



Testing, Mitigation, System Design
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Radon Survey Analysis Job #22-C101F

for

Lake Oswego School District
Uplands Elementary
c/o Brent Paul

property located at

2055 Wembley Park Road
Lake Oswego, OR 97034

June 27, 2023

Introduction

The following report documents a study of radon levels for the property located at 2055 Wembley Park Road Lake Oswego, OR 97034. The goal of this study is to determine indoor radon levels for all areas tested, testing performed per Oregon Health Authority School Testing Protocols.

Conclusions and Recommendations

Test was a "Long-Term" test, with minimum duration of 91 days. See the chart below of areas in buildings that were tested, and the corresponding levels found. Maps of the test levels are provided in Appendix A. Note that one(1) of the three(3) locations tested had results above the USEPA Action Level of 4.0 pCi/L.

It is recommended that a certified radon mitigation company be contacted to evaluate the areas which are elevated to determine appropriate mitigation action to bring them below the USEPA Action Level.

While the USEPA recommends buildings be fixed if the radon level is 4.0 pCi/L or more, because there is no known safe level of exposure to radon, the US EPA also suggests individuals consider fixing buildings for radon levels between 2.0 pCi/L and 4.0 pCi/L.

This report represents the average radon concentration for the period that testing was and at the specific location(s) within the building. The concentration of radon gas in indoor air can vary widely; it fluctuates daily, seasonally, and with weather conditions. Indoor radon levels may be affected by barometric pressure, strong winds, rain-soaked ground, snow cover, heating and A/C systems, building construction, open windows, and the like.

NOTE: It is recommended from the Oregon Health Authority that any school indicating low radon values be retested at least every 10 years. In areas where mitigation has been performed, it is recommended to test using long-term testing at least every 5 years.

Radon Level Measurements

The building tested was assumed occupied during testing.

The measurement technique used five(5) long term Alpha-Track Detectors

Test Start Date: 11/16/2023

Test End Date: 6/13/2023

Measurements of radon levels were made in the following areas:

Table 1: Results

Room	Kit ID#	Uncertainty	Result (pCi/L)
Classroom 13	414848	± 3%	3.2
Classroom 16	Duplicate Avg	± 3%	5.6
Classroom 25	414840	± 4%	2.1

Duplicate measurements were conducted as a means to assess the precision of the test measurements. The criteria of acceptance is that the average relative percent difference (ARPD) of the results of the two measurement results for results whose averages are greater than 4.0, should be within 25%. The results of the collated duplicates are provided in Table 2. The applicable ARPD for this survey was not applicable and is thus in compliance.

Table 2: *Duplicate Table

Room	Kit ID#	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD%
Classroom 16	414843	5.7	5.6	Yes	3.6%
	708157	5.5			
		Average RPD for Duplicate Averages more than 3.9 pCi/L:			3.6%
		In Compliance:			Yes

As a means to determine any biases in the results, detectors were deployed but not opened. At the time of test retrieval of the regular test, the devices were removed from their packaging and sent to the laboratory for blind analysis. The results of these unexposed devices are shown in Table 3. As can be seen, the laboratory reported these at the lower level of detection, indicating that no biases were introduced in handling and shipping of the devices.

Table 3: Blanks

Room	Kit ID#	Result (pCi/L)	In Compliance?
Classroom 25	708181	0.3 ± 8%	Yes

A device was also selected from the lot of detectors that were utilized for exposure to a known radon environment at a spiking chamber (Bowser-Morner, NEHANRPP ID# 101 TC). After exposure, the device was submitted as a blind measurement to the laboratory. A comparison of the reported reading from the lab and the known concentration in the chamber is as follows:

Chamber concentration to which device was exposed:	25.3pCi/L
Concentration reported by lab:	29.0pCi/L ±3%
Relative percent difference (RPD):	13.6%

The RPD between the reported and spiking concentration is well within normal limits.

Key:

pCi/L: Picocuries per liter – units of radon concentration.

Average (Avg): Cumulative average of the entire period since the test started.

Invalid: Kit is void due to being found on floor, damaged, missing, or visibly tampered with after placement

Please contact me if you have any questions.

Thank you,
Felicia Flanders
NRPP 112059 RMP

Appendix A: Map of Results - Uplands Elm.

Uplands Floorplan

