



Date: 12/5/23

Performed by: Andrew Tinklenberg

Location: Hall School – 1601 Aldrich Avenue North, Minneapolis, MN 55411

RE: Radon Testing

INTRODUCTION

From November 27 – 30, 2023, radon testing was performed within Hall School located at 1601 Aldrich Avenue North 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 Protocol for Conducting Measurements of Radon and Radon Decay Products in Multifamily, School, Commercial and Mixed-Use Buildings (MA-MFLB 2023) and Minnesota Department of Health (MDH) guidelines.

SUMMARY OF FINDINGS

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, Duplicate (side-by-side) sampling was conducted in select areas at a rate of 10% of areas tested, and Rooms “A” & “B” 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



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Environmental Health & Safety - Facilities Dept.
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612-668-0310 EH & S General Office
612-668-0275 Fax



Attachments

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

I5554 / ANDREW TINKLENBERG / MINNEAPOLIS PUBLIC SCHOOLS

Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11388623	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CUSTODIAN 145	HALL	1	0.9
11388624	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CUSTODIAN 145	HALL	1	0.8
11388625	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	MUSIC 143	HALL	1	0.9
11388626	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	OFFICE 151	HALL	1	0.6
11388627	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 146	HALL	1	0.7
11388628	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 147	HALL	1	0.9
11388629	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 148	HALL	1	0.9
11388630	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 140	HALL	1	0.6
11388631	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	OFFICE 130	HALL	1	1.0
11388632	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 132	HALL	1	0.8
11388633	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 132	HALL	1	1.0
11388634	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	MEDIA 134	HALL	1	1.1
11388635	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	OBSERVATORY 135	HALL	1	1.1
11388636	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CAFETERIA 104	HALL	1	0.8
11388637	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	OFFICE 106A	HALL	1	0.5
11388638	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	PARENT ROOM 103	HALL	1	0.8
11388639	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 108	HALL	1	< 0.3
11388640	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 109	HALL	1	< 0.3
11388641	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 110	HALL	1	< 0.3
11388642	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 111	HALL	1	0.5
11388643	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 112	HALL	1	< 0.3
11388644	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 113	HALL	1	< 0.3
11388645	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 114	HALL	1	< 0.3
11388646	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 115	HALL	1	0.7
11388647	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 116	HALL	1	0.6
11388648	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 117	HALL	1	0.8
11388649	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 118	HALL	1	< 0.3
11388650	2023-11-27	7:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 119	HALL	1	< 0.3
11388651	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	GYM 121	HALL	1	< 0.3
11388652	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	GYM 122	HALL	1	< 0.3
11388653	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	OFFICE 100E	HALL	1	0.7
11388654	2023-11-27	8:00 am	2023-11-30	3:00 pm	70	MPS HALL	MPS HALL	OFFICE 100D	HALL	1	1.4
11388655	2023-11-27	8:00 am	2023-11-30	3:00 pm	70	MPS HALL	MPS HALL	OFFICE 100C	HALL	1	0.9
11388656	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	OFFICE 100A	HALL	1	1.4
11388657	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	MAIN OFFICE 100	HALL	1	1.1

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Kit Number	Start Date	Start Time	End Date	End Time	Temp.	Facility	Building	Room	Project ID	Floor	Result
11388658	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 205	HALL	2	< 0.3
11388659	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 205	HALL	2	< 0.3
11388660	2023-11-27	8:00 am	2023-11-30	2:00 pm	70	MPS HALL	MPS HALL	CLASSROOM 208	HALL	2	< 0.3
11388661	2023-11-27	8:00 am	2023-11-30	3:00 pm	70	MPS HALL	MPS HALL	ROOM A	HALL	2	< 0.3
11388662	2023-11-27	8:00 am	2023-11-30	3:00 pm	70	MPS HALL	MPS HALL	ROOM B	HALL	2	< 0.3



MINNEAPOLIS
PUBLIC SCHOOLS

Urban Education. Global Citizens.

Environmental Health & Safety

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Safety Specialist

Environmental Health & Safety

RADON TESTING NOTIFICATION (2023)

Hall School

The District will be conducting short-term radon testing at Hall 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 27 – 30, 2023. 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 for Facilitating Staff

A radon test is scheduled for:

Building: _____

Test Start Date: _____ Test End Date: _____

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

1. All windows and exterior doors must be kept closed (aside for 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.

Further guidance on required building conditions are found on the next page.

Test kits are not dangerous in any way. The type of devices used for this testing may include:

- **Short-term test kits:** It's important these devices are fully open and not covered. They will be analyzed by a laboratory.
- **Continuous radon monitors:** These are electronic monitors that record hourly radon readings.
- **Long-term test kits:** It is important that these devices are not covered. They will be analyzed by a laboratory.

Declaration of Observed Compliance:

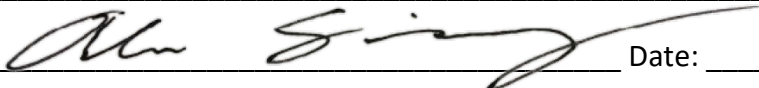
Failure to reasonably maintain test conditions can lead to unnecessary expense, disruptions, and unreliable data. Disturbing test devices can also cause unreliable or invalid test results.

- Please report in a timely manner if required test conditions are not maintained.
- Please sign and return this form once the test is complete.

To the best of my knowledge, the required conditions were maintained during the test.

Yes No

Name: _____

Signature:  _____ Date: _____

Required Closed Building Conditions for Radon Testing

Building Component	Action Required
Windows	Keep Closed, Seal broken windows closed
External doors (except for normal entry or exit)	Keep Closed
Heating & Cooling Systems	Set to normal operating conditions
Bathroom fans	Operate normally
Fireplaces (including gas)	Do not operate
Auxiliary or temporary systems that bring air into the building	Do not operate, unless an integral part of HVAC or supplies make-up air for combustion appliances
Exhaust systems (ex. from shops, laundries, kitchens)	Avoid excessive operation
Interior doors, Stairwells, Fire Doors	Operate Normally
Garage doors	Operate normally
Ceiling Fans, Portable Fans	Do not blow directly on the test device
Window AC Units	Operate in recirculation mode only
Window Fans	Do not operate. Seal shut or remove.
Humidifiers, Dehumidifiers, Portable Air Cleaners	Operate Normally
Central Vacuum Cleaner Systems	Operate Normally
Passive crawl space vents	Operate normally
Crawlspace exhaust systems for humidity control	Operate normally
Passive Vents for Combustion Make-Up Air	Leave Open

NOTICE OF INSPECTION FOR FACILITATING STAFF

Building Component	Action Required
Combustion Appliance Vents	Operate Normally
Passive Solar Systems	Operate Normally
Attic Vent Fans	Operate Normally
Evaporative Cooling Systems	Do not operate

Radon Test Device Placement Requirements

Place detectors within the general breathing zone. Locate detectors no less than:

- 3 feet from exterior doors, windows, other openings to outdoors,
- 20 inches above the floor,
- 4 inches from other test devices and objects, and
- 1 foot from ceilings.

Place detectors where they are not easily disturbed.

Place detectors where they are not influenced by other factors:

- Do not place in closets, crawlspaces, cupboards, sumps, or nooks within building foundation,
- Do not place devices in areas with high air movement (ex. mechanical areas, furnace closets),
- Do not place devices in areas with high humidity (ex. kitchens, bathrooms, laundry rooms),
- Do not place devices near drafts from HVAC systems or fans,
- Do not place test devices near heat sources (ex. appliances, radiators, fireplaces, direct sun), and
- Do not place detectors on devices that produce radiation (ex. natural stone counters, pool tables, rock collections)

For more information regarding on-site activities, contact:

Licensed measurement professional: Andrew Tinklenberg, 612-668-0306

Minnesota Department of Health, Indoor Air Unit, PO Box 64975, St. Paul, MN 55164
651-201-4601, health.indoorair@state.mn.us, mn.gov/radon

8/17/2023, To obtain this information in a different format, call: 651-201-4601.

Notice of Inspection for Building Occupants

A radon test is scheduled for:

Building: _____

Test Start Date: _____ Test End Date: _____

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 and a sample device is available to view upon request.

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

If you have any questions or concerns, please contact:

Client Authorizations & Communications

Client and Facilitating Staff Member Contact Information

Client/Authorized Agent _____ phone _____

Onsite Supervisor _____ phone _____

Building/Dwelling Access _____ phone _____

HVAC Operations _____ phone _____

Other Contact/Title _____ phone _____

Radon Testing Professional Contact Information

Scheduling/Logistics _____ phone _____

Onsite Supervisor _____ phone _____

Field Technician _____ phone _____

Field Technician _____ phone _____

Staff authorized for responding to occupant and public inquiries:

Name/Title _____ phone _____

Name/Title _____ phone _____

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

Name/Title _____ phone _____

Name/Title _____ phone _____

Frequency of Reports

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

Minnesota Department of Health | Indoor Air Unit | PO Box 64975 | St. Paul, MN 55164 | 651-201-4601
health.indoorair@state.mn.us | www.health.state.mn.us | mngov/radon

08/17/2023 | To obtain this information in a different format, call: 651-201-4601.

Client Commitment to Compliance

Management Commitment:

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

Client/Authorized Agent: _____

Signature: Alan Singh Date: _____

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 tested and non-tested dwellings 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: _____

Signature: Alan Singh Date: _____

Building Operations Staff 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. **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.

HVAC Operations Supervisor: _____

Signature: Alan Singh Date: _____



Hall Test Condition Summary

November 27-30, 2023 – Minneapolis, MN (Climate Zone 6)

	Annually	During the Test
Outdoor Temperatures	Average = 46° F	Max. = 43° F Min. = 9° F Average = 28° F
Prevailing Operating Condition (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 and winds were light to moderate.

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 33 of the ANSI/AARST MA-MFLB-2023 Standard, "Protocol for Conducting Measurements of Radon and Radon Decay Products in Multifamily, School, Commercial and Mixed-Use Buildings." Additional advisory notes/information will be added when necessary. Weather information was collected from timeanddate.com/weather/usa/minneapolis.

ANSI/AARST ADVISORY STATEMENTS

Table 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 pages 29-30 of the ANSI/AARST MA-MFLB-2023 Standard, "Protocol for Conducting Measurements of Radon and Radon Decay Products in Multifamily, School, Commercial and Mixed-Use Buildings." Additional advisory notes/information will be added when necessary.