



December 18, 2012

Pinchin File No. 02-02-01016

Department of Health and Safety
Memorial University of Newfoundland
208 Elizabeth Avenue
St. John's, NL
A1C 5S7

Attention: Tina Giles Murphy

Re: Airborne Fibre Monitoring, Memorial University of Newfoundland, St. John's, NL

Dear Ms. Giles Murphy,

This letter is to provide you with the results of the airborne fibre monitoring conducted in various buildings located on the Memorial University of Newfoundland (MUN) campus. Sample locations were determined by consulting the 2010 annual sampling report completed by MUN Department of Health and Safety, which specified various buildings known to contain asbestos, or have contained asbestos, excluding residences. Sampling was conducted in December 2012.

1.0 Background

The results of the airborne fibre monitoring were evaluated against the applicable occupational exposure limits outlined in the Occupational Health and Safety Regulations under the Occupational Health and Safety Act (O.C. 2012-005), Consolidated Newfoundland and Labrador Regulation 5/12. The Regulation has adopted for use, the American Conference of Governmental Industrial Hygienists (ACGIH). In the act, under the heading Hazardous Substances, in section 42 (7) sub section (c) it states that "An employer shall ensure that (c) exposure of a worker to hazardous substances is as minimal as is reasonably practicable, and where a threshold limit value has been established by the ACGIH, exposure shall not exceed the threshold limit value".

The TLV-TWA for asbestos is 0.1 fibres/cc.

2.0 Sample Methodology

A total of seventy-nine (79) airborne fibre samples were collected at fixed locations in various areas throughout the MUN campus.

Sampling for airborne fibres was conducted by drawing known amount of air through cellulose mixed ester filters, 0.8 micrometers pore size, held open-faced in 3-piece conductive cassettes.

The filters were 25 mm in diameter. The sampling equipment used was direct flow high volume air sample pumps and BDX II low volume sampling pumps calibrated with a TSI Model 4199 flow meter instrument.

Air Sample Analysis (PCM Method - Phase Contrast Microscopy)

The samples were analyzed by the PCM method. The analysis was performed following the "A" set of counting rules of the National Institute of Occupational Safety and Health (NIOSH) 7400 Method, Issue 2, dated August 15th, 1994. Phase Contrast Microscopy is an optical technique for viewing small particles rather than a method for measuring specific properties of a substance. It is a technique based entirely on the shape of the particle rather than a method for measuring specific properties of a substance. It is not inherently specific for asbestos. Consequently, all particles satisfying a 3:1 length to width ratio are counted as fibres.

A segment of the collection filter was mounted, treated chemically to make the filter membrane transparent, and examined using a special microscope reticle and counting procedure with phase contrast illumination at 400 to 500 times magnification. Particles are observed for shape and size. Results are presented as the number of fibres per cubic centimetre of air (f/cubic cm). This result is calculated by the following formula:

$$\text{Results} / \text{cm}^3 = \frac{\text{total number of fibres on the filter}}{\text{total volume of air sampled (cm}^3\text{)}}$$

The results are presented based on the above formula and the Quantitation Limit (Q.L.) for Sampling Volume.

The reliable quantitation limit of this method, determined from in-house quality control data, is based on a minimum fibre density of about 40 fibres in 100 fields (assuming a graticule area of .00785 mm/sq.). If calculated value is less than Q.L. then the result is reported as <Q.L. (numerical value for Q.L.). If the calculated value is greater than Q.L., then the result is reported as the calculated value.

Pinchin inspectors/technicians are enrolled in the IRSST (Institut de recherche Robert-Sauve en sante et en securite du travail), a comprehensive quality assurance programme. Each analyst/technician participates in round robin testing on a regular basis to remain certified with the association.

It should be noted that analysis of PCM air samples is on a quantitative basis. The counting process includes all types of fibres in ambient air, which meet the analysis criteria, regardless of the type of those fibres.

3.0 Summary of Data

The following is a table listing the locations and results of the airborne fibre sampling.

Building	Location	Date	Sample ID	Duration (min)	Flow Rate (L/min)	Volume (L)	Reported Result* (f/cc)
Health Science Centre	Outside H-1618	December 3	01-H-02-02-01016	60	15.0	900	<0.02
	Outside H-1227A	December 3	02-H-02-02-01016	60	15.0	900	<0.02
	Outside H-2335	December 3	03-H-02-02-01016	60	15.0	900	<0.02
	Outside H-2817	December 3	04-H-02-02-01016	60	15.0	900	<0.02
	Outside H-3136	December 3	05-H-02-02-01016	60	15.0	900	<0.02
	Outside H-4226	December 3	06-H-02-02-01016	60	15.0	900	<0.02
	Outside H-5239	December 3	07-H-02-02-01016	60	15.0	900	<0.02
Spencer Hall	SP-1005	December 3	01-SP-02-02-01016	60	15.0	900	<0.02
	SP-2C01	December 3	02-SP-02-02-01016	60	15.0	900	<0.02
St. John's College	J-2C03	December 4	01-J-02-02-01016	60	15.0	900	<0.02
	J-3C02	December 4	02-J-02-02-01016	60	15.0	900	<0.02
	J-4C01	December 4	03-J-02-02-01016	60	15.0	900	<0.02
Coughlan College	CL-1010	December 4	01-CL-02-02-01016	60	15.0	900	<0.02
	CL-2C01	December 4	02-CL-02-02-01016	60	15.0	900	<0.02
Business & Administration	BN-1C02	December 4	01-BN-02-02-01016	60	15.0	900	<0.02
	BN-2029A	December 4	02-BN-02-02-01016	60	15.0	900	<0.02
	BN-3C01	December 4	03-BN-02-02-01016	60	15.0	900	<0.02
	BN-4013	December 4	04-BN-02-02-01016	60	15.0	900	<0.02
Feild Hall	GH-1V01	December 4	01-GH-02-02-01016	60	15.0	900	<0.02
	GH-2C01	December 4	02-GH-02-02-01016	60	15.0	900	<0.02
	GH-3C01	December 4	03-GH-02-02-01016	60	15.0	900	<0.02
	GH-4C01	December 4	04-GH-02-02-01016	60	15.0	900	<0.02
Queens College	QC-2011	December 4	01-QC-02-02-01016	60	15.0	900	<0.02
	QC-1C01	December 4	02-QC-02-02-01016	60	15.0	900	<0.02
	QC-3C01	December 5	03-QC-02-02-01016	60	15.0	900	<0.02
	QC-4C01	December 5	04-QC-02-02-01016	60	15.0	900	<0.02
Ocean Science Centre	OS-2C01	December 5	01-OS-02-02-01016	60	15.0	900	<0.02
Ocean Science Centre Annex	AX-3C01	December 5	01-AX-02-02-01016	60	15.0	900	<0.02
Vivarium	V-1C01	December 5	01-AX-02-02-01016	60	15.0	900	<0.02
Utilities Annex	UA-1001	December 5	01-UA-02-02-01016	60	15.0	900	<0.02

Building	Location	Date	Sample ID	Duration (min)	Flow Rate (L/min)	Volume (L)	Reported Result* (f/cc)
South Campus Boiler Plant	SB-1002	December 6	01-SB-02-02-01016	60	15.0	900	<0.02
Physical Education	PE-1C02	December 6	01-PE-02-02-01016	60	15.0	900	<0.02
	PE-3C01	December 6	02-PE-02-02-01016	65	13.85	900	<0.02
	PE-4C01	December 6	03-PE-02-02-01016	67	13.50	905	<0.02
Facilities Management	FM-2C01	December 6	01-FM-02-02-01016	60	15.0	900	<0.02
	FM-1C04	December 6	02-FM-02-02-01016	60	13.50	905	<0.02
Education	ED-2C01	December 6	01-ED-02-02-01016	60	15.0	900	<0.02
	ED-3C01	December 6	02-ED-02-02-01016	60	15.0	900	<0.02
	ED-4C01	December 6	03-ED-02-02-01016	60	15.0	900	<0.02
	ED-1C02	December 6	04-ED-02-02-01016	60	15.0	900	<0.02
Library	L-1C01	December 6	01-L-02-02-01016	60	15.0	900	<0.02
4 Clark Place	CK-2000	December 6	01-CK-02-02-01016	60	15.0	900	<0.02
202 Elizabeth Avenue	CE-2001	December 6	01-CE-02-02-01016	60	15.0	900	<0.02
Science	SN-1C02	December 6	01-SN-02-02-01016	60	15.0	900	<0.02
	SN-1C04	December 6	02-SN-02-02-01016	60	15.0	900	<0.02
	SN-2C02	December 7	03-SN-02-02-01016	60	15.0	900	<0.02
	SN-2C05	December 7	04-SN-02-02-01016	67	13.50	905	<0.02
	SN-3C02	December 7	05-SN-02-02-01016	60	15.0	900	<0.02
	SN-3C06	December 7	06-SN-02-02-01016	60	15.0	900	<0.02
	SN-4C06	December 7	07-SN-02-02-01016	60	15.0	900	<0.02
	SN-4C05	December 7	08-SN-02-02-01016	65	13.85	900	<0.02
Chemistry-Physics	C-1C02	December 7	01-C-02-02-01016	60	15.0	900	<0.02
	C-2C04	December 7	02-C-02-02-01016	60	15.0	900	<0.02
	C-3023	December 7	03-C-02-02-01016	60	15.0	900	<0.02
	C-4019	December 7	04-C-02-02-01016	60	15.0	900	<0.02
Biotechnology	BT-3S01	December 7	01-BT-02-02-01016	65	13.85	900	<0.02
	BT-2C01	December 7	02-BT-02-02-01016	67	13.50	905	<0.02
Printing Services	PS-1C01	December 10	01-PS-02-02-01016	60	15.0	900	<0.02
Computing Services	CS-1C09	December 10	01-CS-02-02-01016	60	15.0	900	<0.02
208 Elizabeth Avenue	BP-2C01	December 10	01-BP-02-02-01016	60	15.0	900	<0.02

Building	Location	Date	Sample ID	Duration (min)	Flow Rate (L/min)	Volume (L)	Reported Result* (f/cc)
6 Clark Place	CM-2S01	December 10	01-CM-02-02-01016	60	15.0	900	<0.02
Arts & Administration	A-1C01	December 10	01-A-02-02-01016	60	15.0	900	<0.02
	A-1C01	December 10	02-A-02-02-01016	60	15.0	900	<0.02
	A-2C02	December 10	03-A-02-02-01016	60	15.0	900	<0.02
	A-3C01	December 10	04-A-02-02-01016	60	15.0	900	<0.02
	A-4C01	December 10	05-A-02-02-01016	60	15.0	900	<0.02
Dining Hall	DH-1000	December 10	01-DH-02-02-01016	60	15.0	900	<0.02
	DH-2C01	December 10	02-DH-02-02-01016	60	15.0	900	<0.02
Engineering	EN-1C01	December 10	01-EN-02-02-01016	60	15.0	900	<0.02
	EN-2C01	December 10	02-EN-02-02-01016	60	15.0	900	<0.02
	EN-3C01	December 10	03-EN-02-02-01016	60	15.0	900	<0.02
	EN-4C01	December 11	04-EN-02-02-01016	60	15.0	900	<0.02
Mathematics	HH-1C03	December 11	01-HH-02-02-01016	60	15.0	900	<0.02
	HH-1C03 (above ceiling)	December 11	02-HH-02-02-01016	181	2.55	462	<0.04
	HH-2C01	December 11	03-HH-02-02-01016	60	15.0	900	<0.02
	HH-2C01 (above ceiling)	December 11	04-HH-02-02-01016	244	1.64	400	<0.04
	HH-3C03	December 11	05-HH-02-02-01016	60	15.0	900	<0.02
	HH-3C03 (above ceiling)	December 11	06-HH-02-02-01016	184	2.20	405	<0.04
Earth Science	ER-6C01	December 11	01-ER-02-02-01016	60	15.0	900	<0.02

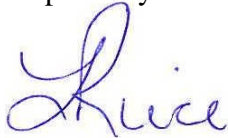
* Airborne fibre calculated results less than the detection limit for the volume sampled is reported as less than the detection limit. For example, the detection limit for 360 to 449 L of air is 0.05 fibres/cc – a result below this value is reported as <0.05 fibres/cc.

Should you have any questions or require additional information, please contact either of the undersigned at our office (709-754-4490).

Yours truly,

PINCHIN LEBLANC ENVIRONMENTAL LIMITED

Prepared by:



Lori Rice, Hon. B.Sc.
Environmental Technologist
lrice@pinchinleblanc.com

Reviewed by:



Paul Staeben
NL Regional Manager
pstaeben@pinchinleblanc.com