



16620 61st Avenue North
Plymouth, MN 55446 • (612) 834-4406

Introduction

Radon is a colorless and odorless gas that comes from the soil. Exposure to radon over time can cause lung cancer. The U.S. Environmental Protection Agency (EPA) has set a target level of 4 pCi/L and to consider action at 2 pCi/L.

Meridian Consulting conducted short-term radon testing for Valley Crossing Elementary at 9900 Park Crossing, Woodbury, MN 55125. Testing was conducted to determine if occupants are exposed to elevated levels of radon. Radon testing was done according to ANSI/AARST MA-MFLB 2023.

Testing

Testing was conducted from 02/06/2024 to 02/08/2024 using Air Chek Pro Chek radon test kits from Air Chek, Inc. 1936 Butler Bridge Rd, Mills River, NC. 28759, NRPP Certified Lab # 101138 AL.

Testing was conducted by the following Minnesota Department of Health (MDH) licensed radon measurement professionals:

Name	MDH License #	Signature
Wendy German	RMEA-00447	

All ground-contact rooms that are occupied or intended to be occupied were tested. In addition, tests were conducted in all rooms above ground-contact rooms that were not tested. On second floors, ten percent of rooms were tested with at least one test conducted on each story.

Test Conditions

Radon levels in a building can be influenced by many factors including weather, season, and occupancy patterns. Temporary conditions observed during the testing period may cause the test to not reflect the occupant's risk from radon.

The radon levels stated for this period had the following situations present:

There were no situations present that would interfere with accurate testing.

Test Results

All test results were less 2 pCi/L.

Missing or Invalid Test Results

Location	Missing/Invalid/Not Tested	Explanation
n/a	None	n/a

There were no missing tests.

Quality Assurance and Quality Control

Quality control measurements were conducted in compliance with ANSI/AARST MA-MFLB 2023.

Recommendations

Test result is 4.0 pCi/L or greater:

- Fix the building if test results indicate occupants may be exposed to radon concentrations that meet or exceed the EPA action level of 4.0 pCi/L.
- Efforts to reduce radon concentrations are not complete until a retest provides evidence of effectiveness.
- The initial retest should be conducted within 30 days after mitigation efforts and system installations.
- Post-mitigation clearance testing to confirm each building is fixed requires testing all buildings that demonstrated elevated radon concentrations:
 1. in all ground-contact rooms and dwellings,
 2. in not less than 10% of non-residential rooms and dwellings on each upper floor.
- Should testing indicate that concentrations meet or exceed the action level, conduct evaluations, corrections, and further testing under radon concentrations have been mitigated to below the action level.
- Retest every 2 years to ensure the system remains effective.

Test results between 2.0 and 4.0 pCi/L:

- Consider fixing the building if the test results indicate radon levels greater than half of the EPA action level.
- Tests conducted when heating systems are active both day and night are more likely to provide a clear characterization of potential radon hazards.

When to Retest:

- Retest every 5 years if no mitigation system is installed.
- Retest in conjunction with the sale of any new or existing building.
- Be certain to test again when any of the following circumstances occur:

- A new addition is constructed or alterations for building rehab or reconfiguration occur;
- A ground contact area not previously tested is occupied, or a building is newly occupied;
- Heating and cooling systems are significantly altered, resulting in changes to air pressure or pressure relationships;
- Ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures;
- Significant openings to the soil occur due to:
 - Groundwater or slab surface water control systems that are altered or added (ex. sumps, perimeter drain tile, shower/tub retrofits) or,
 - Natural settlement causing major cracks to develop.
- Earthquakes, construction blasting, or formation of sink holes nearby; or
- A radon mitigation system is altered, modified, or repaired.

Radon Information

Additional information on radon can be found on the Minnesota Department of Health's website at mn.gov/radon or by contacting them at 651-201-4601 or health.indoorair@state.mn.us. If you have any questions, please contact us at 320-224-1908 or wendy@meridianconsult.net

Appendix A: Floor Plan Diagram

[MAP HAS BEEN REMOVED FROM THIS REPORT]

Appendix B: Test Conditions

- The minimum outdoor temperature that existed 12 hours prior to and during the test period was 25°F. The maximum outdoor temperature was 55°F. The average outdoor temperature was 41°F.
- Weather was mild and rainy. No snow coverage on ground.

		Annual	During the Test
Outdoor Temperatures	Avg. °F	45°	41°
Operating Conditions	Heating (% year)	75%	100%
Operating Conditions	Cooling (% year)	0	0
Operating Conditions	Mixed (% year)	25%	0
Prevailing Operating Condition	Heating/Cooling/Mixed	Heating	Heating

Appendix C: Quality Control Measurements

Duplicates: Two devices are placed next to each other for the results to be compared. This measures the accuracy and consistency of the lab, and the quality and reproducibility of the testing kits.

Sample ID	Result	Average	Pass/Fail
11652997	0.6	0.8	Pass
11652969	1.0		
11652972	< 0.3	< 0.3	Pass
11652994	< 0.3		
11449382	< 0.3	< 0.3	Pass
11449285	< 0.3		
11449096	1.2	1.0	Pass
11449097	0.8		
11449400	1.2	1.0	Pass
11449393	0.7		
11449390	< 0.3	0.8	Pass
11449396	1.2		
11449199	1.0	0.8	Pass
11449200	0.6		

11449190	0.9	0.6	Pass
11449385	< 0.3		
11652984	< 0.3	0.4	Pass
11652983	0.5		
11448995	0.8	0.8	Pass
11448997	0.7		

Blanks: Devices that are sealed immediately and not exposed to air at different times during the testing process. Transit blanks are sent to the lab immediately after receiving the test kits to verify that no radon has been accumulated through transit. Office blanks are sealed on test day to verify that no radon has been accumulated during storage. Field blanks are sealed and placed throughout the buildings being tested.

Type	Sample ID	Result	Pass/Fail
Transit	7408066	< 0.3	Pass
Transit	7408065	< 0.3	Pass
Transit	7408064	< 0.3	Pass
Office	11726803	< 0.3	Pass
Office	11726802	< 0.3	Pass
Office	11726801	< 0.3	Pass
D175	11449197	0.7	Pass
D179	11448989	< 0.3	Pass

Spikes: devices that are sent to a third-party lab, where it is exposed to a known concentration of radon. The device is then sent to the lab to compare results. This measures the accuracy of the test kits.

Sample ID	Exposed	Result	Pass/Fail
11726672	10.5	12.2	Pass
11726673	10.5	11.6	Pass
11726674	10.5	12.2	Pass

11726675	10.5	12.4	Pass
11726679	10.5	12.1	Pass
11726680	10.5	10.9	Pass

Appendix D: Analytical Results

Sample ID	Location	Start Date/Time	End Date/Time	Duplicate	Result
11652993	A108	2/6/24 1:00	2/8/24 1:00		< 0.3
11652977	A101	2/6/24 1:00	2/8/24 1:00		0.8
11652990	A102	2/6/24 1:00	2/8/24 1:00		0.6
11652992	A103	2/6/24 1:00	2/8/24 1:00		< 0.3
11652988	A104	2/6/24 1:00	2/8/24 1:00		1.6
11652997	A105	2/6/24 1:00	2/8/24 1:00	0.6	0.8
11652969	A105	2/6/24 1:00	2/8/24 1:00	1	
11652979	A106	2/6/24 1:00	2/8/24 1:00		1.1
11652986	A107	2/6/24 1:00	2/8/24 1:00		1.1
11652991	A109	2/6/24 1:00	2/8/24 1:00		< 0.3
11652972	A110	2/6/24 1:00	2/8/24 1:00	< 0.3	< 0.3
11652994	A110	2/6/24 1:00	2/8/24 1:00	< 0.3	
11652980	A111	2/6/24 1:00	2/8/24 1:00		0.6
11652978	A112	2/6/24 1:00	2/8/24 1:00		< 0.3
11449100	A114	2/6/24 2:00	2/8/24 1:00		0.8
11652996	A122	2/6/24 1:00	2/8/24 1:00		0.7
11449384	A132	2/6/24 1:00	2/8/24 1:00		0.8
11449088	D180	2/6/24 2:00	2/8/24 1:00		1
11449299	B101	2/6/24 2:00	2/8/24 1:00		< 0.3
11449286	B102	2/6/24 2:00	2/8/24 1:00		0.5
11449300	B103	2/6/24 2:00	2/8/24 1:00		< 0.3
11449386	B104	2/6/24 2:00	2/8/24 1:00		0.6
11449194	B105	2/6/24 2:00	2/8/24 1:00		0.6
11449382	B106	2/6/24 2:00	2/8/24 1:00	< 0.3	< 0.3
11449285	B106	2/6/24 2:00	2/8/24 1:00	< 0.3	
11449392	B107	2/6/24 2:00	2/8/24 1:00		0.6
11449391	B108	2/6/24 2:00	2/8/24 1:00		1
11449089	B109	2/6/24 2:00	2/8/24 1:00		0.7
11449094	B110	2/6/24 2:00	2/8/24 1:00		< 0.3
1449096	B111	2/6/24 2:00	2/8/24 1:00	1.2	1
11449097	B111	2/6/24 2:00	2/8/24 1:00	0.8	
11449394	B112	2/6/24 2:00	2/8/24 1:00		0.7
11449387	B122	2/6/24 2:00	2/8/24 1:00		< 0.3
11449292	B132	2/6/24 2:00	2/8/24 1:00		< 0.3
11449081	C101	2/6/24 2:00	2/8/24 1:00		1.3
11449098	C102	2/6/24 2:00	2/8/24 1:00		1.4

11449389	C103	2/6/24 2:00	2/8/24 1:00		1.4
11449091	C104	2/6/24 2:00	2/8/24 1:00		1.1
11449092	C105	2/6/24 2:00	2/8/24 1:00		0.6
11449399	C106	2/6/24 2:00	2/8/24 1:00		1.6
11449400	C107	2/6/24 2:00	2/8/24 1:00	1.2	1
11449393	C107	2/6/24 2:00	2/8/24 1:00	0.7	
11449395	C108	2/6/24 2:00	2/8/24 1:00		1.2
11449397	C109	2/6/24 2:00	2/8/24 1:00		1.2
11449398	C110	2/6/24 2:00	2/8/24 1:00		1.4
11449390	C111	2/6/24 2:00	2/8/24 1:00	< 0.3	0.8
11449396	C111	2/6/24 2:00	2/8/24 1:00	1.2	
11448993	C112	2/6/24 2:00	2/8/24 1:00		1
11449198	C114	2/6/24 2:00	2/8/24 1:00		0.8
11449079	C122	2/6/24 2:00	2/8/24 2:00		< 0.3
11448994	C128	2/6/24 2:00	2/8/24 1:00		1.4
11449199	C132	2/6/24 2:00	2/8/24 1:00	1	0.8
11449200	C132	2/6/24 2:00	2/8/24 1:00	0.6	
11449192	Café 1	2/6/24 2:00	2/8/24 1:00		0.7
11449388	Café 2	2/6/24 2:00	2/8/24 1:00		1
11652998	Custodial O	2/6/24 1:00	2/8/24 12:00		< 0.3
11652987	D104	2/6/24 1:00	2/8/24 12:00		< 0.3
11652999	D105	2/6/24 1:00	2/8/24 12:00		< 0.3
11653000	D106	2/6/24 1:00	2/8/24 12:00		0.6
11448992	D156	2/6/24 3:00	2/8/24 2:00		1.2
11449195	D157	2/6/24 2:00	2/8/24 1:00		0.6
11448999	D164	2/6/24 2:00	2/8/24 1:00		0.8
11449191	D165	2/6/24 2:00	2/8/24 1:00		1.1
11448991	D167	2/6/24 2:00	2/8/24 1:00		0.8
11449193	D169	2/6/24 3:00	2/8/24 2:00		0.6
11449190	D172	2/6/24 3:00	2/8/24 2:00	0.9	0.6
11449385	D172	2/6/24 3:00	2/8/24 2:00	< 0.3	
11449000	D174	2/6/24 3:00	2/8/24 2:00		0.5
11449196	D175	2/6/24 3:00	2/8/24 2:00		0.8
11449080	D179	2/6/24 3:00	2/8/24 2:00		1.2
11449099	D184	2/6/24 2:00	2/8/24 1:00		0.8
11448996	D195	2/6/24 2:00	2/8/24 1:00		1.2
11652970	Gym A	2/6/24 1:00	2/8/24 12:00		< 0.3
11652995	Gym B	2/6/24 1:00	2/8/24 12:00		0.5
11652985	Gym C	2/6/24 1:00	2/8/24 12:00		< 0.3

11448988	Kitchen	2/6/24 2:00	2/8/24 2:00		0.7
11449093	Media	2/6/24 2:00	2/8/24 1:00		0.7
11449095	Media D194	2/6/24 2:00	2/8/24 1:00		1.2
11652989	Nurse	2/6/24 1:00	2/8/24 12:00		< 0.3
11652984	Office	2/6/24 1:00	2/8/24 12:00	< 0.3	0.4
11652983	Office	2/6/24 1:00	2/8/24 12:00	0.5	
11448995	Staff Dining	2/6/24 2:00	2/8/24 2:00	0.8	0.8
11448997	Staff Dining	2/6/24 2:00	2/8/24 2:00	0.7	

Appendix E: Test Notifications

Client Advisories Prior to Testing

Testing will be conducted in compliance with ANSI/AARST MA-MFLB 2023 and the Minnesota Radon Licensing Act.

- Tests will be done in 100% ground contact residential units and non-residential rooms that are occupied or intended to be occupied.
- In addition, 10% of residential units and non-residential rooms will be tested on each upper floor, with a minimum of one test per floor.
- Quality control measurements will be done at 10% duplicates (extended testing option), 5% blanks, and 3% spikes.
- Closed-building conditions must be maintained at least 12-hours prior to and during the test.

There are two test options that comply with the standards:

Time-Sensitive Testing	Extended Testing
Tests at each location are tested using two short-term test devices or a continuous radon monitor	Tests at each location are conducted using a single short-term test device
	All locations that meet or exceed the action level (4.0 pCi/L) are retested
Decisions to mitigate are based on the results of the average of the two short-term test devices or the average from a continuous radon monitor	Decisions to mitigate are based on the results of the average of the two rounds of testing

Failure to reasonably maintain test conditions can lead to unnecessary expense, disruptions, and unreliable data. Disturbing test devices can also cause reliable and invalid test results.

To aid in proper test conditions, the measurement professional will:

- Inform the person responsible for building operations of the required test conditions,
- Ensure “Radon Test in Progress” signs are posted in prominent locations,
- Attempt to obtain a signed statement from onsite supervisors or facilitating staff members that they will aid in the quality control of closed-building conditions, and
- Conduct a visual inspection upon detector placement and retrieval to ensure all closed-building conditions are met.

Please provide, in writing, a list of who is authorized to receive test data and at which junctures data should be provided.

Instructions for Notifying Individual of Test Conditions

Proper notification is essential to get compliance with required testing conditions.

Enclosed are notification forms for facilitating staff such as authorized building supervisors, maintenance staff, teachers, or office managers. Facilitating staff should ensure closed-building conditions are met in non-residential spaces at least 12-hours prior to the test and maintained during the test period.

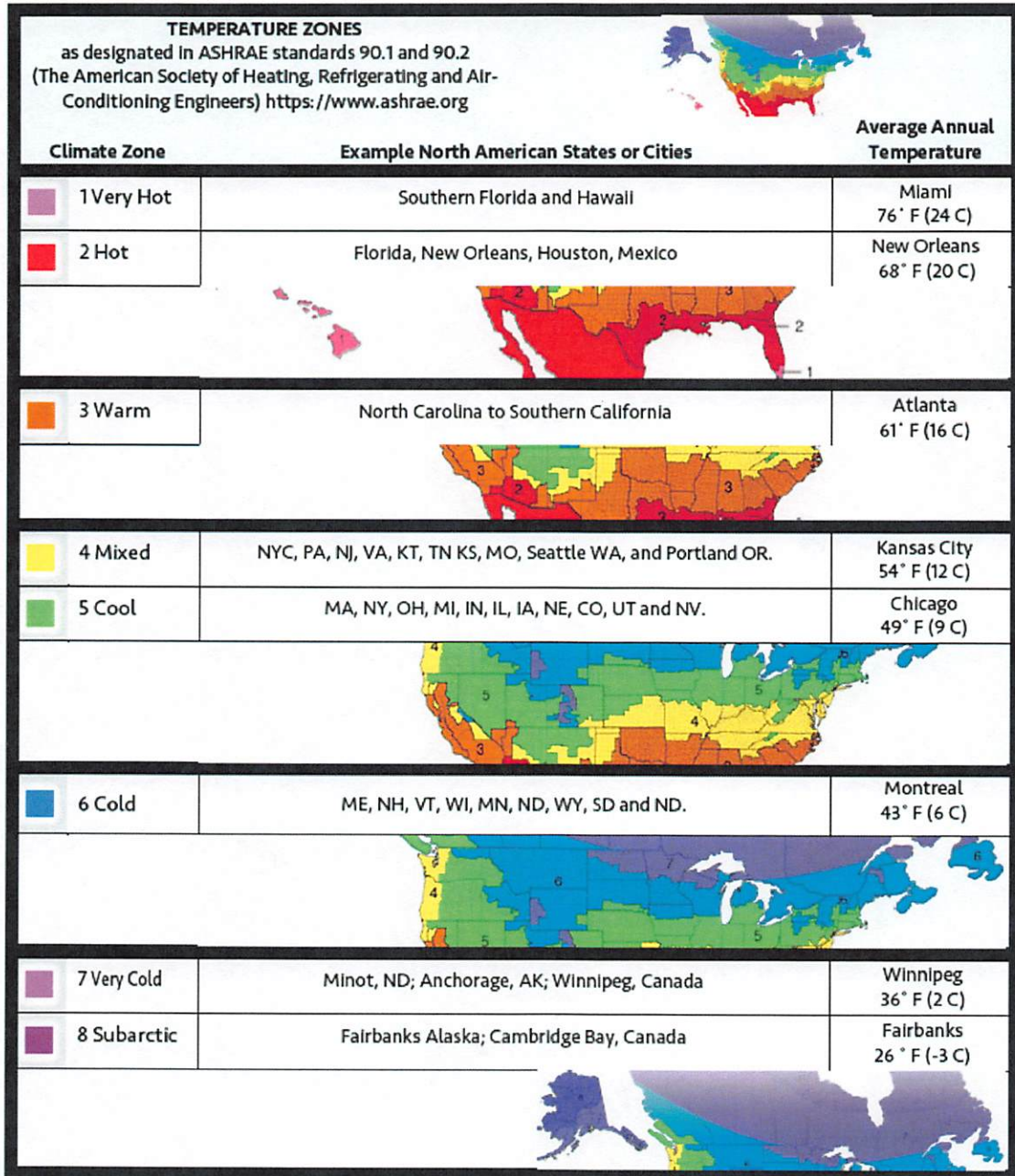
In addition, notifications must be distributed to all occupants of tested and not-tested units and contain:

- Scheduled dates and times for test device placement and retrieval,
- Essential closed-building requirements portrayed in Table 4-A of the ANSI/AARST standard and that these conditions are required no later than 12 hours prior to the test and throughout the test period,
- Information on how to obtain federal or state radon health guidance, and
- Local contact information for inquiries, such as the authorized building supervisor.


Enclosed are notification forms for occupants. Please distribute notifications to occupants at least 24 hours prior to testing. Notifications also need to be posted in prominent areas such as entry doors and community bulletins.

Normal Occupied Building Conditions

Minnesota is in Temperature Zones 6 and 7. Across the state, the prevailing HVAC condition is heating. Radon testing is recommended during the heating season.



CLIENT ADVISORIES PRIOR TO TESTING


<p>Very Cold</p> <p>Climate Zone 7</p> <p>Includes many Canadian provinces, mountain tops, and utmost northern locations in the United States This data is based on Minot, ND</p>															
<p>24 Hour Averages</p> <p>For dwellings and other 24 hour occupancies</p>															
<p>24 Hour</p> <p>7-Very cold Minot, ND</p>		<p>Annual Avg</p> <p>39</p>	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
			56	45	26	14	5	11	21	41	53	61	68	67	
<p>Operating Condition</p>			Prevailing Annually												
	Heating Conditions		83%												
	Cooling Conditions		-												
	Mixed Conditions		16%												
<p>Normal Operating Condition</p>		<ul style="list-style-type: none"> • Heating conditions • No variance in outdoor air ventilation 													
<p>Condition less likely to inhibit characterization of a radon hazard</p>		<ul style="list-style-type: none"> • Heating and air distribution systems active 													
<p>Daytime Averages</p> <p>For non-residential occupancies</p>															
<p>Daytime</p> <p>7-Very cold Minot, ND</p>		<p>Annual Avg</p> <p>45</p>	<p>School Avg</p> <p>36</p>	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug
				63	51	31	19	11	16	26	47	59	67	75	74
<p>Operating Condition</p>			Prevailing Annually											School (prevailing across 9 months)	
	Heating Conditions		75%											100%	
	Cooling Conditions		-											-	
	Mixed Conditions		25%											-	
<p>Normal Operating Condition</p>		<ul style="list-style-type: none"> • Heating conditions • No variance in outdoor air ventilation 													
<p>Condition less likely to inhibit characterization of a radon hazard</p>		<ul style="list-style-type: none"> • Heating and air distribution systems active 													

Some Cities in This Climate Zone

Note—Exact percentages will vary slightly depending upon location

- Caribou ME
- Quebec, CA
- Marquette MI
- Duluth MN
- Winnipeg, CA
- Grand Forks, ND
- Anchorage, AK
- Breckenridge, CO
- Aspen, CO

CLIENT ADVISORIES PRIOR TO TESTING

<p>Cold</p> <p>Climate Zone 6</p> <p>Includes portions of ME, NH, VT, WI, MN, ND, WY, SD, ND and Canada.</p> <p>This data is based on Minneapolis, MN</p>																
<p>24 Hour Averages</p> <p>For dwellings and other 24 hour occupancies</p>																
<p>24 Hour</p> <p>6 Cold Minneapolis, MN</p>		<p>Annual Avg</p> <p>45</p>	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug		
			61	50	33	19	13	18	31	46	59	68	73	71		
		Prevailing Annually														
<p>Operating Condition</p>	<p>Heating Conditions</p>		75%													
	<p>Cooling Conditions</p>		-													
	<p>Mixed Conditions</p>		25%													
<p>Normal Operating Condition</p>		<ul style="list-style-type: none"> • Heating conditions • No variance in outdoor air ventilation 														
<p>Condition less likely to inhibit characterization of a radon hazard</p>		<ul style="list-style-type: none"> • Heating and air distribution systems active 														
<p>Daytime Averages</p> <p>For non-residential occupancies</p>																
<p>Daytime</p> <p>6 Cold Minneapolis, MN</p>		<p>Annual Avg</p> <p>50</p>	<p>School Avg</p> <p>41</p>	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
				66	55	37	23	17	23	35	51	64	73	78	76	
		Prevailing Annually						School (prevailing across 9 months)								
<p>Operating Condition</p>	<p>Heating Conditions</p>		66%						88%							
	<p>Cooling Conditions</p>		16%						11%							
	<p>Mixed Conditions</p>		16%						-							
<p>Normal Operating Condition</p>		<ul style="list-style-type: none"> • Heating conditions • No variance in outdoor air ventilation 														
<p>Condition less likely to inhibit characterization of a radon hazard</p>		<ul style="list-style-type: none"> • Heating and air distribution systems active 														

Some Cities in This Climate Zone

Note—Exact percentages will vary slightly depending upon location

- Portland, ME
- Buffalo, NY
- Burlington, NH
- Milwaukee, WI
- Minneapolis, MN
- Bismarck, ND
- Pierre, SD
- Cheyenne, WY
- Billings, MT
- Helena, MT

Minnesota Department of Health, Indoor Air Unit, health.indoorair@state.mn.us, mn.gov/radon
 10/25/2023 To obtain this information in a different format, call: 651-201-4621.

Client Authorizations & Communications

Client and Facilitating Staff Member Contact Information

Client/Authorized Agent Kyle Uecker phone (651) 425-6299
Onsite Supervisor Principals at each building phone _____
Building/Dwelling Access Wendy has full access phone _____
HVAC Operations Kyle Uecker phone _____
Other Contact/Title _____ phone _____

Radon Testing Professional Contact Information

Scheduling/Logistics Wendy German phone (651) 425-6277
Onsite Supervisor same phone _____
Field Technician same phone _____
Field Technician _____ phone _____

Staff authorized for responding to occupant and public inquiries:

Name/Title Kyle Uecker phone _____
Name/Title _____ phone _____

Person(s) authorized to receive report data and incremental reports:

Name/Title Kyle Uecker phone _____
Name/Title _____ phone _____

Frequency of Reports

prior to testing after each phase of testing when testing is complete

Notice of Inspection for Building Occupants

A radon test is scheduled for:

Building: **Valley Crossing Elementary**

Test Start Date: **2/6/24** Test End Date: **2/8/24**

An important step is being taken to ensure a safe and healthy building. Testing for radon is recommended for all homes and schools.

Radon is a naturally occurring radioactive gas that can be present in some buildings at concentrations greater than recommended. In the United States, radon exposure is the second leading cause of lung cancer, and it is the leading cause of lung cancer in nonsmokers.

Please help to maintain the required test conditions throughout the building.

1. All windows and exterior doors must be kept closed (aside from momentary entry or exit) for 12 hours before and during the test.
2. Heating and cooling systems must be set to normal occupied operating temperatures.
3. Test devices are not to be disturbed.

The test devices are not dangerous in any way, if a test gets incidentally moved, please put it back where it was originally placed. If you think a test has been heavily tampered with (smashed, ripped, moved) please leave me a note so that I can research its validity.

More information about radon in Minnesota can be found online at mn.gov/radon.

If you have any questions or concerns, please contact:

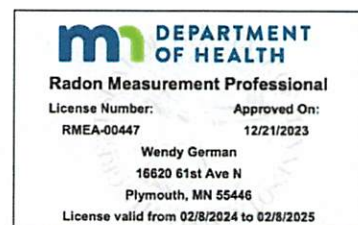
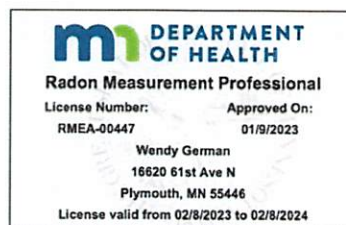
Wendy German

South Washington County Schools

Facilities – Health and Safety

wgerman@sowashco.org

651-425-6277



Client Commitment to Compliance

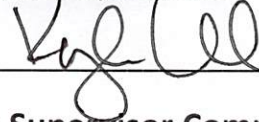
Management Commitment:

To the extent reasonably possible, I, on behalf of **Valley Crossing Elementary**, commit to helping ensure that building conditions required to achieve reliable radon tests are met, as portrayed herein.

To the extent reasonably possible, I commit to helping ensure that building conditions required to achieve reliable radon tests are met, as portrayed herein, by accepting the following responsibilities:

1. **Building Preparation:** I accept responsibility that, no later than 12 hours prior to testing, each building scheduled for testing will be reviewed for compliance with closed-building requirements.
2. **Compliance Verification:** I accept responsibility for taking actions that could include adjustments to HVAC units and repairs where completion is required no later than 12 hours prior to testing.

Client/Authorized Agent: **Kyle Uecker**

Signature:  Date: 1/23/24

Building On-Site Supervisor Commitment:

To the extent reasonably possible, I commit to helping ensure that building conditions required to achieve reliable radon tests are met, as portrayed herein, by accepting the following responsibilities:

1. **Prior Notifications:** Notices will be distributed to all staff and posted in publicly accessible areas in a timely manner.
2. **Access:** Access will be provided to each location being tested within a building with intent to access all locations on the same day for both the event of placing testing devices and a second event for retrieving test devices.

On-Site Supervisor/Principal: Connha Classon

Signature: Verified on testing day Date: _____

RADON TEST IN PROGRESS

from

to

Start Date

End Date

Required closed-building conditions (12 hours prior to the test and during the test)	
Keep closed	Windows & Exterior doors <i>(except for momentary use)</i>
Set to normal	Heating & Cooling systems <i>keep between about 65° - 80° F)</i>
Set to lowest outdoor ventilation	Systems that temporarily ventilate with outdoor air for seasonal comfort or energy savings
Avoid excessive operation	Clothes dryers, range hoods and bathroom fans
Do not operate	Whole-house and window fans
	Fireplaces that burn solid, liquid or gas fuels, unless they are the primary sources of heat for the building

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