

Sent via electronic mail: aneta.mistak@d214.org

Ms. Aneta Mistak
Assistant Director of Operations
Township High School District 214
2121 S. Goebbert Road
Arlington Heights, IL 60005

**Re: Long Term Radon Testing
Wheeling High School**

Dear Ms. Mistak:

Date: June 14, 2024

In January 2013, the Illinois Emergency Management Agency (IEMA) enacted new legislation regarding the testing of licensed Day Care Centers and Day Care Homes for Radon. The legislation requires retesting every three (3) years. Signed into law on January 1, 2010, Public Act 96-0417 recommends, requires, and/or authorizes the following action with regard to radon and schools in Illinois:

1. Recommends all Illinois school districts test their school buildings every five years.
2. Requires Illinois schools that do test for radon to report the results to the State Board of Education. The State Board of Education will then report radon test data bi-annually to the General Assembly. This data will be made public.

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Ref 1940105696-001

At the request of Township High School District 214 (THSD214), Ramboll Americas Engineering Services, Inc. (Ramboll) retained Radon Detection Specialists, Inc. (RDS) to perform a long-term radon survey at Wheeling High School (WHS), 900 S. Elmhurst Road, Wheeling, Illinois. The radon testing included all occupied areas of the high school which previously demonstrated potentially elevated radon levels. None of the potentially elevated areas are used as a day care. Radon Detection Specialists (RDS) are licensed by the IEMA Department of Nuclear Safety (DNS) for both residential and commercial radon testing. The survey was conducted from February 20 – May 23, 2024.

Radon is an odorless, tasteless, and colorless radioactive gas that comes from the decay of naturally occurring uranium in the soil. At WHS, seven (7) passive radon detection devices (Alpha Tracks™) were deployed in four (4) locations on February 20 and retrieved on May 23, 2024, for this survey. The radon detection devices were placed in the rooms by a State of Illinois Licensed Radon Professional.

Long term radon measurements were determined to be below the United States Environmental Protection Agency (USEPA) and IEMA Action Level (AL) of 4.0 picocuries per liter (pCi/L) in one location, Room 135A. The follow-up long term testing determined radon concentrations to be above the USEPA and IEMA AL of 4.0 picocuries per liter of air (pCi/L) in one location, Room 114, where the result was 6.5 pCi/L. The radon detection devices that were deployed in Rooms 151 and 171F were missing so valid, long term, tests were not completed. Two short term radon tests have been completed in Room 151 and the average was above 4.0

pCi/L. One short term test has been completed in 171F and showed radon levels to be above 4.0 pCi/L. The second short term test was found on the floor and was therefore invalid.

Attached is the full report forwarded from Radon Detection Specialists outlining basics of radon and radon health impacts, scope of work, quality assurance plan, device results and site notes, summary, and recommendations.

If you have any questions regarding the above report, please do not hesitate to contact our office. Ramboll thanks you for the opportunity to be of continued service to THSD214.

Sincerely,

Ramboll Americas Engineering Solutions, Inc.



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Managing Consultant

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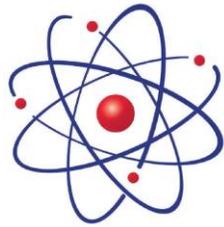
Reviewed and Approved by,



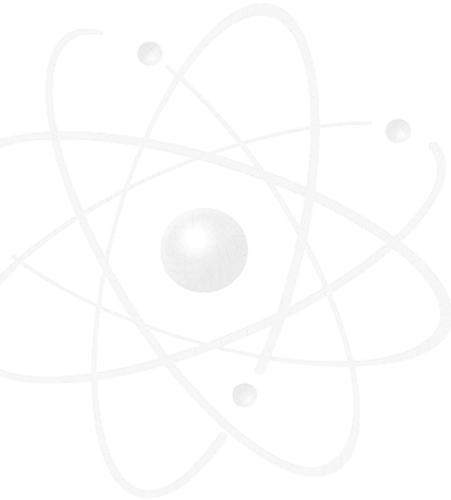
Kevin E. Aikman, Ph.D., CIH, FAIHA
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ATTACHMENT



**RADON
DETECTION
SPECIALISTS**

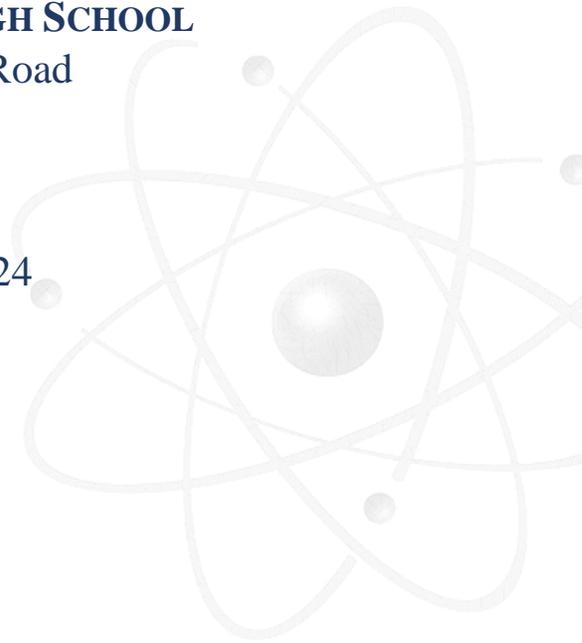


**RADON TEST REPORT
LONG-TERM MEASUREMENT**

FACILITY NAME: WHEELING HIGH SCHOOL

Test Site: 900 S Elmhurst Road
Wheeling, IL 60090

Report Date: May 23, 2024



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Prepared For: Ramboll
Facility Name: Wheeling High School
Test Site: 900 S Elmhurst Road
Wheeling, IL 60090
Test Dates: Tuesday, February 20, 2024 to Thursday, May 23, 2024



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Section 1.0 Radon Health Effects

Radon is recognized by the Environmental Protection Agency as well as the scientific and medical communities as a Class A carcinogen, accounting for 15,000 – 22,000 lung cancer deaths annually. Exposure to radon gas is the leading cause of lung cancer among non-smokers.

Radon is a naturally occurring, radioactive gas which comes from the soil. It can't be seen, smelled or tasted. The only way to know if the level of radon gas in your building exceeds the recommended Action Level of 4.0 pCi/L is to test. The Department of Nuclear Safety in Illinois requires those testing for radon in commercial buildings, schools and multi-family housing communities, as well as individual residences, to be properly licensed.

The amount of radon in the soil depends on soil chemistry, which naturally varies. Radon levels in the soil can range from a few hundred to several thousands of pCi/L (pico Curies per liter of air). The amount of radon that escapes from the soil and enters the building depends on the weather, soil porosity, soil moisture, and the suction within the building.

Radon is the leading cause of lung cancer among non-smokers.

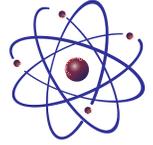
- There is no safe level of radon exposure. Any exposure causes some risk of developing cancer. The National Academy of Sciences (NAS) concluded that only cigarette smoking poses a greater risk. Exposure to radon accounts for 10% of all lung cancer deaths annually.
- As we breathe, the alpha radiation from radon and its decay products cause damage to the sensitive lung tissue. Most of the radiation dose is not actually from radon itself, but rather from radon's chain of short-lived decay products that are inhaled and lodged in the airways of the lungs. These radionuclides decay quickly, producing other radionuclides that continue damaging the lung tissue. Those particles that are retained long enough release radiation and damage the surrounding lung tissue. It is this damage that can lead to lung cancer.

What other health risks are related to radon exposure?

- No other respiratory ailments are linked to radon exposure.
- There are preliminary studies that are looking at the link between radon exposure and the development of Parkinson's and Alzheimer's disease. These are early studies, and research is on-going.



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Section 2.0 Radon Testing Protocol for This Site

Pre-Deployment Testing Strategy

Measurements will be conducted in 4 locations of the subject building which previously demonstrated potentially elevated radon levels or no valid results during prior measurement attempts. A minimum of 1 detector will be placed every 2000 square feet in open areas. Measurements will not be conducted in rooms that are not frequently occupied such as closets, storage rooms, restrooms, hallways, and stairwells unless the space is considered alterable for future regular use, or the measurement is taken for diagnostic purposes.

Materials and Methods

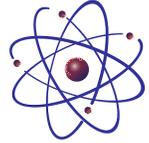
RDS will use alpha tracks to measure radon levels in the air in the above referenced property. The test will comply with all protocols set forth by IEMA and ANSI/AARST, as well as the RDS Quality Assurance Plan.

Duplicate measurements will be conducted for not less than 10% of the total single devices placed to measure precision. Field blanks will be deployed for not less than 5% of the total number of single measurements deployed to measure background gamma radiation.

RDS will locate devices in such a way to limit unintentional interference from building occupants. A walk-through inspection of the building will allow RDS to document observations regarding radon entry mechanisms and general building pressure gradients. Measurement results will be reported in picoCuries per liter (pCi/L) of air.



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Section 3.0 Scope of Work Performed

Radon Detection Specialists performed a Long-Term Measurement in 4 locations at Wheeling High School, located at 900 S Elmhurst Road, in Wheeling, Illinois.

This scope of work included a 93-day (long-term) radon test. This measurement was conducted from Tuesday, February 20, 2024 to Thursday, May 23, 2024.

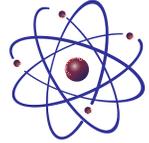
The testing was conducted in accordance with the Illinois Emergency Management Agency Department of Nuclear Safety (IEMA) and the United States Environmental Protection Agency testing protocols for commercial radon measurements, ANSI/AARST standards, the device manufacturer's recommendations, and the RDS Quality Assurance Plan.

The devices used at this facility were alpha tracks (model AT-102), manufactured and analyzed by RSSI.

A total of 7 devices were deployed at this site in these configurations:

Measurement Type	Number of Devices
Single	4
Duplicate	2
Blank	1





Section 4.0 Site Conditions and Device Placement

Site Conditions

1. The subject building was occupied and fully-functional during this radon measurement.
2. The testing period was noted to have been unremarkable in terms of changes/repairs to the building functionality and the weather.
3. At device retrieval, the testing devices deployed in Practice Room 171F and Classroom 151 were missing. There are no results for these locations.

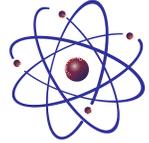
Device Locations

If an appropriate and accurate drawing is provided by the client and dimensional device plotting is possible, Appendix B provides a detailed drawing showing the device locations. If Appendix B is blank, please refer to the Device Placement columns provided in Appendix A (Room Use and Room Number) as an explanation of device locations.

The building was tested in accordance with IEMA and ANSI/AARST protocols with regard to device placement and analytical methods of calculating results.

1. Tampering was not detected at the time the devices were retrieved, unless noted in the Comment Column.
2. Devices were placed strategically to reduce accidental interference by building occupants.
3. Duplicates are averaged together. It is the average of the two devices upon which Follow-Up Testing and mitigation decisions should be based.





Section 5.0 Test Location Results and Recommendations

Test Location Results Table

The table below lists the radon test results by location in the facility.

Because radon levels fluctuate hourly, daily, weekly, seasonally and yearly, these results should not be used to estimate radon levels of rooms that were not measured, or to estimate future radon levels of rooms that were measured.

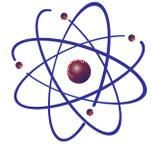
Changes to the building components (both structural and mechanical) can affect radon concentrations.

The EPA Action Level is 4.0 picoCuries per Liter (pCi/L).

Location #	Room Name/Number	Description	Results (pCi/L)
1	114	Classroom	6.5
2	135A	Office	3.3
3	151	Classroom	Missing
4	171F	Practice Room	Missing
5	Shipping	Blank	0.6



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List of Locations with Missing LT Devices, No LT Results, or Invalid LT Results:

Recommendation: *Perform another measurement.*

Room Name/Number	Description	Notes
151	Classroom	Missing. (Initial 4.1, Follow-Up 2.1)
171F	Practice Room	Missing. (Initial Missing, Follow-Up Missing)

It is the recommendation of this testing professional to perform another short-term test in locations with invalid or missing measurements.

List of Locations Above the Action Level

Recommendation: *Consult with an Illinois licensed commercial mitigation professional.*

Room Name/Number	Description	Results
114	Classroom	6.5

When elevated levels are confirmed with either two short-term measurements or a single long-term measurement:

When a single long-term measurement, or the average of two short-term measurements, confirms elevated radon levels, consultation with an Illinois licensed commercial mitigation firm is recommended. A list of firms licensed for radon mitigation in commercial buildings in Illinois can be found on the state’s website at <http://www.illinois.gov/iema/NRS/Radon/Pages/Commercial.aspx>

Commercial mitigation firms differ in terms of their experience, their approaches to your project and their pricing. In order to make sure you find one best suited to the needs of your building, please call more than one.



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A Note about Long-Term Testing

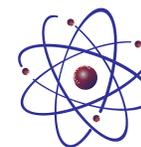
The EPA and IEMA Action Level of 4.0 pCi/L is based on annual average exposure. As a matter of best practice in measurement, a long-term measurement is the best way to determine occupants' annual exposure because radon levels vary hourly, daily, weekly, seasonally, and over the years. Long-term testing (lasting 90 days to one year) provides a better understanding of building radon concentrations and the risks of exposure to radon.

To have a thorough understanding of occupants' risk of exposure, a long-term measurement is always recommended. This type of measurement will provide the best indication of radon concentrations and are the basis upon which mitigation decisions should be made.

Should you choose to engage in a long-term measurement as recommended, please contact us for further details.



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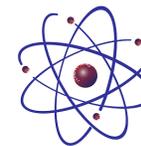
Appendix A: Device Table

The table below lists all the devices deployed and their reported radon levels. The results were determined using calculations supplied by the device manufacturer.

Location #	Device #	Serial Number	Room Name/Number	Room Description	Foundation	Occupiable?	Start Day/Time	End Day/Time	Invalid or Missing?	Device Radon Level (pCi/L)	Set Type
1	1	824233	114	Classroom	Slab-on-grade	Yes	2/29/2024 12:00 PM	5/23/2024 12:00 PM		5.9	S
1	2	824248	114	Classroom	Slab-on-grade	Yes	2/29/2024 12:00 PM	5/23/2024 12:00 PM		7.1	D
2	3	824250	135A	Office	Slab-on-grade	Yes	2/20/2024 12:00 PM	5/23/2024 12:00 PM		3.5	S
2	4	824240	135A	Office	Slab-on-grade	Yes	2/20/2024 12:00 PM	5/23/2024 12:00 PM		3.0	D
3	5	824226	151	Classroom	Slab-on-grade	Yes	2/20/2024 12:00 PM	5/23/2024 12:00 PM	Missing		S
4	6	824227	171F	Practice Room	Slab-on-grade	Yes	2/20/2024 12:00 PM	5/23/2024 12:00 PM	Missing		S
5	7	838545	Shipping	Blank	Slab-on-grade	Yes	2/20/2024 12:00 PM	5/23/2024 12:00 PM		0.6	B

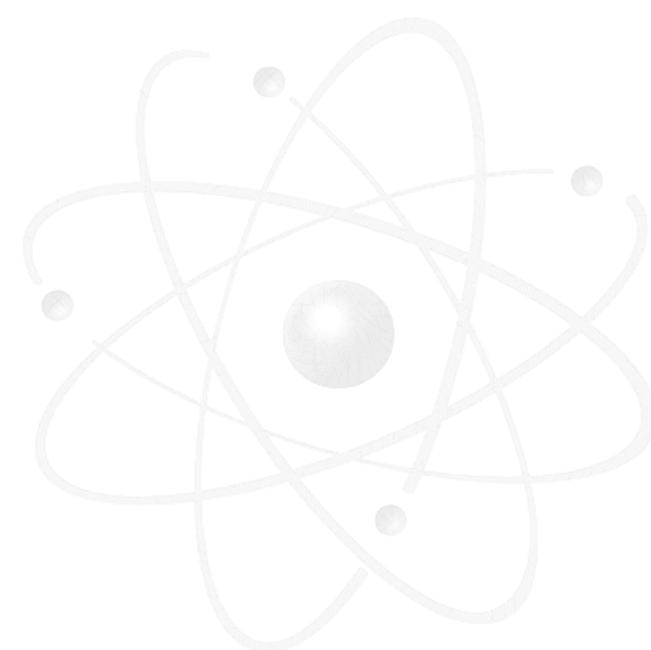


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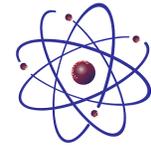


Appendix B: Site Plan Showing Device Locations

Site plan not available.



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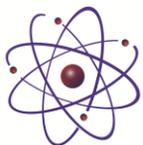
Appendix C: License and Credentials



IEMA: Radon Measurement Professional RNI2006204

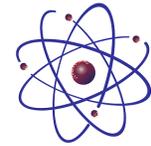


NRPP: Radon Measurement Professional with Standard and Analytical Services
NRPP ID 108034-RMP



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NRSB: Accredited Radon Laboratory NRSB ARL1301



NRSB: Radon Measurement Specialist NRSB 13SS016



AARST-NRPP: Advanced Certification: Multifamily Measurement



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