



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Ritchie Park Elementary School
Date of Test Report	4/6/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	42
# Rooms \geq 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.7 pCi/L

Project Status:
Initial testing completed; no further action needed.



April 6, 2022

Brian T. Croyle, PG, CHMM
Environmental Specialist
Montgomery County Public Schools
Gaithersburg, MD 20879

Re: **Radon Testing Services**
KCI Job # 122108316

Location: Ritchie Park ES
1514 Dunster Rd.
Rockville, MD 20854

Dear Mr. Croyle:

KCI Technologies, Inc. (KCI) is pleased to submit the following report to Montgomery County Public Schools (MCPS) pursuant to completing a “short-term” 3 day radon test for the Ritchie Park ES, located at 1514 Dunster Rd. Rockville, MD 20854 (subject site).

Scope of Services:

KCI conducted radon testing at the subject site to evaluate indoor radon levels relative to the USEPA's recommended action level of 4.0 picocuries per Liter (pCi/L) - the level at which EPA recommends that schools take action to reduce the level. KCI conducted the radon testing in accordance with American Association of Radon Scientists and Technologists (AARST) *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*. A National Radon Proficiency Program (NRPP) Radon Measurement Specialist (certification #111004 RT) supervised the testing. Additional information on radon management and the health effects of radon exposure is available from <https://www.montgomeryschoolsmd.org> or www.epa.gov/radon.

KCI visited the site on February 8, 2022 and deployed forty eight (48) activated charcoal (AC) radon test kits. KCI deployed radon test kits in all frequently-occupied ground contact rooms, and other areas, (if applicable) in accordance with AARST guidance.

A floor plan map of the building with the test locations is included as Attachment A of this report.

As a quality control measure, KCI also included duplicate samples, field blanks, lab transit blanks, and office blanks in accordance with AARST recommendations. In addition, KCI submitted test kits to Bowser-Morner, Inc. as spike samples. The spiked tests were exposed to a known radon concentration by Bowser-Morner prior to being returned to the laboratory for analysis.

KCI returned to the site on February 11, 2022 to retrieve the radon sampling test kits. KCI shipped all radon tests via overnight delivery to Airchek, Inc. for analysis by gamma-ray spectroscopy. Airchek, Inc.

is a NRSB certified analytical laboratory for radon analysis (certification # ARL1402) located at 1936 Butler Bridge Road, Mills River, North Carolina.

Evaluation of Testing Conditions:

These tests represent:

- Follow-up to initial testing.

These tests were conducted to:

- Evaluate radon concentration levels at the facility.

According to AARST, *Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*, ideal testing conditions would be when the building is fully occupied and the heating system is active. For this test, the facility’s HVAC system was operating in heating mode; therefore, KCI concludes that this test was conducted during ideal testing conditions.

KCI recorded observations of the following conditions in each room during the time of deployment and collection of the radon test kits:

- Indoor temperature,
- HVAC Operation,
- Dehumidifier operation,
- Humidifier operation,
- Ceiling fan operation, and
- Open windows or doors.

KCI also compiled weather data for the testing period and conducted observations of relevant field conditions. During the test period, weather records indicate low temperatures were in the 30s and high temperatures ranged from the mid 30s to the mid 50s Fahrenheit. Maximum sustained winds ranged from 3-12 miles per hour. Average humidity was around 23% with 0.1 inches of precipitation (rain) was recorded during testing period.

Results:

The sampling locations and analytical results are listed on Table 1 (Attachment B). The quality control sample locations and analytical results are listed on Table 2 (Attachment B). Sampling locations and associated test kit identification numbers and relevant field observations are listed on Table 3 (Attachment B). The laboratory analytical results are included in Attachment C. Laboratory results and exposure data for the spike samples are also included in Attachment C.

The results of the radon test analysis indicated the following:

Radon Concentration	Room	Result
≥4.0 pCi/L	None	N/A
<4.0 pCi/L	See Attachment B	

Quality Control Samples	
Results of Blank Canisters:	The office blanks, and lab transit blanks had test results of less than the laboratory detection limit of 0.3 pCi/L.
Adequate Laboratory Precision?	Review of the duplicate sample analysis indicates that adequate laboratory measurement precision was achieved.
Spike Sample Analysis:	The Spike Sample analysis results indicate the laboratory is operating within statistical control limits.

Our professional services have been performed in accordance with customary principles and practices in the field of industrial hygiene and engineering. If you have any questions or comments regarding this report, please feel free to contact me at (410) 891-1769.

Sincerely,



Tyler P. McCleaf
Radon Measurement Provider
#111004 RT
KCI Technologies, Inc.

Attachments: A- Floor Plan with Test Locations
 B- Table 1-3, Radon Test Summary Spreadsheets
 C- Laboratory Analytical Results

ATTACHMENT A

Floor Plan With Test Locations

ATTACHMENT B

Radon Test Summary Spreadsheet

Table Notes:

AC- Activated Charcoal

ACI- Air Check, Inc.

D- Duplicate

FB- Field Blank

KCI- KCI Technologies, Inc.

OB- Office Blank

PM- Project Manager

OC- Quality Control

Table 1- Radon Testing Results		
Ritchie Park ES		
Test Period: 02/8/2022 - 02/11/2022		
Kit Number	Room / Area	Result
11114397	110	< 0.3
11105993	113	< 0.3
11105985	115	< 0.3
11105986	116	< 0.3
11105977	117	< 0.3
11105972	119	< 0.3
11114396	121	< 0.3
11105991	123	< 0.3
11105904	124	< 0.3
11105990	125	< 0.3
11105961	126	< 0.3
11106215	126	< 0.3
11105988	127	< 0.3
11114383	128	< 0.3
11105982	129	0.5
11105983	129	0.7
11105964	130	< 0.3
11105901	132	< 0.3
11105989	134	< 0.3
11105984	140	< 0.3
11105981	142	< 0.3
11105976	144	< 0.3
11105997	146	< 0.3
11105999	146	< 0.3
11106207	206	< 0.3
11106209	211	< 0.3
11106208	219	< 0.3
11113866	100A	< 0.3
11114596	100B	< 0.3
11114597	100C	< 0.3
11105987	100E	< 0.3
11113885	100G	< 0.3
11105975	100H HEALTH	< 0.3
11113865	100H OFFICE	< 0.3
11105995	102 MEDIA	< 0.3
11105996	102 MEDIA	< 0.3
11105994	102A	< 0.3
11114378	102B	< 0.3
11105963	105 MULTIPURPOSE	< 0.3
11105992	105 MULTIPURPOSE	< 0.3
11106000	105 STAGE	< 0.3
11105971	GYM	< 0.3

Table 1- Radon Testing Results		
Ritchie Park ES		
Test Period: 02/8/2022 - 02/11/2022		
Kit Number	Room / Area	Result
11114386	GYM	< 0.3
11105973	GYM OFFICE	< 0.3
11114377	GYM OFFICE	< 0.3
11105998	KITCHEN OFFICE	< 0.3
11114398	KITCHEN OFFICE	< 0.3
11105979	MAIN OFFICE	< 0.3

Table 2- Radon Testing Results			
Ritchie Park ES			
Test Period: 02/8/2022 - 02/11/2022			
Kit Number	QC Type	Room / Area	Result
11105982	D	129	0.5
11105997	D	146	< 0.3
11105996	FB	102 Media	< 0.3
11106215	D	126	< 0.3
11114398	D	Kitchen Office	< 0.3
11105973	FB	Gym Office	< 0.3
11113478	OB	OFFICE BLANK	< 0.3
11113477	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11113866	100A	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114596	100B	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114597	100C	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11105987	100E	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11113885	100G	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105975	100H HEALTH	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11113865	100H OFFICE	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105996	102 MEDIA	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105995	102 MEDIA	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105994	102A	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11114378	102B	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105963	105 MULTIPURPOSE	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105992	105 MULTIPURPOSE	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11106000	105 STAGE	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11114397	110	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105993	113	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105985	115	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105986	116	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105977	117	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105972	119	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114396	121	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105991	123	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105904	124	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105990	125	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105961	126	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11106215	126	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105988	127	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114383	128	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105983	129	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	0.7 ± 0.3	2022-02-14
11105982	129	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	0.5 ± 0.3	2022-02-14
11105964	130	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105901	132	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105989	134	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105984	140	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105981	142	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105976	144	2022-02-08 @ 1:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11105999	146	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14

Radon test result report for:

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11105997	146	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11106207	206	2022-02-08 @ 2:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11106209	211	2022-02-08 @ 2:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11106208	219	2022-02-08 @ 2:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105971	GYM	2022-02-08 @ 2:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11114386	GYM	2022-02-08 @ 2:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-15
11105973	GYM OFFICE	2022-02-08 @ 2:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11114377	GYM OFFICE	2022-02-08 @ 2:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14
11105998	KITCHEN OFFICE	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11114398	KITCHEN OFFICE	2022-02-08 @ 1:00 pm	2022-02-11 @ 12:00 pm	< 0.3	2022-02-14
11105979	MAIN OFFICE	2022-02-08 @ 12:00 pm	2022-02-11 @ 11:00 am	< 0.3	2022-02-14

EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204186

NOMINAL Conditions: Radon Conc 25.8 pCi/L Rel. Hum 50.1 % Temp. 70.9 F

Date Start: 2/18/22 Date Stop: 2/21/22 Date Start: _____ Date Stop: _____

Time Start: 0911 Time Stop: 0911 Time Start: _____ Time Stop: _____

Device No.'s: (3) Char Bags -
11113484, 1112998, 20107126 Device No.'s: _____

23 Right

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

Date Start: _____ Date Stop: _____ Date Start: _____ Date Stop: _____

Time Start: _____ Time Stop: _____ Time Start: _____ Time Stop: _____

Device No.'s: _____ Device No.'s: _____

**Note: All times are in 24-hour (military) notation, Eastern Standard Time (EST)
Background = 7 µR/h Elevation = 820 ft**

MCPS - Spike Sample Lab Results. Measured values are satisfactory, i.e., within $\pm 25\%$ of the chamber's reference value (25.7 pCi/L).

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11113484	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK1		1	27.9
11122998	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK2		1	26.0
20107126	2022-02-18	9:00 am	2022-02-21	9:00 am	71	OFFICE	MAIN	SK3		1	27.6



Radon Test Kit Chain of Custody

Project Name: MCPS Radon – February 2022 Schools

Name of Schools:

1. Earle. B Wood MS
2. Flower Valley ES
3. Parkland MS
4. Herbert Hoover MS
5. Ritchie Park ES
6. Wayside ES
7. Potomac ES
8. Redland MS
9. Sequoyah ES
10. Sherwood ES
11. Rock Terrace School

	Date	Initials
Radon Test Kits Deployed	02/08/2022	PM
Radon Test Kits Collected	02/11/2022	PM
Radon Test Kits Shipped to Lab*	02/11/2022	PM
Radon Test Kits Received by Lab*	02/15/2022	PM

*All samples sent to Air Check, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759