



Testing, Mitigation, System Design
CCB 180537
CASCARI927C1
Fed ID 26-1809992

12839 NE Airport Way, Building 9
Portland, Oregon 97230
Phone: (503) 421-4813
Fax: (503) 281-6170
Office@CascadeRadon.com

Radon Survey Analysis
Job# 19-C110R

for

Eagle Point School District
Eagle Point High School
c/o Angie Hamilton

property located at

23 N Platt Ave

Eagle Point OR 97524

November 26, 2019



STATE OF OREGON
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ESB#10782

Introduction

The following report documents a study of radon levels for the property located at 23 N Platt Ave Eagle Point OR 97524. 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 one of one-hundred and fifty-five (155) locations tested had results above the USEPA Action Level of 4.0 pCi/L. There were three test locations that did not maintain closed building conditions and the results were void. Three were also two test locations that had missing test devices. Not maintaining closed building conditions may affect the accuracy of the tests in surrounding test locations.

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.

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 (185) AirChek activated charcoal kits.

Test Start Date: 11/19/2019

Test End Date: 11/22/2019

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)
Ss4	1	9316201	03:02 PM	02:14 PM	1.2
M4	1	9316203	03:11 PM	11:35 AM	1.1
Ss6	1	Duplicate Avg*	02:54 PM	11:52 AM	1.0
SP1 resource	1	9316205	03:35 PM	12:11 PM	2.5
Sp1 study room	1	9316206	03:33 PM	12:14 PM	1.5
East media center	1	9316207	03:18 PM	12:10 PM	1.8
North media	1	9316208	03:18 PM	12:09 PM	1.6
J1	1	9316209	03:27 PM	12:52 PM	1.5
M5	1	Duplicate Avg*	03:13 PM	11:37 AM	2.3
Ss5	1	9316212	03:01 PM	11:52 AM	0.9
Freshman grad coach	1	9316213	03:42 PM	12:17 PM	1.9
EC3	1	9316214	03:48 PM	12:18 PM	1.0
Ss7	1	9316216	02:51 PM	11:49 AM	1.0
Ss2	1	9316217	02:50 PM	11:48 AM	1.1
Mc5	1	9316218	03:25 PM	12:10 PM	1.7
Sp1	1	9316219	03:31 PM	12:13 PM	1.3
Ss8	1	9316220	03:06 PM	02:16 PM	0.7
EC8	1	9316221	03:57 PM	12:24 PM	1.3
Ec6	1	9316222	03:59 PM	12:26 PM	1.0
South media center	1	9316223	03:19 PM	12:10 PM	1.5
South cafeteria	1	9316224	05:05 PM	12:29 PM	2.2
Back stage	1	9316225	04:59 PM	12:34 PM	1.9
Mc4	1	9316226	03:37 PM	12:15 PM	1.5
It3	1	9316227	02:44 PM	11:45 AM	0.7
Ss1	1	9316228	02:49 PM	11:47 AM	1.4
It2	1	9316229	02:46 PM	11:46 AM	0.9
It1	1	9316231	02:42 PM	11:43 AM	0.8
It6	1	9316232	02:41 PM	11:40 AM	0.7
It5	1	Duplicate Avg*	02:39 PM	11:40 AM	0.8
M3	1	9316234	02:33 PM	11:34 AM	1.1

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Wood shop work rm	1	9316238	06:41 PM	01:11 PM	1.0
M2	1	9316239	02:33 PM	11:34 AM	1.4
It4	1	9316240	02:36 PM	11:38 AM	0.6
M1	1	9316242	02:32 PM	11:33 AM	1.4
V3	1	Duplicate Avg*	07:05 PM	01:24 PM	1.1
V4	1	Duplicate Avg*	06:56 PM	01:18 PM	1.1
Band	1	Duplicate Avg*	05:38 PM	02:31 PM	0.8
Art room 2	1	Duplicate Avg*	05:50 PM	02:26 PM	0.8
G6	1	9316258	06:06 PM	12:53 PM	0.5
V8	1	Duplicate Avg*	06:38 PM	01:10 PM	1.2
G3	1	9316264	06:11 PM	12:54 PM	1.7
V9	1	9316265	06:28 PM	01:06 PM	0.8
V1	1	9316266	07:00 PM	01:24 PM	2.1
G5	1	9316269	06:19 PM	01:01 PM	1.4
V7	1	9316271	06:46 PM	01:11 PM	0.8
3D print office	1	9316272	06:45 PM	01:14 PM	0.8
G2	1	9316273	06:08 PM	12:57 PM	1.2
G2 office	1	9316274	06:15 PM	12:55 PM	1.7
G1	1	9316275	06:17 PM	01:01 PM	0.8
Maintenance	1	9316276	06:23 PM	01:03 PM	4.2
Choir	1	9316277	05:58 PM	02:28 PM	0.8
V9 office 2	1	9316278	06:30 PM	01:08 PM	1.3
V9 office 1	1	9316283	06:30 PM	01:08 PM	1.2
Choir office	1	Duplicate Avg*	05:58 PM	02:28 PM	0.9
V5	1	9316285	06:53 PM	01:17 PM	0.7
G4	1	9316287	06:15 PM	12:56 PM	Void*
V10	1	Duplicate Avg*	06:25 PM	01:05 PM	0.8
V0	1	9316289	06:55 PM	01:19 PM	0.9
Auto body	1	9316290	07:01 PM	01:21 PM	Void*
Practice room	1	9316292	05:40 PM	02:33 PM	0.9

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Band office	1	9316294	05:41 PM	02:30 PM	0.8
V6/ metals	1	9316295	06:47 PM	01:12 PM	Void*
V server office	1	9316296	06:51 PM	01:15 PM	1.6
Music room office	1	9316297	05:42 PM	02:29 PM	0.9
Art one	1	9316298	05:46 PM	02:24 PM	0.9
Art one office	1	9316299	05:46 PM	02:25 PM	0.7
EC9	1	9316302	04:01 PM	12:23 PM	1.1
L12	1	9316303	04:23 PM	12:00 PM	1.3
L11	1	9316304	04:23 PM	12:00 PM	1.5
Grad coach 2	1	9316305	03:44 PM	12:17 PM	1.7
Ec1	1	9316306	03:50 PM	12:19 PM	1.1
Commons	1	9316307	05:21 PM	12:26 PM	1.3
Girls dressing room	1	9316309	04:57 PM	12:36 PM	1.7
Hair and makeup	1	9316310	04:55 PM	12:36 PM	1.7
Team room	1	Duplicate Avg*	01:09 PM	11:08 AM	0.9
North A gym	1	9316313	02:02 PM	11:00 AM	0.8
Weight room	1	9316315	01:51 PM	10:56 AM	0.5
L8	1	9316317	04:33 PM	12:02 PM	2.7
Kitchen office	1	9316319	05:17 PM	12:31 PM	0.9
L2	1	Duplicate Avg*	04:25 PM	11:57 AM	1.4
South wrestling room	1	9316321	01:36 PM	11:11 AM	0.3
Dressing room	1	9316322	04:54 PM	12:35 PM	1.5
Girls pe office	1	9316323	01:16 PM	11:19 AM	0.7
Girls team room	1	9316324	01:18 PM	11:18 AM	0.3
East wrestling room	1	9316325	01:37 PM	11:10 AM	0.6
SW A gym	1	9316326	02:00 PM	10:57 AM	0.7
L5	1	9316327	04:20 PM	11:59 AM	1.2
L1	1	9316328	04:14 PM	11:56 AM	1.4
Hm1	1	9316329	05:11 PM	12:48 PM	1.1
Large group room	1	9316330	04:05 PM	12:28 PM	2.1

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
West A gym	1	9316331	02:05 PM	10:59 AM	0.6
Ec7	1	9316332	03:55 PM	12:24 PM	1.1
Large group rm stage	1	9316333	04:05 PM	12:27 PM	1.9
Kitchen	1	Duplicate Avg*	05:16 PM	12:30 PM	1.0
Hm3	1	9316335	05:13 PM	12:47 PM	1.3
Hm2	1	9316336	05:13 PM	12:49 PM	1.0
West cafeteria	1	9316337	05:04 PM	-	Missing*
Nw gym	1	9316339	01:25 PM	11:04 AM	1.0
Ne gym	1	9316340	01:25 PM	11:04 AM	0.7
A North gym	1	9316341	01:28 PM	11:05 AM	0.6
Se gym	1	9316342	01:31 PM	11:03 AM	0.3
L6	1	9316343	04:28 PM	12:04 PM	1.2
L10	1	9316344	04:29 PM	12:01 PM	1.4
Sw gym	1	9316345	01:24 PM	-	Missing*
Boys locker room	1	9316346	12:55 PM	11:13 AM	0.3
Coach office boys	1	9316347	01:06 PM	11:15 AM	1.2
Nurse room	1	9316348	12:16 PM	10:49 AM	1.2
Provider room	1	9316349	12:15 PM	10:50 AM	1.1
Boys Freshman locker rm	1	9316350	01:04 PM	11:14 AM	0.3
Reception	1	9316351	11:05 AM	10:39 AM	1.2
Science 2	1	9316352	11:44 AM	11:23 AM	1.5
Science 5 prep	1	9316353	12:08 PM	11:31 AM	1.9
Pe boys office	1	9316354	01:01 PM	11:12 AM	0.3
Girls locker rm	1	9316355	01:16 PM	11:17 AM	0.6
Athletic training room	1	9316356	01:13 PM	11:08 AM	2
Ec2	1	9316357	03:51 PM	12:18 PM	2.2
Boys varsity locker rm	1	9316358	01:07 PM	11:16 AM	1.6
Stage	1	9316359	04:43 PM	12:33 PM	1.8
NE A gym	1	9316360	01:55 PM	11:01 AM	0.5
South A gym	1	9316361	01:58 PM	10:57 AM	0.7

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
Grad coach office/TA	1	9316362	03:41 PM	12:16 PM	1.4
Science 5	1	9316363	12:09 PM	11:30 AM	1.3
Science 2 prep	1	9316365	11:52 AM	11:23 AM	1.8
Science 2 office	1	9316366	11:51 AM	11:24 AM	1.5
L9	1	9316367	04:31 PM	12:02 PM	2.4
L4	1	9316369	04:18 PM	11:58 AM	1.2
L3	1	9316370	04:15 PM	11:59 AM	1.4
Science 1 office	1	9316371	11:46 AM	11:22 AM	1.3
Behavioral health	1	9316373	12:24 PM	10:51 AM	0.9
Counselor	1	9316374	12:32 PM	10:54 AM	1.0
Science 3	1	9316375	11:54 AM	11:26 AM	1.1
Science room 4	1	9316376	11:57 AM	11:28 AM	1.0
16	1	9316377	11:21 AM	10:42 AM	1.1
11	1	9316378	11:28 AM	10:44 AM	1.3
7	1	9316379	11:31 AM	10:47 AM	0.9
Science 1	1	9316380	11:43 AM	11:21 AM	1.3
10	1	9316381	11:27 AM	10:44 AM	1.2
North cafeteria	1	9316382	05:01 PM	12:33 PM	1.5
Tv2	1	9316383	04:36 PM	12:07 PM	3.1
L7	1	9316384	04:34 PM	12:06 PM	2.2
C1	1	Duplicate Avg*	05:06 PM	12:45 PM	0.7
Health center lobby	1	Duplicate Avg*	12:13 PM	10:48 AM	1.1
North west cafeteria	1	9316389	05:02 PM	12:32 PM	1.7
12	1	Duplicate Avg*	11:18 AM	10:43 AM	1.3
Science 5 office	1	9316392	11:50 AM	11:24 AM	1.6
17	1	9316394	11:25 AM	10:42 AM	1.0
Office 2	1	9316395	11:07 AM	10:38 AM	1.3
Office 1	1	9316396	11:08 AM	10:37 AM	1.0
Office 13	1	9316397	11:13 AM	10:39 AM	2.0
14	1	9316398	11:14 AM	10:40 AM	1.3

Room	Floor	Kit ID #	Test Start Time	Test End Time	Result (pCi/L)
9	1	9316399	11:30 AM	10:46 AM	0.9
15	1	9316400	11:16 AM	10:41 AM	1.3
East A gym	1	9316413	02:01 PM	11:00 AM	0.3
Ec4	1	Duplicate Avg*	03:46 PM	12:22 PM	1.1

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 4.0pCi/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 %
12	9316390	11:18 AM	10:43 AM	1.1	1.3	No	N/A
	9316391	11:18 AM	10:43 AM	1.4			
Health Center Lobby	9316388	12:13 PM	10:48 AM	1.1	1.1	No	N/A
	9316364	12:12 PM	10:48 AM	1.0			
Team Room	9316311	01:09 PM	11:08 AM	0.9	0.9	No	N/A
	9316312	01:10 PM	11:07 AM	0.9			
IT5	9316233	02:39 PM	11:40 AM	0.8	0.8	No	N/A
	9316230	02:39 PM	11:39 AM	0.7			
SS6	9316204	02:54 PM	11:52 AM	0.9	1.0	No	N/A
	9316215	02:55 PM	11:52 AM	1.0			
M5	9316210	03:13 PM	11:37 AM	2.3	2.3	No	N/A
	9316211	03:13 PM	11:37 AM	2.2			
EC4	9316419	03:46 PM	12:22 PM	0.9	1.1	No	N/A
	9316316	03:46 PM	12:22 PM	1.2			
L2	9316320	04:25 PM	11:57 AM	1.4	1.4	No	N/A
	9316318	04:25 PM	11:57 AM	1.3			
v10	9316288	06:25 PM	01:05 PM	0.8	0.9	No	N/A
	9316270	06:25 PM	01:05 PM	1.0			

Room	Kit ID#	Test Start Time	Test End Time	Result (pCi/L)	Average (pCi/L)	Avg > 3.9 pCi/L?	RPD %
Choir Office	9316284	05:58 PM	02:28 PM	0.8	0.9	No	N/A
	9316255	05:58 PM	02:28 PM	0.9			
C1	9316372	05:06 PM	12:45 PM	0.6	0.7	No	N/A
	9316386	05:06 PM	12:45 PM	0.7			
Kitchen	9316314	05:17 PM	12:30 PM	1.1	1.0	No	N/A
	9316334	05:16 PM	12:30 PM	0.9			
Band	9316253	05:38 PM	02:31 PM	0.8	0.8	No	N/A
	9316291	05:38 PM	02:31 PM	0.8			
Art 2	9316254	05:50 PM	02:26 PM	0.9	0.8	No	N/A
	9316300	05:50 PM	02:26 PM	0.7			
V4	9316252	06:56 PM	01:18 PM	1.0	1.1	No	N/A
	9316259	06:56 PM	01:18 PM	1.1			
V3	9316251	07:05 PM	01:24 PM	1.1	1.1	No	N/A
	9316260	07:05 PM	01:24 PM	1.0			
V8	9316261	06:38 PM	01:10 PM	1.2	1.2	No	N/A
	9316262	06:38 PM	01:10 PM	1.1			
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?
16	1	9316393	0.3	Yes
L3	2	9316368	0.3	Yes
V9	3	9316267	0.3	Yes

Room	Blank #	Kit ID #	Result (pCi/L)	In Compliance?
Blank in Transit	4	9315854	0.3	Yes
Blank in Transit	5	9315887	0.3	Yes
Blank in Transit	6	9315888	0.3	Yes
Blank in Transit	7	9315933	0.3	Yes
Blank in Transit	8	9315962	0.3	Yes
Blank in Transit	9	9316102	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:	26.2 pCi/L
Concentration reported by lab:	23.4
Relative percent difference (RPD):	11.3

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	23.0
Relative percent difference (RPD):	13.0

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	24.0
Relative percent difference (RPD):	8.8

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	23.3
Relative percent difference (RPD):	11.7

Chamber concentration to which device was exposed:	26.2 pCi/L
Concentration reported by lab:	22.2
Relative percent difference (RPD):	16.5

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 Placement Map



