



June 7th, 2018

Project No.: RM2164

Ottawa-Carleton District School Board
1224 Stittsville Main Street
Ottawa, Ontario K2S 0E3
Email: daniel.fournier@ocdsb.ca

Attention: Mr. Dan Fournier
Project Officer/Architectural and Engineering

RE: AIR SAMPLING SUMMARY REPORT: KANATA HIGHLANDS SCHOOL, 425 TERRY FOX DRIVE, OTTAWA, ON

INTRODUCTION

CM3 Environmental Inc. was retained by the Ottawa-Carleton District School Board (OCDSB) to complete radon analysis for samples collected within specified areas of Kanata Highlands School at 425 Terry Fox Drive in Ottawa, Ontario.

SCOPE OF WORK AND METHODOLOGY

The scope of work was completed in accordance with the current standing offer between CM3 Environmental and the OCDSB (15-038) and instruction provided by Mr. Fournier.

CM3 Environmental staff deployed 30 Alpha-Track radon gas detectors, including two (2) duplicate samples, throughout the school on January 4th, 2018. Samplers were retrieved on April 17th, 2018, for a testing period totaling 103 days.

Alpha-Track radon gas detectors consist of a small plastic container that houses a detector element within its cavity, called a foil. Radon atoms enter the cavity and strike the foil as they decay, creating microscopic etchings on the foil. When analyzing the detectors, the foils are removed and treated chemically to render the etchings more visible. These etchings are counted on an automated system, and the average radon level is calculated by the number of tracks and the number of days the detector was exposed. Average radon levels are reported in Becquerels per cubic meter (Bq/m³).

The sample cassettes were placed in laboratory-supplied containers and sent to RSSI, of Morton Grove, Illinois, via Chain of Custody for analysis. RSSI is authorized by the Canadian Nuclear Safety Commission (CNSC) for the analysis of radon gas.

BACKGROUND

What is Radon?

Radon is a colourless, odourless gas that forms naturally from the radioactive breakdown of uranium in soil, rocks, and water. It escapes into the air in low concentrations; however this can become a concern in enclosed spaces such as buildings, where radon gas can accumulate in higher concentrations.

As radon gas is heavier than air, it tends to accumulate in the lower floors of buildings, including the ground floor, basements, and crawlspaces.

Radon gas is inhaled into the lungs and as it breaks down it emits alpha particles, which causes damage to lung tissue and cells. Damaged cells have the potential of developing into cancer when they reproduce. This health risk is higher if a person is exposed to high levels of radon gas over a long period of time.

Radon in Schools

Radon levels in schools are of particular concern, as chronic health effects resulting from exposure to radon gas may develop over many years. As a result, restricting exposure to radon gas in schools can significantly reduce children's potential lifetime exposure to radon.

Health Canada recommends long-term testing in schools and other public buildings. Long-term testing is defined as a minimum 90-day monitoring period. Radon testing should be conducted during the heating season, in which doors and windows are usually closed, and the heating and ventilation is operating on a regular schedule. Additionally, as schools are not fully occupied during the summer months, conducting radon gas monitoring during the school year more accurately represents students' overall exposure.

REGULATIONS AND GUIDELINES

Although there is currently no legislation in Canada that governs acceptable levels of radon gas exposure in homes, Health Canada developed the *Guide for Radon Measurements in Residential Dwellings (Homes)* (adopted June 9, 2007). This guideline provides Canadians with recommendations for sampling protocols, and interpretation of results, including guidance on when remedial action should be taken.

The Health Canada guideline recommends monitoring should be conducted over a minimum 90-day period during the heating season, when windows are habitually closed. Measurement devices should be placed in the lowest occupied level of the building. Lowest occupied level is defined as the lowest section of the building in which residents occupy the space for a minimum of 4 hours per day. Devices should be placed in an open area to allow for adequate air circulation.

When interpreting results, Health Canada recommends the following remedial actions:

1. **Remediate within 2 years:** Results between 200 and 600 Bq/m³, Health Canada recommends taking steps to reduce the radon level within 2 years.
2. **Remediate within 1 year:** Results greater than 600 Bq/m³, Health Canada recommends taking steps to reduce the level within 1 year.

While the health risk from radon exposure below the Canadian Guideline is small, there is no safe level of radon. It is the choice of each building owner or manager to decide what level of radon exposure they are willing to accept.

ANALYTICAL RESULTS

The results of the long-term winter radon gas measurements at Kanata Highlands School, collected between January 4th, 2018 and April 17th, 2018 are summarized in Table 1, below. The Laboratory Certificates of Analysis are provided in Appendix A.

Table 1: Long-Term Radon Gas Monitoring Results – Kanata Highlands School, 425 Terry Fox Drive, Ottawa, ON

Sample ID	Location	Length of Test (Days)	Results (Bq/m ³)(1)	Comparison to Health Canada Standard	
				Between 200 ⁽²⁾ and 600 Bq/m ³	Greater than 600 Bq/m ³
364301	Special Ed 126	103	15	n/a(3)	n/a
364302	Kindergarten 116	103	15	n/a	n/a
364303	Kindergarten 125	103	26	n/a	n/a
364305	Meeting 121 B	103	15	n/a	n/a
364306	Kindergarten 124	103	11	n/a	n/a
364307	Work 105 A	103	11	n/a	n/a
364309	Kindergarten 114	103	11	n/a	n/a
364313	Kindergarten 115	103	11	n/a	n/a
364320	Kindergarten 123	103	11	n/a	n/a
364626	Classroom 218	103	7	n/a	n/a
364627	Classroom 228	103	11	n/a	n/a
364628	Classroom 218 (duplicate)	103	7	n/a	n/a
364629	Classroom 215	103	15	n/a	n/a
364630	Classroom 215 (duplicate)	103	7	n/a	n/a
364631	Classroom 209	103	7	n/a	n/a
364633	Principal 100 B	103	11	n/a	n/a

364634	Vice Principal 100 A	103	11	n/a	n/a
364635	Classroom 213	103	7	n/a	n/a
364636	Classroom 221	103	26	n/a	n/a
364638	Teacher Prep 107	103	11	n/a	n/a
364639	Seminar 203	103	7	n/a	n/a
364640	Staff Lounge 103	103	7	n/a	n/a
364641	Office 106 A	103	11	n/a	n/a
364642	Main Office 100	103	7	n/a	n/a
364643	230 A	103	11	n/a	n/a
364644	Classroom 206	103	15	n/a	n/a
364645	Kindergarten 113	103	22	n/a	n/a
364646	Meeting 105 B	103	11	n/a	n/a
364647	Custodian 108	103	18	n/a	n/a
364648	Library 105	103	11	n/a	n/a

Notes:

- 1) Bq/m³: Becquerels per cubic meter
- 2) The Health Canada Guideline maximum allowable concentration is 200 Bq/m³
- 3) n/a – not applicable – results are below recommended guidelines

CONCLUSIONS AND RECOMMENDATIONS

Based on the analytical results, all locations within the school indicated radon gas levels below the Health Canada action limit. No further action is recommended at this time.

STATEMENT OF LIMITATIONS

The conclusions and recommendations contained in this assessment report are based upon professional opinions with regard to the subject matter. These opinions are in accordance with currently accepted environmental assessment standards and practices applicable to these locations and are subject to the following inherent limitations:

1. The data and findings presented in this report are valid as of the dates of the investigation. The passage of time, manifestation of latent conditions or occurrence of future events may warrant further

exploration at the properties, analysis of the data, and re-evaluation of the findings, observations, and conclusions expressed in this report.

2. The data reported and the findings, observations and conclusions expressed in this report are limited by the Scope of Work. The Scope of Work was defined by the request of the client, the time and budgetary constraints imposed by the client, and availability of access to the properties.
3. Because of the limitations stated above, the findings, observations and conclusions expressed by CM3 Environmental in this report are not, and should not be, considered an opinion concerning compliance of any past or present owner or operator of the site with any federal, provincial or local laws or regulations.
4. No warranty or guarantee, whether expressed or implied, is made with respect to the data or the reported findings, observations, and conclusions, which are based solely upon site conditions in existence at the time of the investigation.
5. CM3 Environmental assessment reports present professional opinions and findings of a scientific and technical nature. While attempts were made to relate the data and findings to applicable environmental laws and regulations, the report shall not be construed to offer legal opinion or representations as to the requirements of, nor compliance with, environmental laws, rules, regulations or policies of federal, provincial, or local governmental agencies. Any use of the assessment report constitutes acceptance of the limits of CM3 Environmental's liability. CM3 Environmental's liability extends only to its client and not to other parties who may obtain this assessment report. Issues raised by the report should be reviewed by appropriate legal counsel.

CLOSURE

We trust that the above meets your requirements at this time. If you have any questions, please feel free to contact the undersigned.

Sincerely,

CM3 Environmental Inc.



Scott Simpson
Environmental Technician
Scott@cm3environmental.com



Robert McGrath, B.E.S.
Environmental Consultant/Principal
rob@cm3environmental.com

Appendix A
Analytical Laboratory Results

Air Sampling Summary Reports - Radon
Kanata Highlands School
425 Terry Fox Drive
Ottawa, Ontario
CM3 Environmental Project No.: RM2164



6312 West Oakton Street
Morton Grove, IL 60053-2723
847-965-1999
Fax 847-965-1991

May 08, 2018

CM3 Environmental
Robert McGrath
5710 Akins Road
Ottawa, ON K2S 1B8
Canada

Alpha Track Radon Test Results

Detector	Bq/m ³	Test Location	Test Address	Start Date	End Date	Note*
364301	15 ± 11%	Special Ed 126	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364302	15 ± 11%	Kindergarten 116	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364303	26 ± 8%	Kindergarten 125	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364305	15 ± 11%	Meeting 121 B	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364309	11 ± 12%	Kindergarten 114	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364313	11 ± 12%	Kindergarten 115	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364320	11 ± 12%	Kindergarten 123	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	

Analytical results showing the radon concentration relate only to the device(s) tested in the condition as received by RSSI. Results were calculated based on information provided by the client.

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364626	7 ± 14%	Classroom 218	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364630	7 ± 13%	Classroom 215 (duplicate)	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364639	7 ± 13%	Seminar 203	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364647	18 ± 10%	Custodian 108	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018

Analyzed By:

Aaron J. Morris

05/07/ 2018

Aaron Morris
Radon Analyst

Analysis Date

END REPORT

1-Broken Seal, 2-Damaged Filter, 3-Loose Test Material, 4-Missing Test Material, 5-Missing End Date, 6-Missing Start Date, 7-Less Than 8 Days, 8-Past Expiration Date, 9-Missing Both Dates, NA-No applicable notes

Detector	Bq/m ³	Test Location	Test Address	Start Date	End Date	Note*
364306	11 ± 12%	Kindergarten 124	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364307	11 ± 12%	Work 105 A	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364627	11 ± 13%	Classroom 228	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364628	7 ± 14%	Classroom 218 (duplicate)	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	
364629	15 ± 11%	Classroom 215	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018	

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364631	7 ± 13%	Classroom 209	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364633	11 ± 12%	Principal 100 B	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364634	11 ± 12%	Vice Principal 100 A	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364635	7 ± 13%	Classroom 213	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364636	26 ± 9%	Classroom 221	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364638	11 ± 13%	Teacher Prep 107	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364640	7 ± 14%	Staff Lounge 103	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364641	11 ± 12%	Office 106 A	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364642	7 ± 14%	Main Office 100	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364643	11 ± 12%	230 A	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364644	15 ± 11%	Classroom 206	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018
364645	22 ± 9%	Kindergarten 113	Kanata Highlands Public School 425 Terry Fox Drive Ottawa, ON K2K 1X7	1/4/2018	4/17/2018

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364646 11 ± 12%
Meeting 105 B Kanata Highlands Public School
425 Terry Fox Drive
Ottawa, ON K2K 1X7 1/4/2018 4/17/2018

364648 11 ± 12%
Library 105 Kanata Highlands Public School
425 Terry Fox Drive
Ottawa, ON K2K 1X7 1/4/2018 4/17/2018

Analyzed By:



05/08/ 2018

Aaron Morris
Radon Analyst

Analysis Date

END REPORT

1-Broken Seal, 2-Damaged Filter, 3-Loose Test Material, 4-Missing Test Material, 5-Missing End Date, 6-Missing Start Date, 7-Less Than 8 Days, 8-Past Expiration Date, 9-Missing Both Dates, NA-No applicable notes

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Customer Number: 4194

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