



Testing, Mitigation, System Design
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Radon Survey Analysis
Job# 19-C119R

for

Central Point School District
Jewett Elementary
c/o Dale Giovannetti

property located at

1001 Manzanita St

Central Point, OR 97502

January 24, 2020



ESB#10782

Introduction

The following report documents a study of radon levels for the property located at 1001 Manzanita St, Central Point, OR, 97502. The goal of this study is to determine indoor radon levels for all areas in contact with the ground. Testing was performed per Oregon Health Authority School Testing Protocols.

Analysis assumes that the buildings tested were maintained under “closed-building” conditions (windows closed and exterior doors shut immediately after entering and exiting), as well as normal indoor temperatures, for the duration of the testing period. The H-VAC system for each building was set to normal occupied settings for the entirety of the testing period.

Conclusions and Recommendations

Test was a “Short-Term” test, with minimum duration of 72 hours. See the chart below of areas in buildings that were tested, and the corresponding levels found. All current test results are provided in Table 1. Maps of the test levels are provided in Appendix A. Note that all fifty-three (53) locations tested had results below the USEPA Action Level of 4.0 pCi/L. Classroom 6 was void as the teacher did not maintain closed building conditions. There were four other classrooms notated with an asterisk that are inconclusive due to doors being found at the test pickup and we cannot guarantee closed building conditions were maintained. The entire building should maintain closed building conditions and rooms that did not maintain closed building conditions could have effected the accuracy of the test results of the surrounding areas.

No mitigation action is recommended at this time. 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. For further confirmation of average, long-term radon levels, it is suggested that long-term, Alpha-Track type radon testing be performed.

NOTE: It is recommended that any building indicating low radon values be retested at least every 5 years. In areas where mitigation has been performed, it is recommended to test using long-term testing at least every 2 years.

Radon Level Measurements

The building tested was assumed occupied during testing. The measurement technique used (62) AirChek activated charcoal kits.

Test Start Date: 12/16/2019

Test End Date: 12/19/2019

Measurements of radon levels were made in the following areas:

Table 1: Results

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
1	1	9336332	03:07 PM	01:49 PM	0.3*
2	1	Duplicate Ave *	03:09 PM	01:51 PM	0.6*
3	1	9336329	03:11 PM	01:52 PM	0.3
4	1	9336310	03:13 PM	01:53 PM	0.3
5	1	9336333	02:44 PM	01:55 PM	0.6
6	1	9336336	02:43 PM	01:55 PM	VOID
7	1	9336323	02:51 PM	01:23 PM	0.3
8	1	9336322	02:53 PM	01:22 PM	0.3
9	1	9336328	02:55 PM	01:21 PM	0.3
10	1	9336325	02:57 PM	01:20 PM	0.6*
11	1	Duplicate Ave *	02:58 PM	01:18 PM	0.3
12	1	9315883	01:35 PM	01:17 PM	0.3
13	1	931588	01:33 PM	01:16 PM	0.3
14	1	9315881	01:31 PM	01:15 PM	0.3*
15	1	9302378	02:22 PM	01:34 PM	1.1
16	1	9316571	02:20 PM	01:32 PM	0.7
17	1	9315872	02:18 PM	01:31 PM	0.3
18	1	9302336	02:16 PM	01:31 PM	0.5
19	1	9315869	02:14 PM	01:29 PM	0.7
20	1	9315880	02:10 PM	01:28 PM	1.0
21	1	9315877	02:07 PM	01:27 PM	0.9
22	1	9316018	02:04 PM	01:25 PM	0.9
23	1	9315868	02:30 PM	01:39 PM	0.3
Cafeteria East	1	9315875	01:18 PM	01:06 PM	0.3
Cafeteria North	1	9336326	03:03 PM	01:07 PM	0.3
Cafeteria West	1	9316589	01:17 PM	01:07 PM	0.3
Chapman Office	1	9336331	03:00 PM	01:46 PM	0.3
Exam Room	1	9315874	01:42 PM	01:11 PM	0.3

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Health Lobby	1	9302351	01:41 PM	01:10 PM	0.3
Janitor	1	9315879	02:11 PM	01:25 PM	0.6
Kitchen	1	9315885	01:21 PM	01:08 PM	0.3
Library	1	9315979	01:56 PM	01:14 PM	0.3
Main Office	1	9315899	12:57 PM	01:02 PM	0.3
Makers Lab	1	9336321	03:23 PM	02:04 PM	0.6
Mr. Thompson	1	9315882	01:24 PM	01:10 PM	0.3
Media Center	1	Duplicate Ave *	01:53 PM	01:13 PM	0.3
Nurse Office	1	9315892	01:39 PM	01:12 PM	0.3
PBIS	1	9315886	01:11 PM	01:47 PM	0.3
Portable 24	1	9315867	02:32 PM	01:41 PM	0.3
Portable 25	1	9316023	02:33 PM	01:40 PM	0.3
Portable 26	1	9315871	02:28 PM	01:38 PM	0.3
Portable 27	1	9315870	02:25 PM	01:35 PM	0.3
Portable 27 Office	1	9316016	02:27 PM	01:37 PM	0.3
Portable 28	1	9336330	02:49 PM	01:42 PM	0.3
Portable 29	1	9336340	02:47 PM	01:41 PM	0.3
Principal	1	9315897	01:02 PM	01:03 PM	0.3
Reception	1	9315876	01:40 PM	01:12 PM	0.3
Speech	1	9315890	01:09 PM	01:57 PM	0.3
Sara Seimer	1	9315898	12:58 PM	01:03 PM	0.3
Stage	1	9315894	01:27 PM	01:15 PM	0.3
Store Room	1	9315889	01:22 PM	01:09 PM	0.3
Supply Room	1	9315895	01:07 PM	01:05 PM	0.3
Teachers Lounge	1	Duplicate Ave*	01:05 PM	01:04 PM	0.3

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 4.0pCi/L, 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#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD%
Staff Room	9315896	01:05 PM	01:04 PM	0.3	0.3	No	N/A
	9315900	01:05 PM	01:04 PM	0.3			
Media Center	9315873	01:53 PM	01:13 PM	0.3	0.3	No	N/A
	9302328	01:53 PM	01:13 PM	0.3			
21	9315877	02:07 PM	01:27 PM	0.9	1	No	N/A
	9315891	02:07 PM	01:27 PM	1			
Portable 29	9336340	02:47 PM	01:41 PM	0.3	0.3	No	N/A
	9336334	02:47 PM	01:41 PM	0.3			
2	9336338	03:09 PM	01:51 PM	0.6	0.5	No	N/A
	9336339	03:09 PM	01:51 PM	0.3			
11	9336335	02:58 PM	01:18 PM	0.3	0.3	No	N/A
	9336309	02:58 PM	01:18 PM	0.3			
Average RPD for Duplicate Averages more than 3.9 pCi/L:							N/A
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	Blank #	Kit ID #	Result (pCi/L)	In Compliance?
6	1	9336341	0.3	Yes
9	2	9336324	0.3	Yes
16	3	9316572	0.3	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:	25.5 pCi/L
Concentration reported by lab:	27.2 pCi/L
Relative percent difference (RPD):	6.5%

Chamber concentration to which device was exposed:	25.5 pCi/L
Concentration reported by lab:	26.6 pCi/L
Relative percent difference (RPD):	4.2%

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.

Please contact me if you have any questions.

Thank you,
Danielle Weir
NRPP 108953 RT

Appendix A:

Placement Map

Jewett Elementary

Hackwell 3rd X 15	Stone 4th/5th B X 16	Lunte 5th X 17	Alden 5th X 18	Elmer 4th X 19
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Girls RR	Petersen 3rd X	Ward 3rd X 21	Miller 4th X 22
Boys RR			
Staff RR X	20		

Anderson K X 7	K. Lit K X 8	Corbett K X 9 B	Cooper K X 10	K. Dev Ymca X 11 D
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Girls RR	Swift 2nd X	Cawthorne 2nd X	Ratty 2nd/3rd X 14
Boys RR			
Staff RR			

Navickas Resource X 6 B	Webb 1st X 5
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Stormberg 1st X 4	Tompkins 1st X 3	Schoneberger 1st X 2 D	Title I 1st X 1	Media Center XD
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Health Center X	Stage X	Thompson Coffman X	ELD
Cafeteria X			Kitchen X
Mr. Rambo X	Office X	Zurek Staff Room X	Speech Supply Room X

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Jewett Map 2014-15 (1).xls

Appendix B:

Results Map