



MCPS RADON TESTING – EXECUTIVE SUMMARY

Site Name	Lincoln Center
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	43
# Rooms ≥ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	0.8 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: Lincoln Center
580 N. Stonestreet Ave.
Rockville, MD 20850

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 Lincoln Center, located at 580 N. Stonestreet Ave. Rockville, MD 20850 (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 7, 2022 and deployed forty nine (49) 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 10, 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		
Lincoln Center		
Test Period: 02/7/2022 - 02/10/2022		
Kit Number	Room / Area	Result
11114925	1	< 0.3
11114944	2	< 0.3
11114946	2	< 0.3
11114932	3	< 0.3
11114952	4	< 0.3
11114954	6	< 0.3
11114935	7	< 0.3
11114942	8	< 0.3
11114918	9	< 0.3
11114943	9	< 0.3
11114926	1 OFFICE	< 0.3
11114947	3 OFFICE	< 0.3
11114922	CONFERENCE	< 0.3
11114934	END ROOM	< 0.3
11114941	END ROOM	< 0.3
11114915	LOUNGE	0.7
11114930	MAIL ROOM	0.8
11114916	MAILROOM OFFICE	< 0.3
11114914	MAIN OFFICE	0.6
11114907	MP	< 0.3
11114908	MP	< 0.3
11114927	MP	< 0.3
11114921	MP OFFICE 1	0.6
11114920	MP OFFICE 2	< 0.3
11114919	MP OFFICE 3	0.8
11114912	MP OFFICE 4	< 0.3
11114936	MRS	< 0.3
11114939	MRS	< 0.3
11114945	MRS	0.6
11114940	MRS OFFICE	0.8
11114938	MRS ROOM	< 0.3
11114906	OFFICE 1	< 0.3
11114913	OFFICE 2	< 0.3
11114911	OFFICE 3	< 0.3
11114933	PLUMBING	< 0.3
11114929	PROPERTY OFFICE	< 0.3
11114937	ROOM 1	< 0.3
11114948	ROOM 2	< 0.3
11114953	ROOM 2	< 0.3
11114955	ROOM 2	< 0.3
11114909	SUPPLY WH	< 0.3
11114928	SUPPLY WH OFFICE	< 0.3

Table 1- Radon Testing Results		
Lincoln Center		
Test Period: 02/7/2022 - 02/10/2022		
Kit Number	Room / Area	Result
11114910	TEXTBOOKS	0.8
11114905	VS	< 0.3
11114904	VS OFFICE	< 0.3
11114903	VS OFFICE 2	< 0.3
11114923	WH OFFICE	< 0.3
11114924	WH OFFICE	< 0.3
11114931	WH OFFICE	0.6

Table 2- Radon Testing Results			
Lincoln Center			
Test Period: 02/7/2022 - 02/10/2022			
Kit Number	QC Type	Room / Area	Result
11114907	D	Mp	< 0.3
11114924	D	WH Office	< 0.3
11114923	FB	WH Office	< 0.3
11114946	D	2	< 0.3
11114955	D	Room 2	< 0.3
11114953	FB	Room 2	< 0.3
11113481	OB	OFFICE BLANK	< 0.3
11113483	TB	TRAVEL BLANK	< 0.3

ATTACHMENT C

Laboratory Analytical Results

Radon test result report for:
LINCOLN CENTER
MAIN OFFICE

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114922	CONFERENCE	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114915	LOUNGE	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	0.7 ± 0.3	2022-02-14
11114930	MAIL ROOM	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.4	2022-02-15
11114916	MAILROOM OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114914	MAIN OFFICE	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	0.6 ± 0.3	2022-02-14
11114927	MP	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114908	MP	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114907	MP	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114921	MP OFFICE 1	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.6 ± 0.3	2022-02-14
11114920	MP OFFICE 2	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114919	MP OFFICE 3	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.3	2022-02-14
11114912	MP OFFICE 4	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114906	OFFICE 1	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114913	OFFICE 2	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114911	OFFICE 3	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114929	PROPERTY OFFICE	2022-02-07 @ 10:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114909	SUPPLY WH	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114928	SUPPLY WH OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114910	TEXTBOOKS	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.4	2022-02-15
11114905	VS	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114904	VS OFFICE	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114903	VS OFFICE 2	2022-02-07 @ 10:00 am	2022-02-10 @ 9:00 am	< 0.3	2022-02-14
11114924	WH OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114923	WH OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114931	WH OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.6 ± 0.4	2022-02-15

February 15, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
LINCOLN CENTER
MRS

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114945	MRS	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.6 ± 0.3	2022-02-14
11114939	MRS	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114936	MRS	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114940	MRS OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	0.8 ± 0.4	2022-02-15
11114938	MRS ROOM	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

February 15, 2022

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
LINCOLN CENTER
PLUMBING

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114933	PLUMBING	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

Radon test result report for:
LINCOLN CENTER
PRINT SHOP

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11114925	1	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114926	1 OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114944	2	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114946	2	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114932	3	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114947	3 OFFICE	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114952	4	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114954	6	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114935	7	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114942	8	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114943	9	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114918	9	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114934	END ROOM	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114941	END ROOM	2022-02-07 @ 12:00 pm	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114937	ROOM 1	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114955	ROOM 2	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-14
11114948	ROOM 2	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15
11114953	ROOM 2	2022-02-07 @ 11:00 am	2022-02-10 @ 10:00 am	< 0.3	2022-02-15

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 - Device No.'s: _____

11113484, 1112998, 20107126 _____

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 μ R/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. Lincoln Center
2. Wootton HS
3. Rockville HS
4. Richard Montgomery HS
5. Rocking Horse Rd. Center
6. Blair G. Ewing Center
7. Twinbrook ES
8. Rock Creek Valley ES
9. Luxmanor ES
10. Tilden MS

	Date	Initials
Radon Test Kits Deployed	02/07/2022	
Radon Test Kits Collected	02/10/2022	
Radon Test Kits Shipped to Lab*	02/10/2022	
Radon Test Kits Received by Lab*	02/14/2022	

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