



**MCPS RADON TESTING – EXECUTIVE SUMMARY**

Site Name	Dr. Charles Drew Elementary School
Date of Test Report	4/29/2022
Round of Testing	Initial Follow-up Post Remediation 2 Year Testing 5 Year Testing HVAC Upgrade Window Replacement New Addition New Facility
# Rooms Tested	44
# Rooms $\geq$ 4.0 pCi/L	0
Lowest Value	<0.3 pCi/L
Highest Value	1.0 pCi/L

Project Status:  
Initial testing completed; no further action needed



April 29, 2022

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

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

Location: Dr. Charles Drew Elementary School  
1200 Swingingdale Dr.  
Silver Spring, MD 20905

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 Dr. Charles Drew Elementary School, located at 1200 Swingingdale Dr. Silver Spring, MD 20905 (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](http://www.epa.gov/radon).

KCI visited the site on March 8, 2022 and deployed fifty (50) 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 March 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 post-mitigation biennial testing.

These tests were conducted to:

- Confirm the success of the mitigation system(s).

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 mid 20s and high temperatures ranged from the high 70s to the low 50s Fahrenheit. Maximum sustained winds ranged from 0-32 miles per hour. Average humidity was around 65% with 1.09 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:

<b>Radon Concentration</b>	<b>Room</b>	<b>Result</b>
≥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		
Dr. Charles Drew ES		
Test Period: 03/08/2022 - 03/11/2022		
Kit Number	Room / Area	Result
11133841	1	< 0.3
11133873	1	< 0.3
11130480	2	< 0.3
11130499	3	< 0.3
11133846	4	< 0.3
11130481	5	< 0.3
11133845	6	< 0.3
11133811	7	< 0.3
11133805	8	< 0.3
11133850	9	< 0.3
11130493	10	< 0.3
11130462	11	1.0
11133860	16	< 0.3
11133858	21	< 0.3
11133871	5A	< 0.3
11133816	ART	0.5
11133872	BUILDING SERVICES	< 0.3
11133861	CAFETERIA OFFICE	0.7
11130460	CONFERENCE	< 0.3
11130479	COUNSELOR	< 0.3
11130416	FILE ROOM	0.7
11133868	GYM	0.7
11133869	GYM	< 0.3
11133870	GYM OFFICE	0.6
11130497	HEALTH	< 0.3
11130490	HS	< 0.3
11130487	IMC	< 0.3
11130488	IMC	< 0.3
11133812	IMC	< 0.3
11133862	IMU	0.6
11133815	K1	< 0.3
11133875	K2	< 0.3
11130492	K3	< 0.3
11130491	K4	0.6
11133863	KITCHEN	< 0.3
11133864	KITCHEN	< 0.3
11133874	KITCHEN	< 0.3
11130494	MAIN OFFICE	< 0.3
11130495	MAIN OFFICE	0.6
11130496	MAIN OFFICE	< 0.3
11133865	MPR	< 0.3
11133866	MPR	< 0.3



Table 1- Radon Testing Results		
Dr. Charles Drew ES		
Test Period: 03/08/2022 - 03/11/2022		
Kit Number	Room / Area	Result
11133867	MPR	0.6
11130489	MU	< 0.3
11130459	NURSE	< 0.3
11130498	OFFICE	0.6
11130486	PREP ROOM	< 0.3
11130500	PRINCIPAL	0.5
11133844	TV STUDIO	< 0.3
11130457	WORK ROOM	< 0.3

Table 2- Radon Testing Results			
Dr. Charles Drew ES			
Test Period: 03/08/2022 - 03/11/2022			
Kit Number	QC Type	Room / Area	Result
11130495	D	Main office	0.6
11130496	FB	Main office	< 0.3
11199414	D	IMC	< 0.3
11133841	D	1	< 0.3
11133863	D	Kitchen	< 0.3
11133864	FB	Kitchen	< 0.3
11131663	OB	OFFICE BLANK	< 0.3
11131669	TB	TRAVEL BLANK	< 0.3



# ATTACHMENT C

## Laboratory Analytical Results

Radon test result report for:  
**DR. CHARLES DREW ES**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11133873	1	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133841	1	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133860	16	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133858	21	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133846	4	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133871	5A	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133845	6	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133811	7	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133805	8	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133850	9	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133816	ART	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	0.5 ± 0.3	2022-03-14
11133872	BUILDING SERVICES	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133861	CAFETERIA OFFICE	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	0.7 ± 0.3	2022-03-14
11133869	GYM	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133868	GYM	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	0.7 ± 0.3	2022-03-14
11133870	GYM OFFICE	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	0.6 ± 0.3	2022-03-14
11133812	IMC	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133862	IMU	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	0.6 ± 0.3	2022-03-14
11133815	K1	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133875	K2	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133864	KITCHEN	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133863	KITCHEN	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133874	KITCHEN	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133867	MPR	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	0.6 ± 0.3	2022-03-14
11133866	MPR	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133865	MPR	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11133844	TV STUDIO	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14

Radon test result report for:  
**DR. CHARLES DREW ES**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11130493	10	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130462	11	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	1.0 ± 0.3	2022-03-14
11130480	2	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130499	3	2022-03-08 @ 9:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130481	5	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130460	CONFERENCE	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130479	COUNSELOR	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130416	FILE ROOM	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	0.7 ± 0.3	2022-03-14
11130497	HEALTH	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130490	HS	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130488	IMC	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130487	IMC	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130492	K3	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130491	K4	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	0.6 ± 0.3	2022-03-14
11130495	MAIN OFFICE	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	0.6 ± 0.3	2022-03-14
11130494	MAIN OFFICE	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130496	MAIN OFFICE	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130489	MU	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130459	NURSE	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130498	OFFICE	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	0.6 ± 0.3	2022-03-14
11130486	PREP ROOM	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14
11130500	PRINCIPAL	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	0.5 ± 0.3	2022-03-14
11130457	WORK ROOM	2022-03-08 @ 8:00 am	2022-03-11 @ 12:00 pm	< 0.3	2022-03-14

# EXPOSURE IN BOWSER-MORNER RADON CHAMBER

CLIENT KCI Technologies, Inc. Job Number 204620

NOMINAL Conditions: Radon Conc 27.0 pCi/L Rel. Hum 50.1 % Temp. 70.0 F

Date Start: 3/18/22 Date Stop: 3/21/22 Date Start: \_\_\_\_\_ Date Stop: \_\_\_\_\_

Time Start: 0705 Time Stop: 0705 Time Start: \_\_\_\_\_ Time Stop: \_\_\_\_\_

Device No.'s: (5) Char Bags - Device No.'s: \_\_\_\_\_

11139367, 11139368, 11139371, \_\_\_\_\_

11139710, 11139717 \_\_\_\_\_

E3 light

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  $\mu$ R/h Elevation = 820 ft

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March 30, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

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Radon test result report for:

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

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<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11139367	SK1	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.9 $\pm$ 2.1	2022-03-30
11139368	SK2	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	23.9 $\pm$ 2.0	2022-03-30
11139371	SK3	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	25.7 $\pm$ 2.1	2022-03-30
11139710	SK4	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	26.4 $\pm$ 2.1	2022-03-30
11139717	SK5	2022-03-18 @ 7:00 am	2022-03-21 @ 7:00 am	24.6 $\pm$ 2.0	2022-03-30

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





## Radon Test Kit Chain of Custody

Project Name: MCPS Radon – March 2022 Schools

Name of Schools:

1. Fairland Center
2. Cloverly ES
3. Drew, Dr. Charles ES
4. Weller Road ES
5. Wheaton HS
6. East Silver Spring ES
7. Rosemary Hills ES

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	Date	Initials
Radon Test Kits Deployed	03/08/2022	BMM
Radon Test Kits Collected	03/11/2022	BMM
Radon Test Kits Shipped to Lab*	03/11/2022	BMM
Radon Test Kits Received by Lab*	03/13/2022	BMM

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