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Testing, Mitigation,
Systems Design
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Radon Survey Analysis Job #19-C013R

for

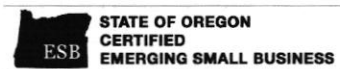
Central Point School District
Central Point Elementary
c/o Dale Giovannetti

property located at

450 S 4th St

Central Point, OR 97502

March 20, 2019



Introduction

The following report documents a study of radon levels for the property located at 450 S 4th 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 and EPA 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 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. Maps of the test levels are provided in Appendix A. All current test results are provided in Appendix B. Note that sixty three of sixty-four (64) locations tested had results below the USEPA Action Level of 4.0 pCi/L. Room two office was missing up pick up of the test kits.

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 (76) AirChek activated charcoal kits.

Test Start Date: 2/26/2019

Test End Date: 3/1/2019

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)
Resource	1	9180601	9:52 AM	9:37 AM	0.3

Room	Floor	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)
Room 20 office	1	9180602	10:27 AM	9:30 AM	0.3
45	1	Duplicate Avg*	10:30 AM	9:54 AM	0.4
12	1	9180604	10:39 AM	10:16 AM	0.7
18	1	9180606	10:54 AM	10:07 AM	0.3
13	1	9180607	10:42 AM	10:03 AM	0.3
13 office	1	9180608	10:42 AM	10:03 AM	0.3
12 office	1	9180609	10:39 AM	10:00 AM	0.7
14	1	9180610	10:41 AM	10:01 AM	0.3
28	1	Duplicate Avg*	10:50 AM	10:05 AM	0.5
2 office	1	9180612	10:04 AM	-	-
Room 11	1	9180613	10:34 AM	9:56 AM	0.3
9 office	1	9180614	10:35 AM	9:55 AM	0.3
Reading room	1	9180615	10:10 AM	9:46 AM	0.3
Cafeteria	1	Duplicate Avg*	9:28 AM	9:12 AM	0.4
6 office	1	9180617	10:17 AM	9:48 AM	0.3
8	1	9180618	10:18 AM	9:48 AM	0.6
3	1	9180619	10:05 AM	9:44 AM	0.3
Custodian	1	9180620	9:31 AM	9:10 AM	0.3
Room 10	1	9180621	10:37 AM	9:59 AM	0.3
Room 9	1	9180622	10:33 AM	9:55 AM	0.3
Davidmentor	1	9180623	9:23 AM	9:17 AM	0.3
5	1	9180625	10:21 AM	9:50 AM	0.3
7	1	9180626	10:20 AM	10:16 AM	0.3
15	1	9180627	10:44 AM	10:05 AM	0.3
Library	1	Duplicate Avg*	9:41 AM	9:27 AM	0.3
27	1	9180631	10:12 AM	9:45 AM	0.3
6	1	9180632	10:15 AM	9:47 AM	0.3
Room 20	1	9180633	10:26 AM	9:30 AM	0.3
19	1	9180634	10:54 AM	10:09 AM	0.3
Librarian	1	9180635	9:43 AM	10:11 AM	1.1
35	1	9180636	9:19 AM	9:20 AM	0.3
Room 29	1	9180638	9:16 AM	9:32 AM	0.5
2	1	9180639	9:59 AM	9:41 AM	0.6
222	1	9180641	9:57 AM	9:40 AM	0.6
26	1	9180642	9:50 AM	9:34 AM	0.3
23	1	9180643	9:55 AM	9:38 AM	0.8
Kitchen	1	9180644	9:34 AM	9:16 AM	0.3
Prep room	1	9180645	8:49 AM	10:21 AM	0.3
24	1	Duplicate Avg*	9:53 AM	9:36 AM	0.7
1	1	9180649	10:01 AM	9:43 AM	0.6
4	1	9180650	10:02 AM	9:44 AM	0.3
Kitchen office	1	9180651	9:33 AM	9:16 AM	0.3
Mrs taylor	1	9180652	8:51 AM	9:02 AM	0.3
Stage	1	9180653	9:11 AM	9:06 AM	0.6

Room	Floor	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)
Speech assistant	1	9180655	9:48 AM	9:34 AM	0.3
26	1	9180656	9:46 AM	9:35 AM	0.3
37	1	9180657	9:07 AM	10:21 AM	0.3
38	1	Duplicate Avg*	9:04 AM	9:24 AM	0.3
36	1	9180660	9:21 AM	9:21 AM	1.0
S gym	1	9180662	8:40 AM	9:08 AM	0.8
N gym	1	9180663	8:40 AM	9:08 AM	0.3
Teacher lounge	1	Duplicate Avg*	8:47 AM	9:03 AM	0.5
Pbis office	1	9180665	9:01 AM	9:04 AM	0.3
Pbis	1	9180666	8:59 AM	9:04 AM	0.6
Walt davenport	1	9180667	8:53 AM	9:00 AM	0.5
17	1	9180669	11:02 AM	10:09 AM	0.7
17 office	1	9180670	11:02 AM	10:09 AM	0.5
Nurse	1	9180672	8:57 AM	8:58 AM	0.3
Main office	1	9180673	8:55 AM	8:58 AM	0.6
16	1	9180674	11:04 AM	10:06 AM	0.5
16 office	1	9180675	11:05 AM	10:10 AM	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 4.0, 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#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD%
Teacher Lounge	9180664	8:47 AM	9:03 AM	0.6	0.5	No	60
	9180661	8:47 AM	9:03 AM	0.3			
38	9180658	9:05 AM	10:16 AM	0.3	0.3	No	0
	9180659	9:04 AM	9:24 AM	0.3			
Cafeteria	9180616	9:28 AM	9:12 AM	0.5	0.4	No	50
	9180647	9:28 AM	9:12 AM	0.3			
Library	9180628	9:41 AM	9:27 AM	0.3	0.3	No	-
	9180624	9:41 AM	-	Void			
24	9180646	9:53 AM	9:36 AM	0.7	0.7	No	0
	9180671	9:54 AM	9:36 AM	0.7			
45	9180603	10:30 AM	9:54 AM	0.3	0.4	No	50
	9180629	10:30 AM	9:54 AM	0.5			
28	9180611	10:50 AM	10:05 AM	0.3	0.5	No	60
	9180630	10:51 AM	10:05 AM	0.6			

Room	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD%
Average RPD for Duplicate Averages more than 3.9 pCi/L:							No
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?
Walt Davenport	1	9180668	0.3	Yes
Room 20	2	9180605	0.3	Yes
Kitchen Office	3	9180637	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:	24.5 pCi/L
Concentration reported by lab:	28.4
Relative percent difference (RPD):	14.7

Chamber concentration to which device was exposed:	24.5pCi/L
Concentration reported by lab:	26.9
Relative percent difference (RPD):	9.3

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

Key:

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

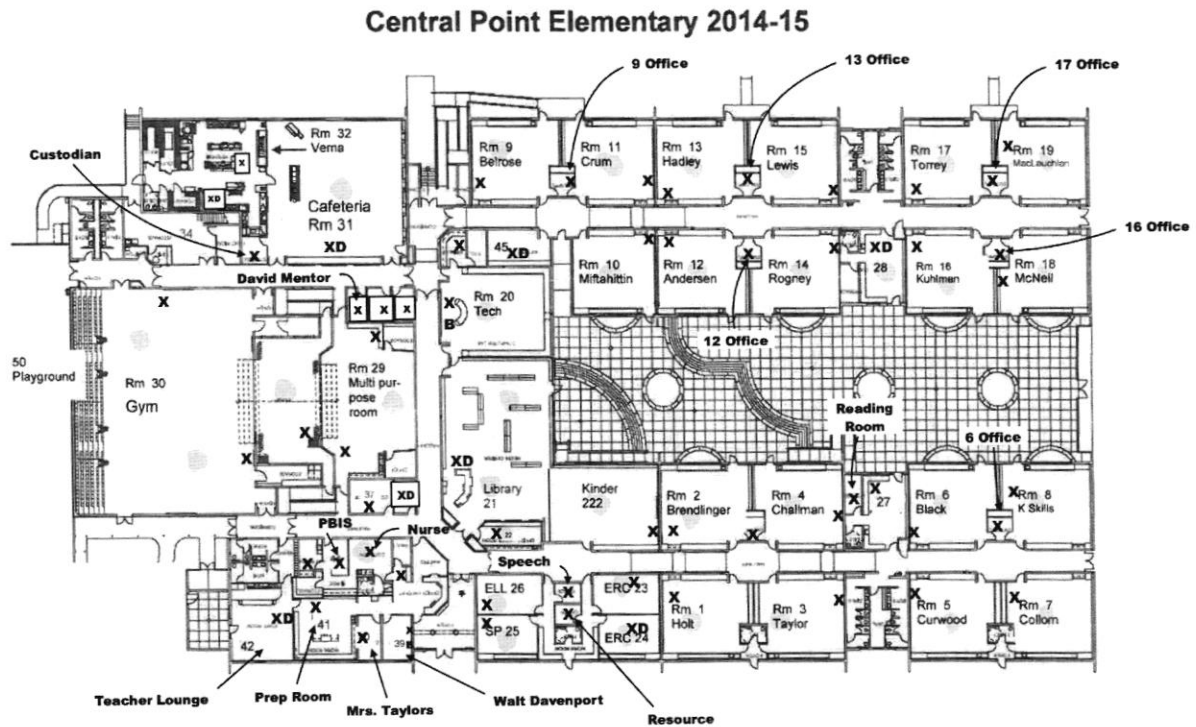
Average (Avg): Cumulative average of the entire period since the test started.

Please contact me if you have any questions.

Thank you,

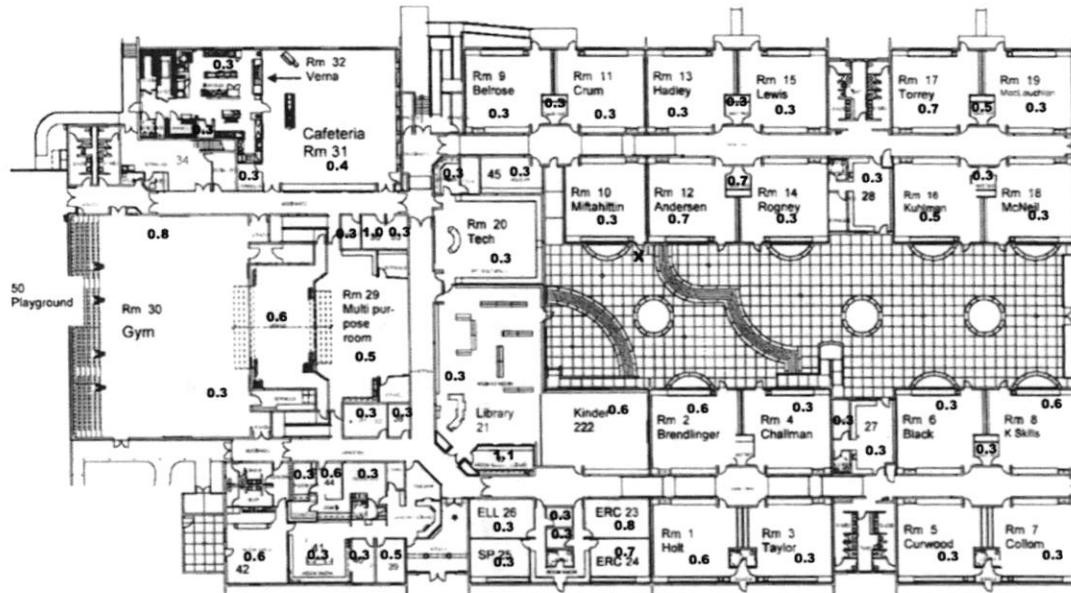
Rachell Meyers
NRPP 110320 RT

Appendix A: Test Location Map



Test Results Map:

Central Point Elementary 2014-15



Central Point Elementary
 450 South Fourth Street
 Central Point, OR
 97502

ALL CALL #1

To Call Rooms: 3#'s example: 007, 019

35-Total