

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Keizer Elementary School

Report to: Vonnie B. Good, EHS Salem Keizer School District

By: Kathy Ellis, Senior Industrial Hygiene Consultant

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

On-site: December 8–11, 2014

Report: December 31, 2014

---

#### **PURPOSE**

Radon testing was done to measure the background levels in all classrooms, offices and staff work rooms that are in contact with the ground.

#### **TEST METHOD**

Radon Air-Chek short-term test devices were used in each location by placing the device 5-6 feet above the floor where it is not in direct contact with airflow from the ventilation system, windows or exterior doors. Staff were requested to keep windows closed during the testing period.

These short-term devices work by trapping room air inside the grains of charcoal within the devices, meaning that live radon gas is being captured. The analysis is performed by measuring the radiation emitted from the charcoal, which is proportional to the amount of radon that was present in the room air.

The testing occurred from Monday, December 8 to Thursday, December 11, 2014, during normal and routine operation of the school.

#### **EPA RADON GUIDELINES**

The EPA has set an Action Level of 4.0 pCi/L (picoCuries per liter) for schools. If classrooms 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:

#### **RESULTS and RECOMMENDATION**

No test locations were above the EPA's Action Level of 4.0 picoCuries per liter (pCi/l).

## **BACKGROUND ON RADON**

Radon is a gas that occurs in nature, seeping up from the earth. It is odorless, colorless and tasteless. Radon comes from the natural breakdown, or radioactive decay, of Uranium 238. The half-life of an individual element is relatively short. Within two weeks, about 90% of a given amount of radon gas will be gone. However, the actual health concern is for the radon decay products, called radon progeny, which carry a small static charge that allows their attachment to water vapor, dust and smoke particles in the air.

The Radon progeny can become lodged in the lung tissue when they are inhaled, and it is these particles' further radiation decay that is associated with potential lung cancer effects.

Radon can seep into buildings or schools through cracks in slab floors or porous cinderblock. It can enter around loose-fitting drainage pipes or through sump pumps.

The US EPA has set an Action Level of 4.0 pCi/L. At or above this level of radon, the EPA recommends that corrective measures should be taken to reduce the exposure to radon gas.

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

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

**Sample Data Attached**

Radon test result report for:**SCHOOL  
KEIZER**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7015453	BEHAV SPEC	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.8	2014-12-15
7015448	COUNSELOR	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	2.0	2014-12-15
7015449	CSOC	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.5	2014-12-15
7015481	CUSTODIAN	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.8	2014-12-15
7015450	INSTRUC COACH	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015439	KEYBOARD RM	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.9	2014-12-15
7015464	KITCHEN	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.6	2014-12-15
7015446	LRC OFFICE	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.8	2014-12-15
7015447	LRC RM 4	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.9	2014-12-15
7015440	MUSIC	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015454	NORTH COM LAB	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015441	PE OFFICE	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015452	PRINCIPAL	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.7	2014-12-15
7015442	RM 1	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015461	RM 10	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.6	2014-12-15
7015462	RM 11	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.7	2014-12-15
7015463	RM 12	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015465	RM 14	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	1.1	2014-12-15
7015466	RM 15	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.9	2014-12-15
7015467	RM 16	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	1.3	2014-12-15
7015468	RM 17	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.9	2014-12-15
7015469	RM 18	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	1.0	2014-12-15
7015470	RM 19	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.6	2014-12-15
7015443	RM 2	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015473	RM 20	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015471	RM 21	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.7	2014-12-15
7015472	RM 23	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015474	RM 24	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015475	RM 25	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015476	RM 26	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015477	RM 27	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015478	RM 28	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.8	2014-12-15
7015479	RM 29	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.6	2014-12-15
7015445	RM 3	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015480	RM 30	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.6	2014-12-15
7015456	RM 5	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	1.3	2014-12-15
7015457	RM 6	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.8	2014-12-15

---

December 16, 2014

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

---

Radon test result report for:

**SCHOOL  
KEIZER**

---

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
7015458	RM 7	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.7	2014-12-15
7015459	RM 8	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15
7015460	RM 9 ALCOVE	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	0.5	2014-12-15
7015455	SOUTH COM LAB	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	1.0	2014-12-15
7015444	SPEECH	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	1.4	2014-12-15
7015451	STAFF RM	2014-12-08 @ 10:00 am	2014-12-11 @ 1:00 pm	< 0.3	2014-12-15

---

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