

February 14, 2019

1 9 8 4 - 2 0 1 9



TRUSTED SERVICES FOR 35 YEARS

Mr. Terry Zerwas
St. Michael-Albertville ISD #885
11343 50th Street NE
Albertville, MN 55301

**RE: St. Michael-Albertville Middle School West
Continuous Radon Monitoring Results
IEA Project #201811184**

Dear Mr. Zerwas:

As requested by St. Michael-Albertville ISD #885, IEA used a continuous radon monitor (CRM) to measure radon levels in the following location:

- Middle School West – Room F103

The purpose of the monitoring was to document if radon levels were within an acceptable range during typical work hours.

INTRODUCTION

The MDH and the EPA have established a recommended action level in frequently occupied areas of 4.0 picoCuries per liter (pCi/L) for an annual average. The average radon level over each work day was compared to the Action Level.

Short-term radon testing, conducted on December 10, 2018, indicated a radon level above the EPA and MDH recommended Action Level. The Minnesota Department of Health's (MDH's) *Best Practices for Radon Measurement in Minnesota Schools and Commercial Buildings* recommends follow-up testing in areas where initial testing results are at or above the action level in accordance with ANSI/AARST 'Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings' (ANSI/AARST MALB 2014). A continuous radon monitor (CRM) is recommended to determine if elevated levels are present during occupied times. Radon levels can fluctuate with the operation of the ventilation system as well as with changes in barometric pressure. The CRM provides hourly radon readings so that levels can be evaluated for periods while the room is occupied.

INSTITUTE FOR ENVIRONMENTAL ASSESSMENT, INC.
www.ieasafety.com

BROOKLYN PARK
9201 West Broadway, #600
Brooklyn Park, MN 55445
763-315-7900 / FAX 763-315-7920
800-233-9513

MANKATO
610 North Riverfront Drive
Mankato, MN 56001
507-345-8818 / FAX 507-345-5301
800-233-9513

ROCHESTER
210 Woodlake Drive SE
Rochester, MN 55904
507-281-6664 / FAX 507-281-6695
800-233-9513

BRAINERD
601 NW 5th Street, Ste. #4
Brainerd, MN 56401
218-454-0703 / FAX 218-454-0703
800-233-9513

MARSHALL
1420 East College Drive
Marshall, MN 56258
507-476-3599 / FAX 507-537-6985
800-233-9513

VIRGINIA
5525 Emerald Avenue
Mountain Iron, MN 55768
218-410-9521
800-233-9513

RESULTS & DISCUSSION

From January 29, 2019 to February 1, 2019, continuous radon monitoring was conducted in Room F103 at Middle School West. A CRM was placed in Room F103 for about 70 hours; the MDH recommends a minimum of 48 hours. Days when these rooms were not occupied (e.g., weekends & holidays) were not included in the monitoring. The hourly CRM data and a graph of the data are provided in Appendix A.

A summary of the continuous radon monitor data, including previous results, is provided in the table on the following page.

St. Michael-Albertville Middle School West: Continuous Radon Monitoring Results – 1/29/2019 – 2/1/2019

Date Range	Room #	¹ Overall Average (pCi/L)
1/29/19 – 2/1/19	F103	1.1

¹Overall average is average for entire test period including when room was not occupied

pCi/L – picoCuries per liter of air

Results from the Previous Testing (pCi/L)
4.2

Discussion of Results

- Average radon levels over the work day in Room F103 was 1.1 pCi/L.
- Average radon levels in Room F103 were below the Action Level during the work days.

CONCLUSIONS & RECOMMENDATIONS

The results of the continuous radon monitoring indicate that radon levels in room F103 at Middle School West at the time of the testing was below the action level during the work day. The testing was performed during the winter so the testing may be representative of “worst case” conditions.

The EPA has established recommended guidelines for permissible radon concentrations in schools. The following are general recommendations for frequently-occupied areas of schools:

- Retest the building at least every 5 years and in conjunction with any sale of a building.
- In addition, be certain to test again when any of the following circumstances occur:
 - A new addition is constructed or a significant renovation occurs
 - A ground contact area not previously tested is occupied
 - Heating or cooling systems are significantly altered resulting in changes to air pressures or distribution
 - Ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures
 - Significant openings to soil occur due to:
 - Ground water or slab surface water control systems (e.g., sumps, perimeter drain tile, shower/tub retrofits, etc.) or
 - Natural settlement causing major cracks to develop
 - Earthquakes, construction blasting, or formation of sink holes nearby or
 - A mitigation system is altered, modified or repaired

- Rooms should be retested during the winter heating season (i.e. under “closed” conditions) which is typically “worst case” conditions.
- Per Minnesota Statutes, section 123B.571, school districts are required to report radon test results at a school board meeting and report results to the MDH. IEA is able to assist with presenting results to the school board, and the MDH reporting. The MDH ‘School Radon Testing Form’ is located in Appendix B.

For more information regarding radon, see the EPA’s A Citizen’s Guide to Radon at <http://www.epa.gov/radon>. MDH can be contacted at health.indoorair@state.mn.us or 651-201-4601.

GENERAL COMMENTS

The analysis and opinions expressed in this report are based upon data obtained from continuous radon monitoring at St. Michael-Albertville ISD #885 and are representative of the location and time period sampled. This report does not reflect variations in conditions that may occur across the site, property, or facility. Actual conditions may vary and may not become evident without further assessment.

The report is prepared for the exclusive use of our client for specific application to the project discussed and has been prepared in accordance with generally accepted radon testing practices. Other than as provided in the preceding sentence and in our proposal #7570 dated October 17, 2018, regarding radon testing services at St. Michael-Albertville ISD #885, including the General Conditions attached thereto, no warranties are extended or made.

IEA appreciates the opportunity to submit this analysis to St. Michael-Albertville ISD #885.

Should you require additional radon testing or have any questions regarding radon or any other health- or safety-related concerns, please do not hesitate to contact our office.

Sincerely,

IEA, Inc.



Daniel Holcomb
EHS Account Manager
EHS Division

DH/khb 02142019

Enc.

Appendix A

*Continuous Radon Monitor
Hourly Data*



February 6, 2019

Test Number: 2260-192

Property Inspected: 11343 50th st. NE, Albertville, MN 55301

Licensed Radalink Radon Inspector:
Institute for Environmental Assessment
Jeffrey Athmann
9201 West Broadway
#600
Brooklyn Park, MN 55445
Phone: 763-315-7900

Test performed for:
 St. Michael-Albertville

Fax:		Placed By:	Ian Dickhausen (MN RMEA-00044)	Temp.	Pressure	R.H.
Calibrated:	11/15/2018 - 11/15/2019	Retrieved By:	Ian Dickhausen (MN RMEA-00044)	Min:	77.0 30.1	4
Test Started:	01/29/2019 9:54 AM	Test Site:	F103	Avg:	77.3 30.2	4
Test Ended:	02/01/2019 8:51 AM	Test Duration:	70 hours	Max:	84.0 30.3	8

AVERAGE RADON CONCENTRATION: 1.1 pCi/l

Test has met minimum EPA sampling duration. Uncertainty: ± 2.28%

Time	01/29/2019		01/30/2019		01/31/2019		02/01/2019	
	pCi/l	Flags	pCi/l	Flags	pCi/l	Flags	pCi/l	Flags
00:54 am			1.9		1.0		1.3	
01:54			1.1		0.8		1.2	
02:54			1.2		0.9		1.3	
03:54			0.6		1.2		1.3	
04:54			1.3		0.6		1.0	
05:54			1.5		1.0		1.4	
06:54			1.1		1.2		0.7	
07:54			1.0		1.0		1.2	
08:54			0.7		1.2			
09:54			0.5		1.4			
10:54	Eq.		0.8		0.8			
11:54	Eq.		1.0		1.6			
12:54 pm	Eq.		1.3		0.3			
01:54	Eq.		1.5		0.5			
02:54	Eq.		0.6		0.7			
03:54	Eq.		0.9		1.0			
04:54	Eq.		0.6		1.2			
05:54	Eq.		1.2		0.6			
06:54	1.8		1.5		1.7			
07:54	1.0		1.1		1.1			
08:54	0.9		0.9		1.6			
09:54	0.7		0.6		1.1			
10:54	0.4		1.2		1.3			
11:54	0.8		1.6		1.9			

Flags: P= AC Power Disruption; T=Tilt
 Eq. = Equilization Period

While every effort was made to maintain optimum quality control and EPA Protocol during the testing period, neither Radalink, Inc. or its licensed agents provide any warranty, expressed or implied, for the consequences of erroneous test results. There can be some uncertainty with any measurement due to statistical variations, extreme weather changes, operation of the building, and other factors, Radalink, Inc. and its licensed operators shall not be liable under any charge or claim for losses, claims, charges, fees, demands, expenses, or damages resulting from a radon test. This report is subject to the terms on the last page of the document.

ENVIRONMENTAL DATA

MONITOR-TEST NUMBER: 2260-192

**Property Inspected: 11343 50th st. NE
Albertville, MN 55301**

Time	01/29/2019			01/30/2019			01/31/2019			02/01/2019		
	Temp	InHg	RH									
00:54 am				77.0	30.2	4	77.0	30.3	4	77.0	30.1	4
01:54				77.0	30.2	4	77.0	30.3	4	77.0	30.2	4
02:54				77.0	30.2	4	77.0	30.3	4	77.0	30.1	4
03:54				77.0	30.2	4	77.0	30.2	4	77.0	30.2	4
04:54				77.0	30.2	4	77.0	30.3	4	77.0	30.2	4
05:54				77.0	30.2	4	77.0	30.2	4	77.0	30.1	4
06:54				77.0	30.2	4	77.0	30.2	4	77.0	30.2	4
07:54				77.0	30.2	4	77.0	30.2	4	78.0	30.1	4
08:54				77.0	30.2	4	77.0	30.2	4			
09:54				77.0	30.2	4	77.0	30.2	4			
10:54	71.0	30.1	12	77.0	30.2	4	77.0	30.2	4			
11:54	78.0	30.1	8	77.0	30.2	4	77.0	30.2	4			
12:54 pm	82.0	30.1	8	77.0	30.2	4	78.0	30.2	4			
01:54	84.0	30.1	8	77.0	30.2	4	77.0	30.2	4			
02:54	80.0	30.1	4	77.0	30.2	4	77.0	30.2	4			
03:54	78.0	30.1	8	78.0	30.2	4	77.0	30.2	4			
04:54	77.0	30.1	8	77.0	30.2	4	77.0	30.2	4			
05:54	77.0	30.1	4	77.0	30.2	4	77.0	30.1	4			
06:54	77.0	30.1	4	77.0	30.2	4	77.0	30.1	4			
07:54	77.0	30.1	4	77.0	30.2	4	77.0	30.2	4			
08:54	77.0	30.1	4	77.0	30.2	4	77.0	30.2	4			
09:54	77.0	30.2	4	77.0	30.2	4	77.0	30.2	4			
10:54	77.0	30.2	4	77.0	30.3	4	77.0	30.1	4			
11:54	77.0	30.2	4	77.0	30.2	4	77.0	30.2	4			

AVERAGE RADON CONCENTRATION: 1.1 pCi/l



Reviewed and certified by

Terry Howell, Quality Assurance Mgr.
Radalink, Inc. NRPP 135791T

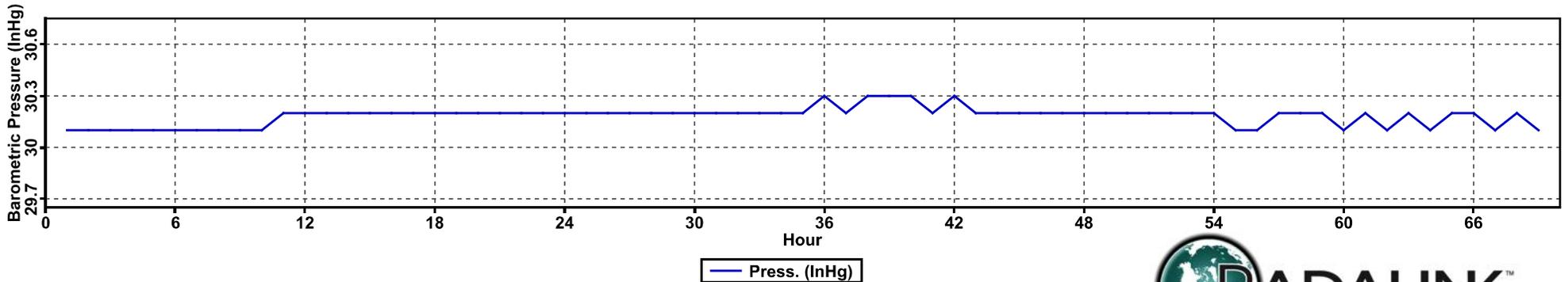
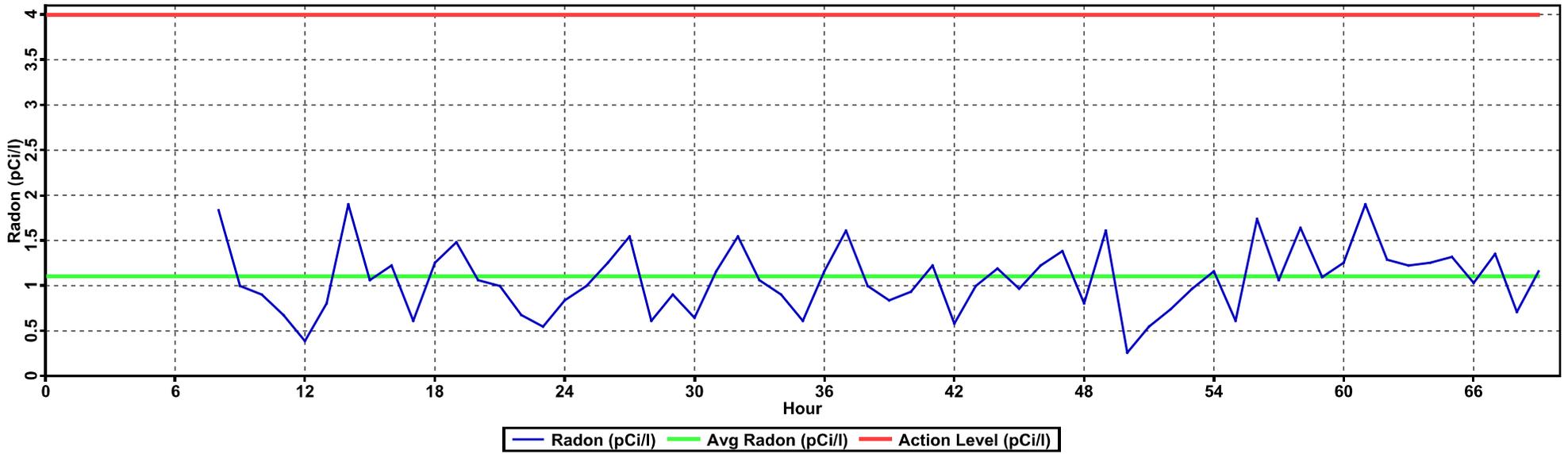
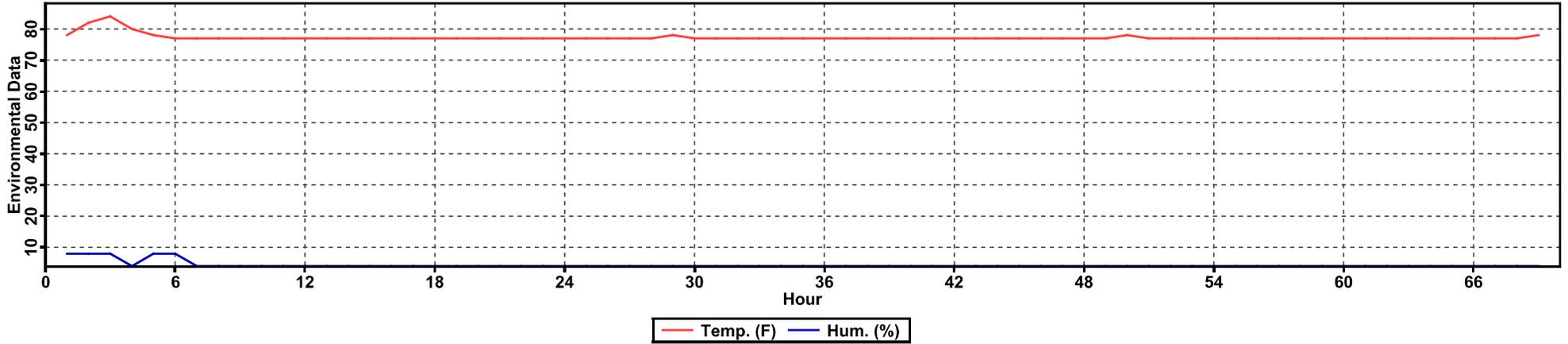
	Minimum	Average	Maximum	Variance
Temperature:	77.0	77.3	84.0	1.19
Barometric Pressure:	30.1	30.2	30.3	0.0
Relative Humidity:	4	4	8	1.08

NOTE: The first hour's environmental data is excluded from the table above.

Radalink, Inc. 5599 Peachtree Road Atlanta, GA 30341 Phone: (800)295-4655

GRAPHICAL DATA VIEW

MONITOR-TEST NUMBER: 2260-192



Property Inspected: 11343 50th st. NE, Albertville, MN 55301
AVERAGE RADON CONCENTRATION: 1.1 pCi/l

HOW TO INTERPRET YOUR TEST RESULTS

THIS REPORT RELATES ONLY TO THE ITEMS TESTED FOR AND DURING THE MEASUREMENT PERIOD SHOWN.

These results should be interpreted in accordance with the EPA's guidance as published in EPA Publication No. 402-K-008 "Home Buyer's and Seller's Guide to Radon" and EPA Publication No. 402-K92-001, "Citizen's Guide to Radon".

Because radon is the second leading cause of lung cancer, the Surgeon General and the US Environmental Protection Agency (EPA) recommend testing all homes for radon and mitigating those with an average concentration of 4 picoCuries per Liter (4 pCi/L) or higher. Even if your test result is below 4 pCi/L, EPA suggests testing again sometime in the future.

The Radalink Radon TeleMonitor (NRPP Device # 00472) or **The Radalink AirCat® Monitor** (NRPP Device # 00477) used to perform this test is EPA and/or NRPP approved and meets the Single Test Option requirements (EPA 402-R-93-003, Section 3.2.3) for conducting radon measurements in the context of a real estate transaction and may be used for determining the necessity for radon mitigation.

Radon reduction systems work! Professionally installed radon mitigation systems can reduce the radon levels in your home by up to 99%. Thousands of people have reduced radon levels in their homes. Maintaining a radon reduction system takes little effort to keep the system working properly and the radon levels low. EPA recommends that you have a qualified contractor (NRPP certified or state licensed) fix your home if radon levels are confirmed to be 4 pCi/L or higher. For more information on how to reduce your radon health risk, contact your state radon office:

ALABAMA 800-582-1866
CALIFORNIA 916-449-5674
WASH. D.C. 202-535-2999
IDAHO 800-445-8647
KANSAS 800-693-5343
MARYLAND 215-814-2090
MISSISSIPPI 800-626-7739
NEVADA 888-723-6610
NEW YORK 800-458-1158
OKLAHOMA 405-702-5162
S. CAROLINA 800-768-0362
UTAH 800-458-0145
W.V. 800-922-1255

ALASKA 800-478-8324
COLORADO 800-846-3986
FLORIDA 800-543-8279
ILLINOIS 217-782-1325
KENTUCKY 502-564-4856
MASS. 800-723-6695
MISSOURI 573-751-6160
N.H. 800-852-3345
N.C. 919-571-4141
OREGON 971-673-0490
S.D. 800-438-3367
VERMONT 800-439-8550
WISCONSIN 888-569-7236

ARIZONA 602-255-4845
CONNECTICUT 860-509-7367
GEORGIA 800-745-0037
INDIANA 800-272-9723
LOUISIANA 866-896-5337
MICHIGAN 517-335-8037
MONTANA 800-546-0483
NEW JERSEY 800-648-0394
N. DAKOTA 800-252-6325
PENN. 800-237-2366
TENNESSEE 800-232-1139
VIRGINIA 800-468-0138
WYOMING 800-458-5847

ARKANSAS 501-661-2301
DELAWARE 800-464-4357
HAWAII 808-586-4700
IOWA 800-383-5992
MAINE 207-287-5698
MINNESOTA 800-798-9050
NEBRASKA 800-334-9491
NEW MEXICO 800-219-6157
OHIO 800-523-4439
RHODE ISLAND 401-222-2438
TEXAS 800-293-0753
WASHINGTON 360-236-3253

ESEPA Radon Program website: www.epa.gov/radon and radon hotline 800-767-7236

SURGEON GENERAL HEALTH ADVISORY: "Indoor radon is the second-leading cause of lung cancer in the U.S. and breathing it over prolonged periods can present a significant health risk to families all over the country. More than 20,000 Americans die of radon-related lung cancer every year. It's important to know that this threat is completely preventable. Radon can be detected with a simple test and fixed through well-established venting techniques."

CONSUMER FEDERATION OF AMERICA: "Consumers need to know about the health of a house they are considering purchasing, including whether there is a radon problem, and if so, how to fix it." The EPA Home Buyer's and Sellers Guide to Radon provides practical consumer information that every homebuyer needs to know.

FLORIDA NOTICE TO CLIENTS: An organization or individual certified by the Florida Dept. of Health to perform radon or radon progeny measurements or radon mitigation services provides this Notice to you. Any questions, comments, or complaints regarding the persons performing these measurement or mitigation services may be directed to the Florida Dept. of Health, Bureau of Facility Programs, Radon Indoor Air Quality, 4052 Bald Cypress Way, Bin #A08, Tallahassee, Florida 32399-1710, (800-543-8279).

MAINE NOTICE TO CLIENTS: As per 22 MRSA, Sec. 771, results of this test will be reported to the Maine Dept. of Health and Human Services. Any questions, comments, or complaints concerning individuals or firms providing radon related services in Maine should be directed to: Radiation Control Program 11 State House Station Augusta, ME 04333-0010 (207-287-5698).

PENNSYLVANIA NOTICE TO CLIENTS: The Radon Certification Act requires that anyone who provides radon-related service or product to the general public must be certified by the Pennsylvania Department of Environmental Protection. You are entitled to evidence of certification from any person who provides such services or products. You are also entitled to a price list for services or products offered. All radon measurement data will be sent to the Department as required in the Act and will be kept confidential. If you have any questions, comments or complaints concerning persons who provide radon-related services, please contact the Department at the Bureau of Radiation Protection, Dept. Of Environmental Protection, P.O. Box 8469, Harrisburg, PA 17105-8469, (717-783-3594).

RHODE ISLAND NOTICE TO CLIENTS: This notice is provided to you by an organization or individual licenses and/or certified by the Rhode Island Dept. of Health to perform radon measurements. Any questions, comments, or complaints regarding the person performing these measurements may be directed to the RI Dept. of Health, Office of Occupational and Radiological Health, 3 Capitol Hill Room 206, Providence RI 0908-5097, (401-222-2438).

Rev: March 2016

Appendix B

MDH Reporting Form

School Radon Testing Reporting Form

According to Minnesota Statute 123B.571 subd. 3, a school district that has tested its school buildings for the presence of radon shall report the results of its tests to the Department of Health. Please use this form to submit information about the most recent round or cycle of testing conducted for each building.

Instructions

1. Complete one form for each building tested. In this case, a building is defined as an occupied facility with a unique address. This includes administrative buildings.
2. Include this form, raw data (e.g. laboratory report) and a building map.
3. Submit this form when all work is completed for a round of testing. This includes reporting to the school board, and follow-up testing and post-mitigation testing, if applicable.
4. Email information to health.indoorair@state.mn.us.

Contact Information

Name:	
Mailing Address:	
Phone:	Email:

Initial Radon Testing Information

School Building Name:	
School District & District Number:	
Building Address:	
Test Kit Manufacturer:	Device Name:
Date of Kit Retrieval (DD/MM/YY):	Length of Test (days):
How many rooms were tested?	
Does the test period include weekends? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Does the test period include school breaks or holidays? <input type="checkbox"/> Yes <input type="checkbox"/> No	

SCHOOL RADON TESTING REPORTING FORM

Were all frequently-occupied ground contact rooms tested? ¹ <input type="checkbox"/> Yes <input type="checkbox"/> No If no, did you attempt to test all frequently occupied ground contact rooms, meaning test kits were placed in all these rooms? <input type="checkbox"/> Yes <input type="checkbox"/> No
How many rooms had results ≥ 4 pCi/L?:
Were the results reported at a school board meeting? <input type="checkbox"/> Yes <input type="checkbox"/> No

Follow-up Testing, Mitigation, & Post-Mitigation Testing

If one or more rooms tested ≥ 4 pCi/L, please answer the questions below:

How many rooms had follow-up testing?:		
Number of rooms with follow-up results	≥ 4 pCi/L:	< 4 pCi/L:
Of the rooms that had test results ≥ 4 pCi/L, how many rooms were:		
mitigated by HVAC balancing or operational changes? :		
mitigated by installation of active soil depressurization?:		
addressed through other corrective measures? ² :		
What was the cost of the installation and/or HVAC service work, to mitigate radon? \$		
What is the known or anticipated annual operating cost of mitigation (estimate)? \$		
After radon mitigation, how many rooms were retested?:		
Post mitigation results (# of rooms)	≥ 4 pCi/L:	< 4 pCi/L:

¹ This includes classrooms, offices, break rooms, laboratories, cafeterias, libraries, auditoriums, gymnasiums, etc. It includes rooms on grade and rooms above unoccupied spaces that are in contact with the ground, such as rooms above storage rooms, crawl spaces, tunnels, and boiler rooms. If only a sample or portion of rooms were tested, then respond with 'no'.

² 'Other corrective measures' could include moving staff out of a room and making a room unoccupied or trying to seal radon entry points.