# Minnesota Department of Health

# Radon Multi-Family and Large Building Report Template

This document is intended to be a starting point to help licensed radon professionals in Minnesota create their own radon test reports that comply with ANSI/AARST standard MA-MFLB 2023. Please review the standards before creating the test report. A link to the MA-MFLB 2023 standard is available on the MDH website (mn.gov/radon).

Text in brackets needs to be edited or deleted to fit the specifics of the project. Instructions and tips are found in italics.

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[mn.gov/radon](http://www.health.state.mn.us)

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To obtain this information in a different format, call: 651-201-4601.

## 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.

[Company] conducted [short-term] radon testing for [client] at [address, city, state, zip code]. [Testing was conducted as part of a real-estate transaction. OR 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 [mo/dd/yyyy] to [mo/dd/yyyy] using [device] from [lab, address, city, state, zip code, MDH license #].

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

|  |  |  |
| --- | --- | --- |
| **Name** | **MDH License #** | **Signature** |
|  |  |  |
|  |  |  |

All ground-contact rooms that are occupied or intended to be occupied were tested. [The client determined whether rooms are intended to be occupied.] In addition, tests were conducted in all rooms above ground-contact rooms that were not tested. On floors [2, 3, etc.], 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:

[Property or portion of the property was vacant.]

[Closable passive crawl space vents were open during the test but would be closed more than 50% of the year for seasonable comfort.]

[Window air conditioners did not have closed outside air dampers during the test period ]

[Energy recovery ventilators/heat recovery ventilators/economizer ventilation systems were not set to the lowest outdoor air ventilation rate that occurs during all seasons.]

[Sub-slab return ducts observed, and minimal air handler activity occurred during the test]

[weather events occurred that were unusually severe for local weather]

[Building temperature was outside of normal occupied range of 65 – 80 degrees.]

[Radon testing device was moved during the test.]

[In the measurement professional’s opinion, test data produced by the CRM may indicate interference or deviation from testing protocols.]

[Tamper resistant features of the device or other methods, indicate possible interference with testing conditions.]

[A radon mitigation system was observed. The system was operational/did not appear to be operating. The inspection of the mitigation system consisted of checking the u-tube and active alarm.]

## Test Results

[All test results were less 2 pCi/L.]

[Number of test results were between 2 – 3.9 pCi/L. Locations of the elevated test results are shown in the map location in Appendix A. (If this is a residential property and no map is available, include a description of the test locations.) All remaining results were less than 2 pCi/L.]

[Number of tests were at or above the action level of 4 pCi/L. In addition, number of tests were between 2 – 3.9 pCi/L. Locations of the elevated test results are shown in the map location in Appendix A. (If this is a residential property and no map is available, include a description of the test locations.)]

## Missing or Invalid Test Results

|  |  |  |
| --- | --- | --- |
| **Location** | **Missing/Invalid/Not Tested** | **Explanation** |
|  |  |  |
|  |  |  |
|  |  |  |

[The number of missing valid tests is less than what is allowed in the standard so no additional action was taken.] [Testing was conducted at the missing or invalid test locations from xx/xx/xxxx to xx/xx/xxxx.]

*(NOTE: If there are still locations that are missing or invalid, must list description of the insistent efforts made for each location)*

## Unoccupied Non-Residential Spaces

[All unoccupied non-residential ground contact spaces that are part of the conditioned space were tested.]

[The following ground contact unoccupied non-residential spaces that are part of the conditioned space were not tested because the client said they are not occupied or soon to be occupied: *(list locations not tested)*. The locations should be tested when they are intended to be occupied.]

## Quality Assurance and Quality Control

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

[*Describe any missing quality control measurements or any that fell outside control tolerance.*]

## Recommendations

[Elevated radon concentrations were found on upper floors. An investigation is needed without delay to determine the source of the elevated results.]

**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 [phone number] or [email address].

## Appendix A: Floor Plan Diagram

*A floor plan diagram showing the average for each test results from all locations is needed unless the exemption is met. If the property is residential where addresses are not expected to change (ex. Apt 1), then a narrative identification and vicinity within the building is allowed in lieu of the floor plan diagram.*

*[An example narrative: The building has 3 stories with 8 apartments on each floor. First floor has units 101-108, second floor has 201-208, and third floor has units 301-308. Unit 1 on each floor is in the NE corner of the building. Unit 4 is in the NW corner of the building. Unit 5 is the SW corner of the building. Unit 8 is in the SE corner of the building.]*

## Appendix B: Test Conditions

*Include the following:*

* The minimum, maximum, and average outdoor temperature that existed 12 hours prior to and during the test period;
* If the degree of precipitation was near to flood or drought conditions, or if the ground was covered with snow or ice; and
* The seasonal relationship between test conditions and annual average conditions. An example is included below.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | Annual | During the Test |
| Outdoor Temperatures | Avg. °F | 45° | 70° |
| Operating Conditions | Heating (% year) | 75% | 25% |
| Operating Conditions | Cooling (% year) | 0 | 0 |
| Operating Conditions | Mixed (% year) | 25% | 75% |
| Prevailing Operating Condition | Heating/Cooling/Mixed | Heating | Mixed |

*Use local weather data for the “during the test” column. For annual averages, use Appendix A of MA-MFLB 2023. Operating conditions are considered heating if the temperature is less than 65°F. Cooling conditions are defined as temperatures above 83°F. Mixed conditions are between 65-83°F.*

## Appendix C: Quality Control Measurements

*Quality control measurements must be labeled as such- duplicates, blanks, spikes.*

*Spikes conducted to cover this batch of test kits must be included.*

*Duplicates must include individual results plus the average.*

## Appendix D: Analytical Results

*For each test, identify the start and stop time, date, detector identification.*

## Appendix E: Test Notifications

*Attach records of client notifications and the dates distributed. Must include communications regarding client advisories, client authorizations, and client commitments. Also must include communications regarding content of occupant notices that facilitating staff were to distribute.*

*Example templates for these test notifications are available on the MDH website: mn.gov/radon.*