



Date: 11/17/21

Performed by: Andrew Tinklenberg

Location: Armatage School – 2501 W. 56th Street, Minneapolis, MN 55410

RE: Radon Testing

INTRODUCTION

From November 1 – 4, 2021, radon testing was performed within Armatage School located at 2501 W. 56th Street in Minneapolis, MN. The testing was performed to ensure that radon gas concentrations within the building are below the established regulatory limits. Testing was conducted under normal occupied building conditions in frequently-occupied ground contact rooms and other areas in accordance with ANSI/AARST Protocols for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings 2014 with 1/21 Revisions and Minnesota Department of Health (MDH) guidelines.

SUMMARY OF FINDINGS

The test kits in Classrooms 115 & 117 were lost/removed during the first round of testing, and so the areas were retested from November 10 – 12, 2021. All of the areas that were tested were found to have radon gas levels below 4.0 picocuries per liter of air (pCi/L), which is the EPA and MDH action level. (Note: Spike sampling is performed in conjunction with this testing and Duplicate (side-by-side) sampling was conducted in select areas at a rate of 10% of areas tested, and Rooms “A, B & C” were the blank samples.)

The radon test kits were submitted to and analyzed by AirChek, Inc., 1936 Butler Bridge Rd, Mills River, NC 28759 (MN License #RL-00003). Please refer to the attached AirChek radon testing report and sample diagrams for further information concerning the radon testing, areas that were tested, and the radon levels that were found to be present. Per MDH requirements, this information will be shared with the local regulatory agency (MDH - health.indoorair@state.mn.us, Phone # 651-201-4601) and incorporated in an MPS’ board meeting. The information will also be posted on the EH&S webpage available through the main MPS website and maintained on file by EH&S.

REMARKS

Every effort was made to maintain closed building conditions and HVAC systems are monitored and controlled remotely by MPS Direct Digital Control (DDC) personnel. Any deviation in building conditions or sampling protocol which could have an impact on the testing and test results is described in the summary above. If any unoccupied areas that were not tested are planned for future occupancy, contact EH&S so that the areas can be tested. Unless specified, all QA/QC measurements were within the required limits. Radon testing is to be performed in MPS District buildings every 5 years or any time major renovation activities take place which have the potential to impact the building’s foundation or HVAC systems. Refer to the attached test condition summary and ANSI/AARST advisories for additional information concerning the radon testing.

If you have any questions regarding this information, please feel free to contact me. Thank you,



Andrew Tinklenberg
MDH RMEA-00426
NRPP ID# 111389 RT



Safety Specialist - Environmental Health & Safety
Minneapolis Public Schools
Environmental Health & Safety - Facilities Dept.
1225 N. 7th Street, Minneapolis, MN 55411
andrew.tinklenberg@mpls.k12.mn.us
612-668-0306 Phone
612-668-0310 EH & S General Office
612-668-0275 Fax



Attachments

Radon Testing Results
Floor Plans
Notification Documents
Test Condition Summary
ANSI/AARST Advisory Statements

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Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
9512871	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	N20	ARMATAGE	0	< 0.3
9512872	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	N22	ARMATAGE	0	0.7
9512873	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	N24	ARMATAGE	0	0.6
9512874	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	CUSTODIAN OFFICE	ARMATAGE	1	< 0.3
9512875	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 127	ARMATAGE	1	< 0.3
9512876	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 114	ARMATAGE	1	< 0.3
9512879	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 116	ARMATAGE	1	0.7
9512880	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 118	ARMATAGE	1	0.7
9512881	2021-11-01	7:00 am	2021-11-04	3:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 119	ARMATAGE	1	< 0.3
9512882	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 120	ARMATAGE	1	0.9
9512883	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	COMPUTER 217	ARMATAGE	1	0.7
9512884	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 121	ARMATAGE	1	0.7
9512885	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 207	ARMATAGE	1	2.2
9512886	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	MEDIA 206	ARMATAGE	1	1.6
9512887	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	GYM A	ARMATAGE	0	0.7
9512888	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	GYM B	ARMATAGE	0	0.7
9512889	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	OFFICE 102	ARMATAGE	0	1.2
9512890	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 203	ARMATAGE	1	1.3
9512891	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	GYM OFFICE	ARMATAGE	0	0.8
9512892	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	GYM OFFICE	ARMATAGE	0	0.8
9512893	2021-11-01	7:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 101	ARMATAGE	1	< 0.3
9512894	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 102	ARMATAGE	1	< 0.3
9512895	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 103A	ARMATAGE	1	< 0.3
9512896	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 103B	ARMATAGE	1	< 0.3
9512897	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 104	ARMATAGE	1	< 0.3
9512898	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 105	ARMATAGE	1	< 0.3
9512899	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 105	ARMATAGE	1	< 0.3
9512900	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 106	ARMATAGE	1	< 0.3
11034801	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 107	ARMATAGE	1	< 0.3
11034802	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 108	ARMATAGE	1	0.6
11034803	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 109	ARMATAGE	1	0.5
11034804	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 110	ARMATAGE	1	< 0.3
11034805	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 111	ARMATAGE	1	< 0.3
11034806	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 112	ARMATAGE	1	< 0.3
11034807	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 112	ARMATAGE	1	0.6

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Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11034808	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS 113	ARMATAGE	1	0.6
11034809	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	OFFICE 109A	ARMATAGE	1	0.8
11034810	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	KITCHEN OFFICE	ARMATAGE	1	1.2
11034811	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CAFETERIA	ARMATAGE	1	0.8
11034812	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	STAFF LOUNGE	ARMATAGE	1	0.8
11034813	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	PRINCIPAL OFFICE	ARMATAGE	1	1.0
11034814	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	RECEPTION	ARMATAGE	1	0.7
11034815	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	HEALTH OFFICE	ARMATAGE	1	0.6
11034816	2021-11-01	8:00 am	2021-11-04	4:00 pm	70	MPS ARMATAGE	ARMATAGE	CLASS N103	ARMATAGE	1	0.6
11034817	2021-11-01	8:00 am	2021-11-04	5:00 pm	70	MPS ARMATAGE	ARMATAGE	AUDITORIUM	ARMATAGE	1	1.9
11034818	2021-11-01	8:00 am	2021-11-04	5:00 pm	70	MPS ARMATAGE	ARMATAGE	AUDITORIUM	ARMATAGE	1	1.9
11034819	2021-11-01	8:00 am	2021-11-04	5:00 pm	70	MPS ARMATAGE	ARMATAGE	SMALL GYM	ARMATAGE	1	1.4
11034820	2021-11-01	8:00 am	2021-11-04	5:00 pm	70	MPS ARMATAGE	ARMATAGE	ROOM A	ARMATAGE	1	< 0.3
11034821	2021-11-01	8:00 am	2021-11-04	5:00 pm	70	MPS ARMATAGE	ARMATAGE	ROOM B	ARMATAGE	1	< 0.3
11034822	2021-11-01	8:00 am	2021-11-04	5:00 pm	70	MPS ARMATAGE	ARMATAGE	ROOM C	ARMATAGE	1	< 0.3

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Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11034888	2021-11-10	11:00 am	2021-11-12	3:00 pm	70	MPS	ARMATAGE	CLASS 115	ARMATAGE (2)	1	< 0.3
11034889	2021-11-10	11:00 am	2021-11-12	3:00 pm	70	MPS	ARMATAGE	CLASS 117	ARMATAGE (2)	1	< 0.3

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498



MINNEAPOLIS
PUBLIC SCHOOLS

Urban Education. Global Citizens.

Environmental Health & Safety

Office: (612) 668-0310

Direct: (612) 668-0306

Andrew Tinklenberg

Safety Specialist

Environmental Health & Safety

RADON TESTING NOTIFICATION (2021)

Armatage School

The District will be conducting short-term radon testing at Armatage School. Radon is a naturally occurring radioactive gas that is created from the breakdown of Radium that is naturally present in soil. Radon can enter buildings from the soil through gaps, cracks and holes in the foundation. Radon testing is performed periodically and is being performed based on Minnesota Department of Health recommendations and protocols. As per the recommendations, frequently occupied, ground level or ground contact areas will be the focus of the testing. Sampling locations will be selected that provide the best representation of these areas.

If your room is selected for testing, please do your part by ensuring that the devices are not removed or tampered with in any way. The devices are small, rectangular envelopes, approximately 4 by 6 inches and will typically be hung from the ceiling or an interior wall. The short-term radon detectors are planned to be placed and collected November 1 – 4, 2021. When available, sample results will be shared with your principal and placed on the EH&S webpage available through the main MPS website.

An example of the detector is pictured below:



Thank you very much for your cooperation. If you have questions, please contact me at 612-668-0306 or andrew.tinklenberg@mpls.k12.mn.us

Notice of Inspection - Radon Survey in Progress

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 are 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.

Radon testing is scheduled for:

Building(s): Armatage

Building Area(s): Throughout

Test Start Date: 11/1/21

Test End Date: 11/4/21

Access into your unit/room is: required not required

PLEASE START THE FOLLOWING BY:

Please help to maintain the following required test conditions:

- **Windows and Doors** need to be kept closed (aside from momentary entry and exit) on all levels of the building including areas not being tested,
- **Heating and cooling systems** need to set to normal temperatures (65-80°F),
- **Bathroom fans** should operate normally,
- Do not operate wood-burning or natural gas **fireplaces**,
- **Energy recovery ventilators (ERV) or heat recovery ventilators (HRV)** should be set to the lowest level they are used at through the year, and
- Avoid excessive operation of **exhaust systems** that draw air from laundries, workshops, community kitchens.

For inquiries or reporting concerns:

Contact Person: Andrew Tinklenberg

Phone: 612-668-0306

Visit mn.gov/radon for more information about radon

Authorizations and Lines of Communications

Please complete the following to help us clarify lines of communication and responsibilities.

Staff authorized to respond to occupant and public inquiries:

Title/Name: Lee Setter Phone: 612-668-0310 Email: lee.setter@mpls.k12.mn.us

Title/Name: Phone: Email:

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

Title/Name: Lee Setter Phone: 612-668-0310 Email: lee.setter@mpls.k12.mn.us

Title/Name: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

Frequency of reports: Prior to testing After each phase of testing When testing is complete

Client & Facilitating Staff Contact Information

Client/Authorized Agent: Lee Setter Phone: 612-668-0310 Email: lee.setter@mpls.k12.mn.us

Onsite Supervisor: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

Building Access: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

HVAC Operations: Jason Kohlen Phone: 612-668-0338 Email: Jason.kohlen@mpls.k12.mn.us

Other Contacts (Title/Name): Phone: Email:

Radon Testing Professional Contact Information:

Scheduling/Logistics: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

On-site Professional: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

Licensed Field Technician: Andrew Tinklenberg Phone: 612-668-0306 Email: andrew.tinklenberg@mpls.k12.mn.us

Licensed Field Technician: Phone: Email:

Client Commitment to Compliance

By signing below, I am committing to help ensure that building conditions required to achieve reliable radon tests are met.

Management

Help Onsite Supervisors and Building Operations Staff maintain closed-building conditions and meet the requirements list above.

Name: Andrew Tinklenberg@mpls.k12.mn.us


Signature: 

Date: 11/4/21

Onsite Supervisor

To help ensure reliable radon tests, the onsite supervisor will:

- **Prior Notification:** distribute notices to all building occupants no later than the day before testing. Notices must be given to all occupants regardless if their unit/room is being tested and posted in publicly accessible areas such as corridors, elevators, and offices.
- **Access:** provide access to each test location within the building on the same day for the event of placing test devices and a second event for retrieving test devices.
- Name: Andrew Tinklenberg@mpls.k12.mn.us


Signature: 

Date: 11/4/21

Building Operations Staff

To help ensure reliable radon tests, Building Operations Staff will:

- **Building Preparation:** no later than 12 hours prior to the start of the test, review each building scheduled for testing for compliance with closed-building requirements.
- **Compliance Verification:** verify closed-building conditions and ensure that any repairs or adjustments that impact these conditions are completed 12 hours prior to the start of the test. Initial when verified.
- Name: Andrew Tinklenberg@mpls.k12.mn.us

Signature: 

Date: 11/4/21

Building Address: 2501 W. 56th Street, Mpls., MN

Date Completed: 11/1/21 Initials: AJT

CLIENT COMMITMENT TO COMPLIANCE

Actions Required at Least 12 hour prior to test and throughout	
Windows	Close or seal on all levels of the building, including areas not being tested Exception: Do not close openings to outside to outside air designed to provide air needed for combustion appliances.
External doors (except for normal entry or exit)	
Other openings to the exterior (as a result of disrepair, incomplete construction or structural defect)	
Heating & Cooling Systems	Set to normal occupied temperatures: 65° - 80°F (Maintenance inspection of systems are recommended prior to testing)
Variable Outdoor Air Ventilation Systems (if applicable) Systems such as manually operated dampers, energy economizer systems, energy recovery ventilators (ERV), or heat recovery ventilators (HRV) that seasonally vary outdoor air ventilation for energy savings or comfort	Close outside air inlet dampers or set to minimum outdoor air intake settings that apply at all times of the year when a building is significantly occupied
Window Air Conditioners	Dampers to outside air shall be closed
Variable Air Volume (VAV) Systems (if applicable) Systems that temper room temperature using thermostats to vary the volume of heated or cooled air coming into rooms	Set all thermostats to between 65° - 80°F in all rooms that are served by the system
Return-Air Ducts laid in Soil (if applicable) Return-air ductwork is located under a slab, or otherwise laid in soil.	All testing company immediately
Heating, ventilation, and air conditioning (HVAC) setback in non-residential locations If non-residential rooms are operating with HVAC setback temperatures during nights or weekends that are outside of normal occupied temperatures of 65° - 80°F	Alter to retain temperatures within range of 65° - 80°F Or contact the testing company



Armatage Test Condition Summary

November 1-4, 2021 – Minneapolis, MN (Climate Zone 6)

	Annually	During Testing
Outdoor Temperatures	Average = 46° F	Max. = 43° F Min. = 30° F Average = 36° F
Operating Conditions (Heating/Cooling)	Heating – 50% Cooling – 25% Mixed – 25%	Heating – 100% Cooling – 0% Mixed – 0%
Air Distribution Systems	Intermittent during summer	Active

* - Note: No rain or snowfall was recorded during the testing period.

Informative Advisories

1. Fluctuations in radon concentrations are usually caused by either:
 - changes in the strength of indoor air pressures that draw soil gas into a building; or
 - changes in the volume of outside air entering a building.
2. Clear characterization of a radon hazard is more likely to occur when:
 - Outdoor temperatures extend below 65°F (18°C), at least intermittently, which causes natural indoor air pressures that draw radon laden soil gas into a building; and
 - Heating or cooling distribution fans are at least intermittently active during a test.
3. Measurements more likely to reflect an occupant’s exposure to radon are measurements conducted under conditions that most closely align to the building operating conditions that prevail during the greatest amount of time each year.

* - Above advisory information is taken from page 31 of the ANSI/AARST Standard, “Protocols for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings, 2014 with 1/21.” Additional advisory notes/information will be added when necessary. Weather information was collected from timeanddate.com/weather/usa/minneapolis.

ANSI/AARST ADVISORY STATEMENTS

8-A Reporting Low Radon Concentrations

Consider fixing the building if test results indicate radon concentrations greater than half the action level, (e.g., between 2 and 4 pCi/L). Responsible care requires repeating initial testing procedures for all building(s) at least every 5 years and in conjunction with any sale of a building. Radon testing should also be conducted when any of the following circumstances occur:

- a new addition is constructed or alterations for building reconfiguration or rehabilitation occur;
- a ground contact area not previously tested is occupied, or a building is newly occupied;
- heating or cooling systems are significantly altered, resulting in changes to air pressures or pressure relationships;
- ventilation is significantly altered by extensive weatherization, changes to mechanical systems or comparable procedures;
- significant openings to soil occur due to:
 - groundwater or slab surface water control systems that are altered or added (e.g., sumps, perimeter drain tile, shower/tub retrofits, etc.) or,
 - natural settlement causing major cracks to develop;
- earthquakes or construction blasting, fracking or formation of sink holes nearby; or
- a mitigation system is altered, modified or repaired.

Should testing indicate concentrations that meet or exceed the action level, conduct evaluations, corrections and further testing until radon concentrations have been mitigated to below the action level.

Table 8-B Reporting Elevated Radon Concentrations

Fix the building. Test results indicate occupants may be exposed to radon concentrations that meet or exceed the action level. Efforts to reduce radon concentrations are not complete until retests provide 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 concentrations that meet or exceed the action level, conduct evaluations, corrections and further testing until radon concentrations have been mitigated to below the action level.

* - Above advisory information is taken from page 28-29 of the ANSI/AARST Standard, "Protocols for Conducting Measurements of Radon and Radon Decay Products in Schools and Large Buildings, 2014 with 1/21 Revisions." Additional advisory notes/information will be added when necessary.