DEPARTMENT OF HEALTH

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.

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

There are two test options that comply with the standards:

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 closedbuilding 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.

as designated in . (The American Socie	APERATURE ZONES ASHRAE standards 90.1 and 90.2 ety of Heating, Refrigerating and Air- gineers) https://www.ashrae.org	Average Annual
Climate Zone	Example North American States or Cities	Temperature
1Very Hot	Southern Florida and Hawaii	Miami 76' F (24 C)
2 Hot	Florida, New Orleans, Houston, Mexico	New Orleans 68° F (20 C)
3 Warm	North Carolina to Southern California	Atlanta 61' F (16 C)
	3 22 2 3 3 3	
4 Mixed	NYC, PA, NJ, VA, KT, TN KS, MO, Seattle WA, and Portland OR.	Kansas City 54° F (12 C)
5 Cool	MA, NY, OH, MI, IN, IL, IA, NE, CO, UT and NV.	Chicago 49° F (9 C)
6 Cold	ME, NH, VT, WI, MN, ND, WY, SD and ND.	Montreal 43° F (6 C)
7 Very Cold	Minot, ND; Anchorage, AK; Winnipeg, Canada	Winnipeg 36° F (2 C)
8 Subarctic	Fairbanks Alaska; Cambridge Bay, Canada	Fairbanks 26 ° F (-3 C)

CLIENT ADVISORIES PRIOR TO TESTING

| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|------|------|------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | ł | 1 | Cold | Cold | Cold | / Cold | y Cold |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | 1 | 1 | Cold | Cold | Cold | / Cold | y Cold |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | | | | | 1 | ł | 1 | 1 | | | | | | | | | | | | | Col | Col | Col | / Colo | y Colo |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | Col | Col | Col | / Col | y Col |
| 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | 1 | | 1 | | | | | | | | | | | | | | | | | | | | | | | | Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | | | | | | | | | Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | (| | | Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | (| | | Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | (| (| | Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | (| (| (| Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | (| (| (| Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | C | (| (| Col | Col | Col | / Col | y Col |
| d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | C | C | C | 0 | (| Co | Co | Co | / Col | y Col |
| ld | d | d | d | d | d | d | d | d | d | d | d | ld | ld | ld | d | d | d | d | ld | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | d | lc | lc | l | 1 | 1 | Co | Co | Co | / Co | y Co |
| ld | lc | lo | lo | l | l | Co | Co | Co | / Co | y Co |
| ld | lc | lo | lo | l | l | Co | Co | Co | / Co | y Co |
| ld | lc | lo | lo | l | l | Co | Co | Co | / Co | y Co |
| ld | lc | lo | lo | lo | l | Co | Co | Co | / Co | y Co |
| ld | lc | lo | lo | l | l | Co | Co | Co | / Co | y Co |
| ld | lc | lo | lo | l | l | Co | Co | Co | / Co | y Co |
| old | olo | olo | olo | olo | Co | C | C | / Co | y Co |
| old | olo | olo | olo | olo | C | C | C | / Co | y Co |
| old | olo | olo | olo | olo | C | C | C | / Co | y Co |
| old | olo | olo | olo | olo | C | C | C | / Co | y Co |
| old | olo | olo | olo | olo | C | C | C | (C | (C | (C | (C | (C | (C | y C | y C | y C | y C | y C | y C | y C |
| old | olo | olo | olo | olo | C | C | C | /C | ۱C | ۱C | ۱C | ۱C | ۱C | уC | уC | y C | y C | y C | y C | y C |
| old | olo | olo | olo | ol | C | C | C | / C | ۲C | ۲C | ۲C | ۲C | ۲C | уC | уC | y C | y C | y C | y C | y C |
| old | olo | olo | olo | ol | C | C | C | / C | ۲C | ۲C | ۲C | ۲C | ۲C | y C | y C | y C | y C | y C | y C | y C |
| old | olo | olo | olo | olo | ol | C | C | C | / C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C |
| old | olo | olo | olo | olo | ol | C | C | C | / C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C |
| old | olo | olo | olo | olo | ol | C | C | C | / C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C | y C |
| old | olo | olo | olo | olo | olo | C | C | C | 10 | 10 | 10 | 10 | 10 | 10 | y C | y C | y C | y C | y C | y C | y C |
| old | olo | olo | olo | olo | olo | C | C | C | 10 | 10 | 10 | 10 | 10 | 10 | y C | y C | y C | y C | y C | y C | y C |
| old | Cold | old | olo | olo | olo | olo | olo | C | 0 | 0 | 10 | 10 | 10 | 10 | 10 | 10 | y Q | y Q | y (| y (| y (| y (| y (|
| Cold | Colo | Colo | Colo | Colo | (| (| (| 10 | 10 | 10 | 10 | 10 | 10 | y (| y (| y (| y (| y (| y (| y (|
| Cold | Colo | Colo | Colo | (| (| (| 10 | 10 | 10 | 10 | 10 | 10 | y (| y (| y (| y (| y (| y (| y (|
| Cold | Colo | Colo | Colo | (| (| (| (| 1 | 1 | 1 | 1 | 1 | y (| y (| y (| y (| y (| y (| y (|
| Cold | Colo | Colo | Colo | (| (| (| 1 | 1 | 1 | 1 | 1 | 1 | y (| y (| y (| y (| y (| y (| y (|
| Cold | Colo | Colo | Colo | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | y١ | y١ | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | y١ | y١ | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | 1 | | | 1 | 1 | 1 | 1 | 1 | 1 | y | y | Y | y | Y | y | y |
| Cold | Colo | Colo | Colo | Col | | | | 1 | 1 | 1 | 1 | 1 | 1 | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Colo | Col | | | | I | 1 | 1 | 1 | 1 | 1 | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Colo | Col | | | | I | I | I | I | I | I | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | | | | I | I | I | I | I | I | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | | | | I | I | I | I | I | I | Y | Y | ł | y | ł | y | y |
| Cold | Colo | Colo | Col | | | | I | I | I | I | I | I | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | | | | I | 1 | 1 | 1 | 1 | 1 | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | | | | 1 | I | I | I | I | I | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Col | | | | 1 | I | I | I | I | I | Y | Y | Y | y | Y | y | y |
| Cold | Colo | Colo | Colo | Col | | | | | | | | | | y | y | y | y | y | y | y |
| Cold | Colo | Colo | Colo | Col | | | | | | | | | | y | y | y | y | y | y | y |
| Cold | Colo | Colo | Colo | Col | | | | | | | | | | | | | y | | y | y |
| Cold | Colo | Colo | Colo | Col | | | | | | | | | | | | | | | | |
| / Cold | r Cold | / Cold | / Cold | / Cold | r Cold | r Cold | / Cold | Cold | Cold | Cold | Cold | Cold | Cold | Cold | r Cold | r Cold | r Cold | r Cold | r Cold | r Cold | r Cold | r Cold | r Cold | r Cold | r Colo | r Colo | r Colo | r Cole | | | | | | | | | | | | | | | | |
| / Cold | / Colo | / Colo | / Colo | / Cole | | | | | | | | | | | | | | | | |
| / Cold | / Colo | / Colo | / Colo | / Cole | | | | | | | | | | | | | | | | |
| / Cold | / Colo | / Colo | / Colo | / Colo | I | | | | | | | | | | | | | | | |
| / Cold | / Colo | / Colo | / Colo | / Colo | I | | | | | | | | | | | | | | | |
| y Cold | y Colo | y Colo | y Colo | y Colo | Y | Y | Y | | | | | | | | | | | | | |
| y Cold | y Colo | y Colo | y Colo | y Colo | Y | Y | Y | | | | | | | | | | | | | |
| y Cold | y Colo | y Colo | y Colo | y Colo | Y | Y | Y | | | | | | | | | | | | | |

Climate Zone 7 Includes many Canadian provinces, mountain tops, and utmost northern locations in the United States This data is based on Minot, ND



24 Hour Averages For dwellings and other 24 hour occupancies 24 Hour Annual Avg Oct Nov Dec Sep Jan Feb Mar Apr May Jun Jul Aug 7-Very cold Minot, ND 39 56 45 26 14 21 53 61 68 67 6 11 41 Prevailing Annually Heating Conditions 83% Operating Condition Cooling Conditions Mixed Conditions 16% Heating conditions **Normal Operating Condition** No variance in outdoor air ventilation Condition less likely to inhibit Heating and air distribution systems active characterization of a radon hazard Daytime Averages For non-residential occupancies School Daytime Annual Sep Oct Nov Dec Jan Feb Mar Apr May Jun Jul Aug Avg 7-Very cold Minot ND 45 36 31 19 16 26 47 59 67 75 74 63 51 11 Prevailing Annually School (prevailing across 9 months) Heating Conditions 100% Operating 75% Condition **Cooling Conditions** 25% Mixed Conditions Heating conditions Normal Operating Condition No variance in outdoor air ventilation Condition less likely to inhibit Heating and air distribution systems active characterization of a radon hazard

Some Cities in This Climate Zone

Note-Exact percentages will vary slightly depending upon location

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

CLIENT ADVISORIES PRIOR TO TESTING

	te Zone 6				-	The state	T	- Ly	1	3	-		\$			
Includes portion	ons of ME, NH, VT, WI, M	N, ND,	WY, 9	SD,		5 h	6		Sic	20	al.	2				
ND and Canad	a.					5			2	5	and the second					
This data	is based on Minneapolis	, MN														
	F			Ir Ave		_										
	For dwe	ellings	and o	ther 24	4 hour	occu	pancie	es								
24 Hour 6 Cold Minne	Annual Avg eapolis, MN 45	Sep 61	Oct	Nov 33	Dec 19	Jan 13	Feb	Mar 31	Apr 46	May 59	Jun 68	Jul 73	Aug 71			
o colo	apolis, with 15	01		ailing	_		10	34	10		90	15	14			
Operating	Heating Conditions			75												
Condition	Cooling Conditions				-											
	Mixed Conditions			25	%											
	ating Condition		-	condi nce in		oor air	venti	lation								
	s likely to inhibit ion of a radon hazard	• He	ating	and ai	ir disti	ributio	on syst	tems a	ctive							
		<u>D</u> For nor		ne Ave Jentia			5									
Daytime	Annual School Avg Avg	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr		Jun	Jul	Aug			
6 Cold Minn	eapolis, MN 50 41	66	55	37	23	17	23	35	51	64	73	78	76			
			Prev	ailing		ally		Scho	ool (p			ross 9	month			
Operating	Heating Conditions				%			88%								
Condition	Cooling Conditions				%						11%					
	Mixed Conditions			16	%						-					
		• He	ating	condi												
Normal Oper	ating Condition	• No	o varia	nce in	outdo	oor air	' venti	lation								

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, <u>health.indoorair@state.mn.us</u>, mn.gov/radon 10/25/2023 To obtain this information in a different format, call: 651-201-4621.