	Trial #1	Trial #2	Trial #3	Flow Rate (L/min)	(L/min) +10%	(L/min) -
MSB -11	14,15	14.96	14,95	14.35		
MSB-12	15.00	14,99	14.99	14,99		
MSB -13	15.00	15.00	15.00	15,60		
MSB -14	15.00	15,00	15.00	15.00		
MSB-15	15.00	14.99	14.99	14,99		
MSB -16	15,05	15.04	15.04	15,04		
MSB -17	1501	15.01	/5.0t	15.01		
MSB-18	18.03	1865	15.03	15.02		
MSB -19	15.04	15.03	15.04	15:04		
MSB -20				<b>'</b>		





Calibration Device:	BIOS DryCal DC Lite HV
	2.002,000,202,001.1

Date: April 14, 2017

Name: Anthony Fiuml

Temperature: 12°C

Barometric Pressure: 103 KPa

Pump Number	Flov	v Rate (L	/min)	Average Flow	Average Flow Rate	Average Flow Rate			
	Trial #1	Trial #2	Trial #3	Rate (L/min)	(L/min) +10%	(L/min) - 10%			
MSB -11	15.01	15.00	15.00	15.00					
MSB-12	14.97	14.99	14.99	14.96					
MSB -13	14.88	15.47	15.36	14.90					
MSB -14	26.39	17,93	15.00	15.02					
MSB-15	14.93	15.07	14.99	15.02					
MSB -16	14,99	15.00	15.03	5.01					
MSB -17	14.96	14.99	14.95	14,94					
MSB-18	14.96	14.99	15.01	14,99					
MSB -19	14,96	14.95	15.01	14,99					
MSB -20	. , , -			•					







# Appendix C PCM ANALYSIS EXAMPLE CALCULATION SHEET



# **PCM Air Sample Analysis**

Project Name:	UofT Medical Sciences Building										
Project Number:	119917										
Sample ID:	20/7-04-462   Sample Type: Ambient										
Sample Collected By:	JH		Date:	April/(2	017						
Sample Analyzed By:	SC/GS		Date:	April 1/2	017						
Sample Location:	500/70	F hec	Ical	Solen	ces Buildis						
Start Time:	15:44	Sample	Duration	ı (min)	7/						
Finish Time:	16:58	Flow Rate (L/min) 15.04.									

	L	1068	Volume (V)
	fibres	4	Total Fibres Counted in Sample (FCS)
	fields	-	Total Fields Counted in Sample (FLS)
	mm²	0.00801	Reticle Field Area (RFA)
	mm²	385	Area of Filter (AF)
		A	NIOSH 7400 Counting Rules Used
E = (FCS/FLS)/RFA	ores/mm²	3,7 m	Fibre Density (E)
C = (E*385)/(V*1000)	fibres/cc	8.002	Fibre Concentration (C)

1		11		21		31	E-Shopman,	41		51		61		71	-	81		91	<u> </u>
2		12		22		32		42	1	52		62	_	72	_	82		92	
3	· Amagana vera	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	1	56		66		76		86	. Andrews	96	
7		17 _		27	4-,0	37		47		57	_	67		77		87		. 97	,
8	, ,	18		28		38	5	48		58	~	68		78		88		98	
		19	<u></u>	29		39		49		59		69	_	79		89		99	
10		20	ال	30	1	40		50	/	60	1	70	/	80	1	90	/	100	



