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TEM Microvac Particulate Sampling Report

December 13, 2022

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Project #: 30171

Microvac Sampling Results - Asbestos in Settled Dust
Bicentennial School, 85 Victoria Road, Dartmouth, Nova Scotia

On December 9-11, 2022, ALL-TECH Environmental Services Ltd. collected 31 TEM Dust Microvac samples of settled dust for asbestos analyses at Bicentennial School located at 85 Victoria Road in Dartmouth, Nova Scotia. The TEM microvac samples were collected from random selected horizontal surfaces at breathing zone height (0.75 to 2 meters) in classrooms to establish background levels of asbestos concentrations in surface dust.

The Microvac samples were submitted to International Asbestos Testing Laboratories (IATL) Laboratories in Mount Laurel, NJ for asbestos analyses. IATL is an internationally accredited laboratory with NIST-NVLAP, AIHA, and the New York Department of Health (NY-DOH).

Based on the sampling results, the asbestos fibre concentrations were none detected in 31 surface samples collected (< 925 s/cm^2). The results of both the air samples and surface dust samples indicate normal building operating conditions, and the school is safe to re-occupy.

What is Asbestos?

Asbestos is a generic term which is used to describe a group of naturally occurring fibrous mineral silicates (fibrous rock). Six main types of asbestos are; chrysotile, amosite, crocidolite, anthophyllite, tremolite, and actinolite. Heat, corrosion, and tensile qualities of Asbestos have been so beneficial, that from the dates 1900 to 1980, Asbestos was used worldwide in over 3000 different commercial products. Asbestos has been used in fireproofing materials, friction products, reinforcing building materials, insulations materials (thermal/acoustic), etc.

Microvac Dust Sample Results

Samples were collected on a 25mm Settled Dust Sampling cassette loaded with a 0.8 µm MCE filter. The sampling pump used to collect the sample were Gilian® low volume air sampling pumps. Prior to sampling, the pump was calibrated using a TSI® Primary Calibrator Model #4146, Serial No. 41461602006 (NIST Traceable). The samples were analyzed by IATL for asbestos content following the ASTM D5755-09 Standard Test Method for Microvacuum Sampling and Indirect Analysis of Settled Dust by TEM for Asbestos. The results of the analyses are presented in Table 1.0.

Table 1.0
Microvac Analyses of Settled Dust Samples
Bicentennial School
December 9-11, 2022

Sample #	Location and Item Sampled	Structures (s/cm^2)	Asbestos Types Detected
T-01 *(Lab # 7538186)*	Room 10 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-002 *(Lab # 7538187)*	Room 11 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-003 *(Lab # 7538188)*	Room 12 – top of cabinet 100 cm^2 sample area	< 925	**None Detected**
T-004 *(Lab # 7538189)*	Room 9 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-005 *(Lab # 7538190)*	Gym – from stage 100 cm^2 sample area	< 925	**None Detected**
T-006 *(Lab # 7538191)*	Vice Principal's Office– top of desk 100 cm^2 sample area	< 925	**None Detected**
T-007 *(Lab # 7538192)*	Principal's Office – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-008 *(Lab # 7538193)*	Room 1 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-009 *(Lab # 7538194)*	Room 2 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-010 *(Lab # 7538195)*	Room 3 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-011 *(Lab # 7538196)*	Room 7 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-012 *(Lab # 7538197)*	Room 4 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-013 *(Lab # 7538198)*	Room 6 – window ledge 100 cm^2 sample area	< 925	**None Detected**
T-014 *(Lab # 7538199)*	Room 5 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-015 *(Lab # 7538200)*	Room 16 – top of cabinet 100 cm^2 sample area	< 925	**None Detected**
T-016 *(Lab # 7538201)*	Room 18 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-017 *(Lab # 7538202)*	Room 8 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-018 *(Lab # 7538203)*	Music Room – top of cabinet 100 cm^2 sample area	< 925	**None Detected**
T-019 *(Lab # 7538204)*	Room 22 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-020 *(Lab # 7538205)*	Room 23 – top of cabinet 100 cm^2 sample area	< 925	**None Detected**
T-021 *(Lab # 7538206)*	Room 25 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-022 *(Lab # 7538207)*	Room 24A – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-023 *(Lab # 7538208)*	Room 26 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-024 *(Lab # 7538209)*	Room 28 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-025 *(Lab # 7538210)*	Room 29 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-026 *(Lab # 7538211)*	Room 30 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-027 *(Lab # 7538212)*	Room 14 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-028 *(Lab # 7538213)*	Room 31 – top of desk 100 cm^2 sample area	< 925	**None Detected**

Sample #	Location and Item Sampled	Structures (s/cm^2)	Asbestos Types Detected
T-029 *(Lab # 7538214)*	Room 13 – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-030 *(Lab # 7538215)*	Room 31A – top of desk 100 cm^2 sample area	< 925	**None Detected**
T-031 *(Lab # 7538216)*	Teacher's Room – top of desk 100 cm^2 sample area	< 925	**None Detected**

TEM (Microvac) Dust Sampling Conclusion

In Canada, no Provincial or Federal guidelines with respect to settled dust sampling and analysis exist. However, in the U.S.A., a considerable number of settled dust analyses for asbestos using TEM have been performed following the Microvac sampling procedure[1]. Based on current available information, contrary to airborne asbestos, there are no regulated health-based exposure limits for surface asbestos fibres in structures. There is no clearly established correlation between airborne contaminant concentrations and analysis of dust sample.

Based on results from these studies, levels of asbestos in settled dust as determined by the Microvac technique are considered low (levels expected outdoors) if less than 1,000 s/cm^2 (structures per cubic centimeter) are detected, above background (Moderate Contamination) if levels are greater than 10,000 s/cm^2, and high (significant contamination) if levels are above 100,000 s/cm^2. Levels above 100,000 s/cm^2 are usually associated with a significant accidental release such as from an asbestos abatement site. For the purpose of asbestos fibres in surface dust, < 5,000 s/cm^2 is generally used as an acceptable clearance concentration.[2] The presence of asbestos in a building does not present a health hazard to the building occupants. Numerous studies have shown that undisturbed asbestos in buildings rarely causes significantly elevated airborne asbestos levels. Often the asbestos fibre levels in the air of these buildings are not detectable or is no greater than that found in outdoor air.[3]

Based on the sampling results, the asbestos fibres concentrations were none detected in all samples (< 925 s/cm^2). The results of both the air samples, and surface dust samples indicate normal building operating conditions, and the school is safe to re-occupy.

If you have any questions regarding this report, please do not hesitate to call our office 902-835-3727 or email us email@toalltech.com.

Thank you,

Alisha Glogowski, B.Sc.
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Review by:

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1 Millette, J.R. and S.M. Hays, Settled Asbestos Dust Sampling and Analysis, Lewis Publishers, London, 1994, pp: 49-51
2 US EPA response to the Lower Manhattan test and clean up program following the collapse of the World Trade Center in 2001.
3 Report of the Royal Commission on Matters of Health and Safety Arising from the Use of Asbestos in Ontario, 1984.

Appendix 1
Laboratory Results

IATL **Chain of Custody**

Client / Invoice: ALL-TECH Environmental
162 Trider Crescent
Dartmouth, NS

Project: Bicentennial School
Project #: 30171
Date: December 9th, 2022

Client Number: ALL131

Client Contacts:		Laboratory Contacts:	
Name	Alisha Glogowski	Lab Contact:	
Phone	902-835-3727	Lab Director:	
Fax	902-835-5266	Phone:	856-231-9449
Email	aglogowski@toalltech.com	Email:	info@iatl.com

Turn around time: RUSH ASAP

Analysis:

Lead / AAS				PLM		TEM	
	Air		Wipe		Bulk, EPA		AHERA
	Paint		Soil		198.1 Pnt Cnt		NIOSH7402
	Other		Water		198.6 NOB	x	Microvac/Dust
					PLM to TEM		Water
							NOB 198.4

Other:

Special Instructions: Please also CC swells@toalltech.com and rgardner@toalltech.com

Sample Log

Client Sample #	IATL #	Description	Area(ft²) or Volume(L)
Γ-001	7538186 lo	Room 10	100 cm²
Γ-002	7538187 lo	Room 11	100 cm²
Γ-003	7538188 lo	Room 12	100 cm²
Γ-004	7538189 lo	Room 9	100 cm²
Γ-005	7538190 lo	Gym	100 cm²
Γ-006	7538191 lo	Vice Principal's Office	100 cm²
Γ-007	7538192 lo	Principal's Office	100 cm²
Γ-008	7538193 lo	Room 1	100 cm²
Γ-009	7538194 lo	Room 2	100 cm²
Γ-010	7538195 lo	Room 3	100 cm²
Γ-011	7538196 lo	Room 7	100 cm²
Γ-012	7538197 lo	Room 4	100 cm²

Chain of Custody:

	Date	Time
Samples Relinquished:		
Samples Rec'd at Laboratory:		
Samples Logged In:		
Samples Prepped/Analyzed:	12/12/22	
Preliminary Results Released:		
Report Review:		

RECEIVED
DEC 12 2022
IATL - By

ATL

Chain of Custody

lient / Invoice: ALL-TECH Environmental
162 Trider Crescent
Dartmouth, NS

Project: Bicentennial School
Project #: 30171
Date: December 9th, 2022

lient Number: ALL131

Sample Log

lient Sample #	IATL #	Description	Area(ft²) or Volume(L)
-013	7538193 la	Room 6	100 cm^2
-014	7538197 la	Room 5	100 cm^2
-015	7538205 la	Room 16	100 cm^2
-016	7538209 la	Room 18	100 cm^2
-017	7538213 la	Room 8	100 cm^2
-018	7538217 la	Music Room	100 cm^2
-019	7538221 la	Room 22	100 cm^2
-020	7538225 la	Room 23	100 cm^2
-021	7538229 la	Room 25	100 cm^2
-022	7538233 la	Room 24A	100 cm^2
-023	7538237 la	Room 26	100 cm^2
-024	7538241 la	Room 28	100 cm^2
-025	7538210 la	Room 29	100 cm^2
-026	7538214 la	Room 30	100 cm^2
-027	7538212 la	Room 14	100 cm^2
-028	7538213 la	Room 31	100 cm^2
-029	7538221 la	Room 13	100 cm^2
-030	7538215 la	Life Sciences/Home Ec/Next to Room 31	100 cm^2
-031	7538216 la	Teacher's Room	100 cm^2

IATL International Asbestos Testing Laboratories

9000 Commerce Parkway, Suite B, Mt. Laurel, NJ 08054
Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Miscellaneous Asbestos Analysis

Client: **ALL-TECH Environmental Services** Project: **Bicentennial School**
20 Duke St.,Suite 109 Project No.: 30171
Bedford, NS B4A 2Z5 Batch No.: 674256
Client No.: ALL131 Turnaround Time: 6 Hour

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:					
Samples Taken in Field:		Date:		Time:	
Samples Rec'd at Laboratory:	L. D'Ornellas	Date:	12/12/22	Time:	
Samples Analyzed:	J. Jeon	Date:	12/12/22	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data

ASTM D5755-09 Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Surface Loading

Client Sample ID #	IATL Sample ID #	Area Sampled (cm^2)	Aliquot (ml)	Comments	Results s/mm^2	Results s/cm^2
T-001	7538186	100	10.0	None Detected	< 19.2	< 925
T-002	7538187	100	10.0	None Detected	< 19.2	< 925
T-003	7538188	100	10.0	None Detected	< 19.2	< 925
T-004	7538189	100	10.0	None Detected	< 19.2	< 925
T-005	7538190	100	10.0	None Detected	< 19.2	< 925
T-006	7538191	100	10.0	None Detected	< 19.2	< 925
T-007	7538192	100	10.0	None Detected	< 19.2	< 925
T-008	7538193	100	10.0	None Detected	< 19.2	< 925
T-009	7538194	100	10.0	None Detected	< 19.2	< 925
T-010	7538195	100	10.0	None Detected	< 19.2	< 925
T-011	7538196	100	10.0	None Detected	< 19.2	< 925
T-012	7538197	100	10.0	None Detected	< 19.2	< 925
T-013	7538198	100	10.0	None Detected	< 19.2	< 925

Several publications and resources are available for the interpretation of Asbestos in Settled Dust by ASTM methodology. The method is highly dependent on field sampling protocol.

These preliminary results are issued by IATL to expedite procedures by the clients based upon the above data. IATL assumes that all of the sampling methods and data upon which these results are based, has been accurately supplied by the client. These results may not have been reviewed by the Laboratory Director. Final Certificate of Analysis will follow these preliminary results. The signed COA is to be considered the official results. All EPA, HUD, and NJDEP conditions apply.

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Telephone: 856-231-9449 Fax: 856-231-9818

PRELIMINARY RESULTS
Miscellaneous Asbestos Analysis

Client: **ALL-TECH Environmental Services** Project: **Bicentennial School**

20 Duke St.,Suite 109 Project No.: 30171

Bedford, NS B4A 2Z5 Batch No.: 674256

Client No.: ALL131 Turnaround Time: 6 Hour

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
Fax:		Fax:	(856) 231-9818
Cell/Pager:		Cell/Pager:	
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:					
Samples Taken in Field:		Date:		Time:	
Samples Rec'd at Laboratory:	L. D'Ornellas	Date:	12/12/22	Time:	
Samples Analyzed:	J. Jeon	Date:	12/12/22	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data

ASTM D5755-09 Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Surface Loading

Client Sample ID #	IATL Sample ID #	Area Sampled (cm^2)	Aliquot (ml)	Comments	Results s/mm^2	Results s/cm^2
T-014	7538199	100	10.0	None Detected	< 19.2	< 925
T-015	7538200	100	10.0	None Detected	< 19.2	< 925
T-016	7538201	100	10.0	None Detected	< 19.2	< 925
T-017	7538202	100	10.0	None Detected	< 19.2	< 925
T-018	7538203	100	10.0	None Detected	< 19.2	< 925
T-019	7538204	100	10.0	None Detected	< 19.2	< 925
T-020	7538205	100	10.0	None Detected	< 19.2	< 925
T-021	7538206	100	10.0	None Detected	< 19.2	< 925
T-022	7538207	100	10.0	None Detected	< 19.2	< 925
T-023	7538208	100	10.0	None Detected	< 19.2	< 925
T-024	7538209	100	10.0	None Detected	< 19.2	< 925
T-025	7538210	100	10.0	None Detected	< 19.2	< 925
T-026	7538211	100	10.0	None Detected	< 19.2	< 925

Several publications and resources are available for the interpretation of Asbestos in Settled Dust by ASTM methodology. The method is highly dependent on field sampling protocol.

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PRELIMINARY RESULTS
Miscellaneous Asbestos Analysis

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	20 Duke St.,Suite 109	Project No.:	30171
	Bedford, NS B4A 2Z5	Batch No.:	674256
Client No.:	ALL131	Turnaround Time:	6 Hour

Client Contacts:		Laboratory Contacts:	
Contacts:		Contacts:	Frank E. Ehrenfeld III
Phone:		Phone:	(856) 231-9449
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Cell/Pager:		Cell/Pager:	
E-Mail:		E-Mail:	frankehrenfeld@iatl.com

Chain of Custody:					
Samples Taken in Field:		Date:		Time:	
Samples Rec'd at Laboratory:	L. D'Ornellas	Date:	12/12/22	Time:	
Samples Analyzed:	J. Jeon	Date:	12/12/22	Time:	
Preliminary Results Faxed:		Date:		Time:	
Preliminary Results E-Mail:		Date:		Time:	

Summary Data

ASTM D5755-09 Standard Test Method for Microvacuum Sampling and Indirect Analysis of Dust by Transmission Electron Microscopy for Asbestos Structure Number Surface Loading

Client Sample ID #	IATL Sample ID #	Area Sampled (cm^2)	Aliquot (ml)	Comments	Results s/mm^2	Results s/cm^2
T-027	7538212	100	10.0	None Detected	< 19.2	< 925
T-028	7538213	100	10.0	None Detected	< 19.2	< 925
T-029	7538214	100	10.0	None Detected	< 19.2	< 925
T-030	7538215	100	10.0	None Detected	< 19.2	< 925
T-031	7538216	100	10.0	None Detected	< 19.2	< 925

Several publications and resources are available for the interpretation of Asbestos in Settled Dust by ASTM methodology. The method is highly dependent on field sampling protocol.

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