

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Richmond Elementary School

Report to: Vonnie B. Good, EHS Salem–Keizer Public Schools

By: Kathy Ellis, Senior Industrial Hygiene Consultant

Reviewed By: DeEtta Burrows, MSPH, CIH – Wise Steps, Inc.

On-site: December 5– 8, 2022

Report: December 15, 2022

---

#### PURPOSE

Radon retesting was done at Richmond Elementary School to determine if there have been any changes in the background radon levels in the classrooms, offices and other rooms that are in contact with the ground since the 2013 tests.

This testing is a requirement in OAR 332.331 Healthy and Safe Schools Plan rules.

#### EPA RADON GUIDELINES

The EPA has set an Action Level of 4.0 pCi/L (picoCuries per liter) for schools. If classrooms, offices or buildings have radon levels at or above 4.0 pCi/L, EPA recommends that schools take action to reduce the level. These actions include:

Step 1. If your result is 4.0 pCi/L or higher take a follow-up test (Step 2) to be sure.

Step 2. Follow up with either a long-term test or a second short-term test.

The World Health Organization has set their action level at 2.7 pCi/L. Salem-Keizer Public Schools has determined that 2.7 pCi/L is a target level where retesting should be done.

#### TESTING

Radon testing was conducted using protocols recommended by the Oregon Health Authority per ORS 332.166-167. Radon Air-Chek short-term test devices were used in the rooms by suspending the device in each room. The testing occurred from December 5, 2022 to December 8, 2022 during normal and routine building ventilation system operation. Weather conditions during the weeks prior of testing had been wet with cold temperatures.

Quality assurance (QA) testing was also conducted by utilizing laboratory spiked test devices, (QCS), blank (QCB) test devices, and duplicate samples per the recommendations found in ORS 332.166-167. The laboratory analysis of the QA samples were found to be within the expected range of analytical accuracy recommended by the Oregon Health Authority.

### **CONCLUSION and RECOMMENDATIONS**

Most rooms had low or non detectable levels of radon with the exception of Classroom 1. This classroom had a radon level of 2.8 picoCuries/Liter (pCi/L)

Retesting will be done in this space. If retesting shows that the level is still above the 2.7 pCi/L level, the recommendation is to increase the amount of outdoor air supplied to this classroom via the ventilation system in order to reduce the airborne levels of radon. Retesting will then done to determine if the radon levels are within acceptable limits.

### **CONTROL OF RADON LEVELS IN SCHOOLS**

The major control mechanism for lowering radon levels within school buildings is the use of dilution ventilation. If the amount of outside air delivered into a building increases, the radon levels should decrease.

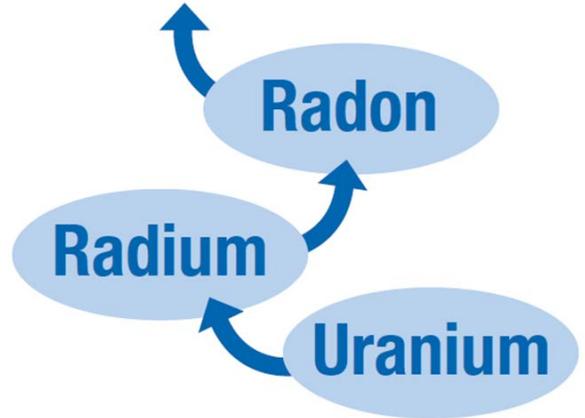
Radon test result report for:**RICHMOND  
MAIN**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11118426	BACK OFFICE	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118451	CAFETERIA N	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.8 ± 0.3	2022-12-05
11118450	CAFETERIA S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.8 ± 0.3	2022-12-05
11118428	CSOC	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.6 ± 0.3	2022-12-05
11118436	CUSTODIAN OFFICE	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.8 ± 0.3	2022-12-05
11118425	FRONT OFFICE	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118442	GYM N	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	1.4 ± 0.3	2022-12-05
11118443	GYM S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	1.6 ± 0.3	2022-12-05
11118452	KITCHEN	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.5 ± 0.3	2022-12-05
11118439	LIBRARY N	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118440	LIBRARY S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118444	MUSIC	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118429	OFFICE MANAGER	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.7 ± 0.3	2022-12-05
11118445	PE OFFICE	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118427	PRINICPAL OFFICE	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118458	QCB 1	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118459	QCB 2	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
9604582	QCS	2022-11-26 @ 8:00 am	2022-11-29 @ 8:00 am	23.8 ± 1.9	2022-12-05
11118438	RM 1	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	2.8 ± 0.3	2022-12-05
11118432	RM 10	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118435	RM 11N	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118434	RM 11S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118437	RM 12	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	0.9 ± 0.3	2022-12-05
11118447	RM 3NW	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	1.9 ± 0.3	2022-12-05
11118446	RM 3S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	1.6 ± 0.3	2022-12-05
11118449	RM 4 N	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	1.2 ± 0.3	2022-12-05
11118448	RM 4 S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	1.2 ± 0.3	2022-12-05
11118453	RM 5	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118454	RM 6 N	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118455	RM 6 S	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118456	RM 7	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118457	RM 8	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118431	RM 9	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118430	SPEECH	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05
11118441	WORKROOM	2022-11-29 @ 9:00 am	2022-12-02 @ 11:00 am	< 0.3	2022-12-05

**Note: QCS is the laboratory spiked sample. Spiked measurements are exposed in a radon chamber to a known amount of radon and then returned to the laboratory without the laboratory's knowledge. This does NOT represent a space in the building. It is part of the Quality Control/Quality Assurance for reporting.**

# Radon in schools

## Fact Sheet on Radon Exposure for Students and Staff



### What is radon?

Radon is a radioactive gas you can't see, smell or taste. It is a decay product of uranium and is found all over the world. Uranium and its decay products are naturally found in the soil and rocks beneath buildings. Our school image (right) shows how uranium naturally decays into radium that further breaks down into radon gas. Radon moves up through the soil and enters buildings in contact.

### Why is radon a problem in Oregon schools?

Radon is the 2nd leading cause of lung cancer, after smoking. The Environmental Protection Agency (EPA) estimates around 21,000 radon-related lung cancer deaths occur each year. Breathing high levels of radon in combination with smoking is even more dangerous and increases your risk by ten times.

Home is likely the most significant source for breathing radon. According to the EPA, 1 out of 15 homes has high radon levels. School is likely the second largest source of radon exposure for students and staff. The only way to know your radon levels is to test. The EPA recommends that **all** homes and schools be tested for radon.

EPA ACTION LEVEL

**4.0** Picocuries  
Liter of air

### Testing at Home

Radon testing at home can be simple and inexpensive. You can find do-it-yourself test kits at most local hardware stores and online from the [American Lung Association](http://www.AmericanLungAssociation.org). Oregon Health Authority (OHA) Radon Program also offers FREE test kits to those living in areas where little data is available. To find out if you are eligible, contact [radon.program@state.or.us](mailto:radon.program@state.or.us).

### Testing in Oregon Schools

By law (ORS 332.341-345), all Oregon schools are required to test for radon before January 1, 2021.

School radon testing involves the placement of small testing devices in all frequently occupied rooms on the lowest level of the building. Initial testing is short-term and lasts between 2 and 7 days. Test devices are not dangerous in any way.

Rooms that test at or above 4.0 picocuries per liter of air (pCi/L) (EPA recommended action level) are subject to longer confirmation testing and radon reduction systems.

\*Test results for your school can be found at:

For more information about radon, visit [www.healthoregon.org/radon](http://www.healthoregon.org/radon).

If you have other questions or concerns about radon testing at your school, contact \_\_\_\_\_ at \_\_\_\_\_.

