

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Hayesville 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: March 14– 17, 2022

Report: April 14, 2022

---

#### PURPOSE

Radon retesting was done at Hayesville 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. Hayesville Elementary School has also undergone a major construction project that included additional classrooms, offices and workspaces. These new areas also needed to be tested for radon levels.

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

#### CONCLUSION and RECOMMENDATIONS

Most tested rooms had low levels of radon with the exception of two locations:

- Classified Corner, and
- The PE office

To reduce the airborne levels of radon it is recommended to increase the amount of outdoor air supplied to these rooms via the ventilation system in order. Unfortunately, neither of these two workspaces are ventilated. Retesting was then done to determine if the radon levels are within acceptable limits.

The retesting in these two rooms was done in April and found the radon levels remained elevated.

It is recommended that the Classified Corner and the PE office not be used by staff as work areas.

## TESTING

Radon testing was conducted using protocols recommended by the Oregon Health Authority per OAR 332.345. Radon Air-Chek short-term test devices were used in the rooms by suspending the device in each room. The testing occurred from March 14-17, 2022, during normal and routine school ventilation system operation. Weather conditions during the weeks prior to testing had been wet with moderate temperatures.

This testing was conducted under COVID-19 recommended precautions of having increased outside air supplied to the building.

Quality assurance testing was also conducted by blank (QCB) test devices, and duplicate samples per the recommendations found in OAR 332.345.

## 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.

## 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. The retesting in the three rooms with radon levels above the Action levels confirmed additional ventilation did lower the radon levels to acceptable levels.

March 18, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

Radon test result report for:

**HAYESVILLE  
MAIN**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
11118722	1	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118694	13	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-18
11118693	14	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118692	14	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118691	15	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118689	16	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118684	17	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	0.7 ± 0.3	2022-03-18
11118683	18	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	< 0.3	2022-03-18
11118720	2	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-18
11118685	25	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118686	25	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118687	26	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-18
11118688	27	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118721	3	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118719	4	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-18
11118718	4E	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-18
11118717	5	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-18
11118716	6	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-18
11118715	7	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.6 ± 0.3	2022-03-18
11118708	8	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.8 ± 0.3	2022-03-18
11118711	AUX GYM	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	1.6 ± 0.3	2022-03-18
11118674	CAFETERIA S	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	0.6 ± 0.3	2022-03-18
11118675	CAFETERIA N	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	0.8 ± 0.3	2022-03-18
11118690	CENTER	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118697	CLASSIFIED CORNER	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	4.2 ± 0.3	2022-03-18
11118699	CONF RM	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118677	CUSTODIAN OFFICE	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	0.6 ± 0.3	2022-03-18
11118713	GYM E	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	1.3 ± 0.3	2022-03-18
11118714	GYM OFFICE	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-18
11118709	GYM W	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	1.4 ± 0.3	2022-03-18
11118723	HEALTH OFFICE 4	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118698	HEALTH ROOM	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118676	KITCHEN OFFICE	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	< 0.3	2022-03-18
11118672	MAIN OFFICE	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	0.6 ± 0.3	2022-03-18
11118700	OFFICE 2	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118701	OFFICE 3	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118702	OFFICE 3	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18

March 18, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

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

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
11118710	PE OFFICE	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	4.8 ± 0.4	2022-03-18
11118673	PRINCIPAL	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	< 0.3	2022-03-18
11118724	QCB1	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118725	QCB2	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118726	QCB3	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118705	RM 10	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-18
11118704	RM 11	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.7 ± 0.3	2022-03-18
11118681	RM 19 N	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	< 0.3	2022-03-18
11118682	RM 19 S	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	< 0.3	2022-03-18
11118680	RM 20 MEDIA	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	< 0.3	2022-03-18
11118679	RM 21 MEDIA	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	0.9 ± 0.3	2022-03-18
11118678	RM 22	2022-03-14 @ 10:00 am	2022-03-17 @ 9:00 am	1.1 ± 0.3	2022-03-18
11118712	RM 24	2022-03-14 @ 11:00 am	2022-03-17 @ 10:00 am	1.1 ± 0.3	2022-03-18
11118707	RM 9E	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.8 ± 0.3	2022-03-18
11118706	RM 9N	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	< 0.3	2022-03-18
11118696	STAFF ROOM	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	???? IF1	2022-03-18
11118703	TEAM RM 1	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.8 ± 0.3	2022-03-18
11118695	TESTING SPACE	2022-03-14 @ 10:00 am	2022-03-17 @ 10:00 am	0.5 ± 0.3	2022-03-18

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

**RETEST DATA**

April 11, 2022

**\*\* LABORATORY ANALYSIS REPORT \*\***

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

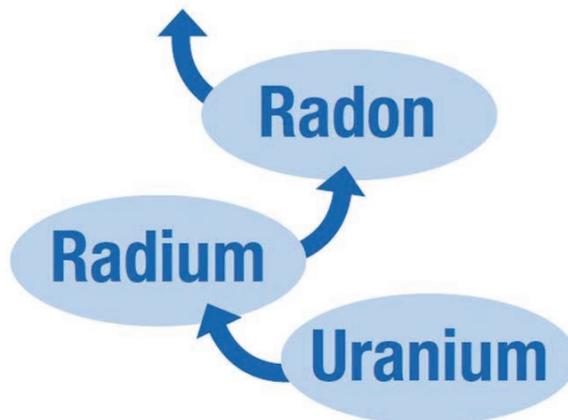
Kit #	Room Id	Started	Ended	pCi/L	Analyzed
9604571	CLASSIFIED CORNER	2022-04-04 @ 1:00 pm	2022-04-07 @ 11:00 am	4.0 ± 0.4	2022-04-11
9604572	PE OFFICE	2022-04-04 @ 1:00 pm	2022-04-07 @ 11:00 am	3.8 ± 0.4	2022-04-11

Air Chek 1936 Butler Bridge Rd, Mills River, NC 28759-3892 Phone: (828) 684-0893 Fax: (828) 684-8498

**Note: QCB1-3 are blank samples and part of the quality control process for radon testing.**

# 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:

<http://salkeiz.k12.or.us/parents/safe-schools/radon-testing/>

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 [Vonnie Good, Environmental Health Specialist](mailto:Vonnie_Good@salkeiz.k12.or.us) at 503-399-3071 or [Good\\_Vonnie@salkeiz.k12.or.us](mailto:Good_Vonnie@salkeiz.k12.or.us).



Oregon  
Health  
Authority