

February 10, 2021



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Mr. John Heltunen
Buildings and Grounds Director
Buffalo-Hanover-Montrose Schools
214 – 1st Avenue NE
Buffalo, MN 55313

**RE: Short-Term Radon Testing Results
IEA Project #202010907**

Dear Mr. Heltunen:

IEA placed one-hundred and seventy-two (172) Air Chek Pro Chek short-term radon test kits in the following four (4) district buildings for the purpose of evaluating radon levels:

- Montrose Education Center – 11 samples
- Phoenix Learning Center – 18 samples
- Northwinds Elementary – 65 samples
- Tatanka Elementary – 78 samples

The radon samples were placed by the following certified radon measurement professionals:

Erin Baker	RMEA - 00388	
Robert Watson	RMEA - 00385	

Conditions of air intakes were good and the ventilation system was operating in good condition at the time of placement and retrieval.

INTRODUCTION

Radon is a colorless, odorless, tasteless, radioactive gas that occurs naturally in soil, rocks, and underground water supplies and in the ambient air. According to the U.S. Environmental Protection Agency (EPA) and other scientific organizations, naturally occurring radon gas has been associated with an increased risk of developing lung cancer. The chances of developing lung cancer from radon exposure are dependent on several factors including individual susceptibility and, perhaps more importantly, the dose and duration of exposure. Radon testing in schools is highly recommended by the Minnesota Department of Health (MDH) and EPA.

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IEA placed one-hundred and seventy-two (172) Air Chek Pro Chek short-term radon test kits in frequently occupied areas in the district buildings for the purpose of sampling for radon in accordance with the MDH’s *Guidance for Radon Testing in Minnesota Schools* (2018) and ANSI/AARST ‘*Protocol for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings*’ (ANSI/AARST MALB 2014). A total of one-hundred and seventy-two (172) radon test kits were placed from January 19, 2021, to January 22, 2021, for a total short-term sampling period of three (3) days. One (1) test kit was missing at the time of pick-up and one (1) test kit was damaged. The radon test kits were analyzed by AirChek, Inc., MDH license #RL-00003, located at 1936 Butler Bridge Road, Mills River, NC 28759. The sampling and analysis methodologies are provided in Appendix A. IEA followed ANSI/AARST MALB 2014 for quality assurance measurements by including duplicate kits, control kits (blanks), and spiked kits.

EVALUATION CRITERIA

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. Although the buildings were not fully occupied at the time of testing, the HVAC system was set as it normally is during school days with standard occupancy. Testing was conducted during the heating season when the average outdoor temperature is less than 65°F, as recommended by the MDH, when the ventilation system was operating normally, and windows and doors were closed. Consequently, sampling under these “closed” conditions is when the radon risk is most likely to occur.

MDH recommends follow-up testing for sampling results that are above the action level. Please refer to the following table for MDH guidelines:

RESULTS (pCi/L)	RECOMMENDED ACTION
LESS THAN 4	Re-test after changes to foundation or HVAC and every 5 years
GREATER THAN 4	Conduct CRM short-term testing during winter months
LESS THAN 4 (DURING OCCUPANCY) AFTER CRM TESTING	Repeat CRM testing if not conducted during winter or if conducted during abnormal ventilation. Otherwise consider re-testing after changes to foundation or HVAC and every 5 years
GREATER THAN 4 (DURING OCCUPANCY) AFTER CRM TESTING	Reduce radon in rooms to less than 4 through radon mitigation. Conduct CRM testing to verify radon reduction.

CRM: Continuous Radon Monitor

RESULTS & DISCUSSION

The laboratory reports, which includes maps of each building with sampling locations marked, are provided in Appendix B. The chain of custody cover pages are also provided in Appendix B. Following are summary results for each building.

Montrose Education Center
115 - 2nd Street SW
Montrose, MN 55363

A total of eleven (11) test kits were placed at the Montrose Education Center. The results indicated that radon levels were below the action level of 4 pCi/L. See Table 1 below for a summary of the results:

	0.0 – 1.9 pCi/L	2.0 – 2.9 pCi/L	3.0 – 3.9 pCi/L	≥ 4 pCi/L
Number of Tests	11	-	-	-
All below action level				

pCi/L: picocuries per liter

Northwinds Elementary

1111 - 7th Avenue NW
Buffalo, MN 55313

A total of sixty-five (65) test kits were placed at Northwinds Elementary. The results indicated that radon levels were below the action level of 4 pCi/L. See Table 2 below for a summary of the results:

TABLE 2: Northwinds Elementary RANGE OF RESULTS				
	0.0 – 1.9 pCi/L	2.0 – 2.9 pCi/L	3.0 – 3.9 pCi/L	≥ 4 pCi/L
Number of Tests	63	2	-	-
All below action level				

pCi/L: picocuries per liter

Phoenix Learning Center

800 - 8th Street NE
Buffalo, MN 55313

A total of eighteen (18) test kits were placed at the Phoenix Learning Center. The results indicated that radon levels were below the action level of 4 pCi/L. See Table 3 below for a summary of the results:

TABLE 3: Phoenix Learning Center RANGE OF RESULTS				
	0.0 – 1.9 pCi/L	2.0 – 2.9 pCi/L	3.0 – 3.9 pCi/L	≥ 4 pCi/L
Number of Tests	8	7	3	-
All below action level				

pCi/L: picocuries per liter

Tatanka Elementary

703 - 8th Street NE
Buffalo, MN 55313

A total of seventy-eight (78) test kits were placed at Tatanka Elementary. One (1) kit in Room 124B was missing and one (1) kit in Room 120 was damaged when the test kits were collected. The results indicated that radon levels were below the action level of 4 pCi/L. See Table 4 below for a summary of the results:

TABLE 4: Tatanka Elementary RANGE OF RESULTS				
	0.0 – 1.9 pCi/L	2.0 – 2.9 pCi/L	3.0 – 3.9 pCi/L	≥ 4 pCi/L
Number of Tests	76	-	-	-
All below action level				

pCi/L: picocuries per liter

CONCLUSIONS & RECOMMENDATIONS

The radon levels in the sampled locations were below the EPA action level of 4 pCi/L. It is recommended actions be taken to address results of radon concentrations greater than half the action level (2-4 pCi/L).

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.)
 - Natural settlement causing major cracks to develop
 - Earthquakes, construction blasting, or formation of sink holes nearby
 - 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 E.

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 radon sampling the district buildings and are representative of the locations 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 environmental, health and safety practices. Other than as provided in the preceding sentence and in our Proposal #9224 dated September 16, 2020, regarding radon sampling services at the district locations, including the General Conditions attached thereto, no warranties are extended or made.

IEA appreciates the opportunity to submit this analysis to the district. Should you require additional radon testing or have any questions regarding radon or any other environmental, health, or safety-related concerns, please do not hesitate to contact our office.

Sincerely,

IEA, Inc.

Reviewed by:



Erin Baker
Environmental Technician



Mary Perrian, CSP
EH&S Division Manager

EB/khb 02102021

Enc.