|  |
| --- |
| ***RADON SCREENING SURVEY***  Beaver Brook Elementary School 1 Ralph G. Hamlin Jr. Lane Abington, MA  **Beaver Brook Elementary School**  **1 Ralph G. Hamlin Jr. Lane**  **Abington, MA**  Prepared by:  Massachusetts Department of Public Health  Bureau of Environmental Health  Indoor Air Quality Program  Radon Assessment Unit  April, 2019 |

# Background

|  |  |
| --- | --- |
| Dates of Assessment: | 12/17/2018 through 12/19/2018 |
| Building Name: | Beaver Brook Elementary School |
| Address: | 1 Ralph G. Hamlin Jr. Lane,  Abington, MA 02351 |
| Assessment Requested by: | Abington Public School Dept. |
| Massachusetts Department of Public Health Bureau of Environmental Health (MDPH/BEH) Staff Conducting Assessment: | Lisa A. Hébert, Senior Technical Radon Specialist, Indoor Air Quality (IAQ) Program, Radon Unit |

# Methods

Radon samples were collected for the purpose of this radon survey using the United States Environmental Protection Agency (US EPA) Method #402-R-92-004 Liquid Scintillation (LS). Sampling devices were obtained through AccuStar Labs, a certified radon laboratory. Seventy seven devices were deployed throughout the building for a minimum 48-hour time period. Devices were deployed on 12/17/2018 and collected on 12/19/2018.

# Results

Tests were taken during normal operations at Beaver Brook Elementary School. Of the 77 areas where test devices were deployed, devices from 74 areas were collected and submitted to AccuStar Labs. The lab results from the survey appear in Appendix A.

# Discussion

Radon Unit staff reviewed the lab results from AccuStar Labs and found all quality assurance parameters within acceptable limits. Appendix A shows that radon levels in the building ranged from less than 0.4pCi/L to 2.4pCi/L. All areas screened had radon levels below the US EPA action guideline of 4 picocuries per liter of air pCi/L. Please note that vials from three areas could not be submitted due to being disturbed/tampered. These areas were:

• OTPT - (Vial # 3135907)

• Room 17 – (Vial # 3135958)

• Teachers Room – (Vial # 3135986 and QA sample: vial # 3135998)

## In addition, the following areas were unable to be tested due to lack of access, temperature conditions, or by the request of the School Department. These areas should be tested in the future. They are:

• Boiler room – Too hot to test (above 80 degrees F)

• Rm 42 Storage – No access

## • Kitchen Storage – No access

• Hall Storage near Rm 31 – No access

## • Rooms 20, 21, 22 not tested at the request of the School Dept.

• Cafeteria and Stage Areas – Only one vial was able to be safely placed in each area,

rather than two.

## Radon Gas

According to the National Research Council (NRC, 2009), “low levels of radon are present in all the air we breathe.” Radon is a naturally occurring, radioactive gas that is produced by the natural decay of uranium in the soil. The average outdoor radon level is about 0.4 pCi/L (US EPA, 2009). Once radon is formed, it migrates through various pathways in the soil and can enter a building through cracks, holes, and joints in a building’s foundation (US EPA, 2009). The EPA recommends mitigation for indoor radon levels at or above 4 pCi/L.

According to the US EPA (2009), radon gas “decays into radioactive particles that can get trapped in your lungs when you breathe. As they break down further, these particles release small bursts of energy.” This activity can damage your lung tissue and increase a person’s risk of developing lung cancer (US EPA, 2009). Radon is the leading cause of lung cancer in non-smokers. In 2005, the U.S. Surgeon General issued a health advisory stating that indoor radon is the second leading cause of lung cancer (US EPA, 2013).

# Recommendations

Based on the measurements and observations made during the visit, the following recommendations are made.

It would be prudent to test areas with disturbed/tampered sampling devices and those areas which were unable to be tested. These areas include:

a. OTPT

b. Room 17

c. Teachers Room

d. Boiler room

e. Room 42 Storage

f. Kitchen Storage

g. Hall Storage near Rm 31

## h. Rooms 20, 21, 22

## i. Cafeteria and Stage Areas

Refer to resource manual and other related IAQ documents located on the MDPH’s website for further building-wide evaluations and advice on maintaining public buildings. These documents are available at: <http://mass.gov/dph/iaq> .

If you have any questions or concerns, please call the Massachusetts Department of Public Health Radon Assessment Unit at (413) 586-7525.

**References**

National Research Council (MRC). 1999. *Risk Assessment of Radon in Drinking Water,* National Academy Press.

United States Environmental Protection Agency (US EPA). 2009. “A Citizen’s Guide to Radon. The Guide To Protecting Yourself and Your Family From Radon”. US Environmental Protection Agency. EPA402/K-09/001. January 2009.

United States Environmental Protection Agency (US EPA). 2013. “Home Buyers and Seller’s Guide to Radon”. US Environmental Protection Agency. EPA402/K-13/002. September 2013.

**Appendix A**

**Radon Survey Results**

NELAC NY 11769

NRPP 103216 AL NRSB ARL0017

Laboratory Report for: Property Tested:

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2411907 | 3135901 | 12/17/2018 | 3:40 pm | 12/19/2018 | 4:20 pm | Office | 0.5 |
| 2411908 | 3135902 | 12/17/2018 | 3:45 pm | 12/19/2018 | 4:20 pm | Principal's Office | 0.7 |
| 2411909 | 3135903 | 12/17/2018 | 3:50 pm | 12/19/2018 | 4:25 pm | Room 28 | 0.4 |
| 2411910 | 3135904 | 12/17/2018 | 3:55 pm | 12/19/2018 | 4:25 pm | Room 30 | 0.4 |
| 2411911 | 3135905 | 12/17/2018 | 3:55 pm | 12/19/2018 | 4:30 pm | Room 29 | 0.5 |
| 2411912 | 3135906 | 12/17/2018 | 3:55 pm | 12/19/2018 | 4:30 pm | Room 31 | 0.5 |
| 2411913 | 3135908 | 12/17/2018 | 4:05 pm | 12/19/2018 | 4:35 pm | Room 32 | 0.9 |
| 2411914 | 3135909 | 12/17/2018 | 4:05 pm | 12/19/2018 | 4:35 pm | Room 33 | 1.2 |
| 2411915 | 3135910 | 12/17/2018 | 4:10 pm | 12/19/2018 | 4:35 pm | Room 34 | 0.7 |
| 2411916 | 3135911 | 12/17/2018 | 4:10 pm | 12/19/2018 | 4:40 pm | Room 35 | 0.6 |
| 2411917 | 3135912 | 12/17/2018 | 4:10 pm | 12/19/2018 | 4:40 pm | Room 36 | 0.8 |

**Comment:**

Per ANSI/AARST MAH 2014, requirements for test locations within a room were not met (Closets and Kitchens).

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Test Performed By: Lisa Hebert

Distributed by: Dept of Public Health-Western Regional

Date Received: 12/21/2018

Date Logged:

12/21/2018

Date Analyzed: 12/22/2018

Date Reported:

12/26/2018

**Disclaimer:**

Report Reviewed By: \_ \_\_\_\_ \_\_\_ \_\_\_

Report Approved By: \_\_\_ \_\_\_ \_\_\_ \_\_\_\_ \_\_

Shawn Price, Director of Laboratory Operations, AccuStar Labs

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NELAC NY 11769

NRPP 103216 AL NRSB ARL0017

Laboratory Report for: Property Tested:

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2411918 | 3135913 | 12/17/2018 | 4:10 pm | 12/19/2018 | 4:40 pm | Custodian's Office | 0.6 |
| 2411919 | 3135914 | 12/17/2018 | 4:15 pm | 12/19/2018 | 4:45 pm | Room 37 North River Collaborative | 1.7 |
| 2411920 | 3135915 | 12/17/2018 | 4:20 pm | 12/19/2018 | 4:45 pm | Room 38 | 2.3 |
| 2411921 | 3135916 | 12/17/2018 | 4:20 pm | 12/19/2018 | 4:45 pm | Room 39 | 2.4 |
| 2411922 | 3135917 | 12/17/2018 | 4:20 pm | 12/19/2018 | 4:50 pm | Storage with Garage Bay | 0.5 |
| 2411923 | 3135918 | 12/17/2018 | 3:40 pm | 12/19/2018 | 4:20 pm | QA-1 | 0.5 |
| 2411924 | 3135919 | 12/17/2018 | 3:45 pm | 12/19/2018 | 4:20 pm | QA-2 | 0.8 |
| 2411925 | 3135920 | 12/17/2018 | 4:20 pm | 12/19/2018 | 4:50 pm | QA-3 | < 0.4 |
| 2411926 | 3135921 | 12/17/2018 | 4:25 pm | 12/19/2018 | 4:50 pm | Storage Area-Caged | 0.7 |
| 2411927 | 3135922 | 12/17/2018 | 4:30 pm | 12/19/2018 | 4:55 pm | Paint Storage Area | 1.9 |
| 2411928 | 3135924 | 12/17/2018 | 4:30 pm | 12/19/2018 | 4:55 pm | Room 40 | 0.6 |

**Comment:**

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NRPP 103216 AL NRSB ARL0017

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EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2411929 | 3135925 | 12/17/2018 | 4:35 pm | 12/19/2018 | 4:55 pm | Room 1 | 0.4 |
| 2411930 | 3135926 | 12/17/2018 | 4:40 pm | 12/19/2018 | 5:00 pm | Room 2 | < 0.4 |
| 2411931 | 3135927 | 12/17/2018 | 4:40 pm | 12/19/2018 | 5:05 pm | Nurse Entry | 0.7 |
| 2411932 | 3135928 | 12/17/2018 | 4:45 pm | 12/19/2018 | 5:05 pm | Nurse Sick Bay | 0.7 |
| 2411933 | 3135929 | 12/17/2018 | 4:45 pm | 12/19/2018 | 5:10 pm | Nurse Office | 0.8 |
| 2411934 | 3135930 | 12/17/2018 | 4:45 pm | 12/19/2018 | 5:00 pm | Custodian | 0.4 |
| 2411935 | 3135931 | 12/17/2018 | 4:50 pm | 12/19/2018 | 5:10 pm | Room 3 | 0.5 |
| 2411936 | 3135932 | 12/17/2018 | 4:50 pm | 12/19/2018 | 5:10 pm | Room 4 | 0.5 |
| 2411937 | 3135933 | 12/17/2018 | 4:50 pm | 12/19/2018 | 5:15 pm | Room 5 | 0.8 |
| 2411938 | 3135934 | 12/17/2018 | 4:55 pm | 12/19/2018 | 5:15 pm | Room 6 | 0.5 |
| 2411939 | 3135935 | 12/17/2018 | 4:55 pm | 12/19/2018 | 5:15 pm | Room 7 | 0.6 |

**Comment:**

Per ANSI/AARST MAH 2014, requirements for test locations within a room were not met (Closets and Kitchens).

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EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Log Number | Device Number | Result  Test Exposure Duration: Area Tested pCi/L | | | | | |
| 2411940 | 3135936 | 12/17/2018 | 5:00 pm | 12/19/2018 | 5:20 pm | Cross Corridor West | 0.6 |
| 2411941 | 3135937 | 12/17/2018 | 5:00 pm | 12/19/2018 | 5:20 pm | Math Curriculum Closet | 1.1 |
| 2411942 | 3135938 | 12/17/2018 | 5:05 pm | 12/19/2018 | 5:20 pm | Cold Storage Rear | 0.5 |
| 2411943 | 3135939 | 12/17/2018 | 4:45 pm | 12/19/2018 | 5:10 pm | QA-4 | 0.8 |
| 2411944 | 3135940 | 12/17/2018 | 4:45 pm | 12/19/2018 | 5:05 pm | QA-5 | 0.7 |
| 2411945 | 3135941 | 12/17/2018 | 4:45 pm | 12/19/2018 | 5:20 pm | QA-6 | < 0.4 |
| 2411946 | 3135942 | 12/17/2018 | 5:10 pm | 12/19/2018 | 5:25 pm | Room 13 | 0.6 |
| 2411947 | 3135943 | 12/17/2018 | 5:10 pm | 12/19/2018 | 5:25 pm | Room 12 | 0.8 |
| 2411948 | 3135944 | 12/17/2018 | 5:15 pm | 12/19/2018 | 5:30 pm | Room 11 | 0.4 |
| 2411949 | 3135945 | 12/17/2018 | 5:20 pm | 12/19/2018 | 5:30 pm | Room 9 | 0.5 |
| 2411950 | 3135947 | 12/17/2018 | 5:20 pm | 12/19/2018 | 5:30 pm | Room 9 Closet | 0.4 |

**Comment:**

Per ANSI/AARST MAH 2014, requirements for test locations within a room were not met (Closets and Kitchens).

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Laboratory Report for: Property Tested:

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2411951 3135948

2411952 3135949

2411953 3135950

2411954 3135951

2411955 3135952

2411956 3135953

2411957 3135954

2411958 3135955

2411959 3135956

2411960 3135957

2411961 3135959

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

5:25 pm

5:25 pm

5:30 pm

5:30 pm

5:35 pm

5:35 pm

5:40 pm

5:45 pm

5:45 pm

5:45 pm

5:55 pm

12/19/2018 5:30 pm

12/19/2018 5:35 pm

12/19/2018 5:35 pm

12/19/2018 5:35 pm

12/19/2018 5:45 pm

12/19/2018 5:45 pm

12/19/2018 5:45 pm

12/19/2018 5:50 pm

12/19/2018 5:50 pm

12/19/2018 5:50 pm

12/19/2018 6:05 pm

Room 9 Corridor Closet Room 8

Room 41

Room 42

Room 42 Server

Room 43

Room 43 Supply Closet Room 14 Art

Room 15 Art Storage

Room 16

Room 18

0.4

< 0.4

0.4

0.4

< 0.4

< 0.4

< 0.4

< 0.4

< 0.4

< 0.4

< 0.4

**Comment:**

Per ANSI/AARST MAH 2014, requirements for test locations within a room were not met (Closets and Kitchens).

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EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2411962 3135960

2411963 3135961

2411964 3135962

2411965 3135963

2411966 3135964

2411967 3135965

2411968 3135966

2411969 3135967

2411970 3135968

2411971 3135969

2411972 3135970

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

5:10 pm

5:15 pm

5:45 pm

6:00 pm

6:00 pm

6:05 pm

6:05 pm

6:10 pm

6:10 pm

6:15 pm

6:15 pm

12/19/2018 5:25 pm

12/19/2018 5:30 pm

12/19/2018 6:05 pm

12/19/2018 6:10 pm

12/19/2018 6:10 pm

12/19/2018 6:10 pm

12/19/2018 6:15 pm

12/19/2018 6:20 pm

12/19/2018 6:25 pm

12/19/2018 6:25 pm

12/19/2018 6:30 pm

QA-7 QA-8 QA-9

Room 19

Rear Cross Corridor East Custodial Storage

Room 27

Room 26

Room 25

Room 24

Room 23

0.5

< 0.4

< 0.4

0.7

0.6

1.0

< 0.4

< 0.4

0.4

0.5

0.4

**Comment:**

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Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2411973 3135971

2411974 3135974

2411975 3135975

2411976 3135976

2411977 3135977

2411978 3135979

2411979 3135980

2411980 3135981

2411981 3135982

2411982 3135983

2411983 3135984

12/17/2018

12/17/2018

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12/17/2018

12/17/2018

12/17/2018

12/17/2018

6:20 pm

6:30 pm

6:30 pm

6:35 pm

6:40 pm

6:45 pm

6:50 pm

6:15 pm

6:15 pm

6:40 pm

6:55 pm

12/19/2018 6:35 pm

12/19/2018 6:40 pm

12/19/2018 6:40 pm

12/19/2018 6:45 pm

12/19/2018 6:55 pm

12/19/2018 6:55 pm

12/19/2018 7:00 pm

12/19/2018 6:25 pm

12/19/2018 6:30 pm

12/19/2018 6:45 pm

12/19/2018 7:05 pm

Custodial Closet Vice Principal Cafeteria Kitchen

Gym 1 West

Gym 1 East Stage Right QA-10

QA-11 QA-12

Gym 2 West

0.4

0.6

0.4

0.5

0.4

0.4

< 0.4

< 0.4

0.4

< 0.4

0.5

**Comment:**

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12/21/2018

Date Analyzed: 12/22/2018

Date Reported:

12/26/2018

**Disclaimer:**

Report Reviewed By: \_ \_\_\_\_ \_\_\_ \_\_\_

Report Approved By: \_\_\_ \_\_\_ \_\_\_ \_\_\_\_ \_\_

Shawn Price, Director of Laboratory Operations, AccuStar Labs

The uncertainty of this radon measurement is ~+/- 10 %. Factors contributing to uncertainty include statistical variations, daily and seasonal variations in radon concentrations, sample collection techniques and operation of the dwelling. Interference with test conditions may influence the test results.

This report may only be transferred to a third party in its entirety. Analytical results relate to the samples AS RECEIVED BY THE LABORATORY. Results shown on this report represent levels of radon gas measured between the dates shown in the room or area of the site identified above as "Property Tested". Incorrect information will affect results. The results may not be construed as either predictive or supportive of measurements conducted in any area of this structure at any other time. AccuStar Labs, its employees and agents are not responsible for the consequences of any action taken or not taken based upon the results reported or any verbal or written interpretation of the results.

NELAC NY 11769

NRPP 103216 AL NRSB ARL0017

Laboratory Report for: Property Tested:

EPA Method #402-R-92-004

Liquid Scintillation NRPP Device Code 8088 NRSB Device Code 12193

Peter Schafer Superintendent Abington Public Scho Beaver Brook Elementary 1071 Washington Street 1 Ralph Hamlin Lane

Abington MA 02351 Abington MA 02351

Log Number

Device Number

Test Exposure Duration:

Area Tested

Result

pCi/L

2411984 3135985

2411985 3135987

2411986 3135988

2411987 3135989

2411988 3135990

2411989 3135991

2411990 3135992

2411991 3135993

2411992 3135994

2411993 3135999

2411994 3136000

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

12/17/2018

6:55 pm

7:05 pm

7:05 pm

7:10 pm

7:10 pm

7:10 pm

7:15 pm

7:15 pm

7:15 pm

7:10 pm

7:15 pm

12/19/2018 7:05 pm

12/19/2018 7:15 pm

12/19/2018 7:15 pm

12/19/2018 7:15 pm

12/19/2018 7:20 pm

12/19/2018 7:20 pm

12/19/2018 7:20 pm

12/19/2018 7:25 pm

12/19/2018 7:25 pm

12/19/2018 7:15 pm

12/19/2018 7:25 pm

Gym 2 East

Teacher's Room Kitchen Teacher's Room Storage Teacher's Copy Area Storage Closet

Daycare Storage School Storage

Youth Basketball Storage Gym 2 Storage

QA-14 QA-15

0.6

< 0.4

< 0.4

< 0.4

0.4

0.5

1.1

< 0.4

< 0.4

< 0.4

< 0.4

**Comment:**

Per ANSI/AARST MAH 2014, requirements for test locations within a room were not met (Closets and Kitchens).

Your test is for informational purposes only. A copy of this report was emailed to [lisa.hebert@state.ma.us.](mailto:lisa.hebert@state.ma.us)

Test Performed By: Lisa Hebert

Distributed by: Dept of Public Health-Western Regional

Date Received: 12/21/2018

Date Logged:

12/21/2018

Date Analyzed: 12/22/2018

Date Reported:

12/26/2018

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Shawn Price, Director of Laboratory Operations, AccuStar Labs

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