

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Candalaria Elementary School

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

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On-site: March 14–17, 2017

Report: April 7, 2017

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#### PURPOSE

After initial testing showed radon levels above EPA's Action Level of 4.0 picoCuries/L (pCi/L) in a number of rooms at Candalaria, two radon mitigation systems were installed in August of 2010. To ensure that the systems are functioning properly and levels are well below EPA's Action Level, annual radon testing is performed.

#### CONCLUSION AND RECOMMENDATION

All classrooms had very low to non-detectable levels of radon. Two test locations were above the EPA's Action Level of 4.0 pCi/L. These locations are: "Dungeon" or storage room @ 14.2 pCi/L and the Custodian's Office @ 4.8pCi/L. One other location, the Speech Room, had a radon level of 3.0 pCi/L, which is just above the Salem Keizer School District recommended level for retesting.

It is recommended to increase the amount of outdoor air to the Speech Room and Custodial Office, then retest these rooms for radon levels.

#### 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 March 14-17, 2017, during normal and routine school ventilation system operation, as well as with the radon mitigation system in operation.

Quality assurance testing was also conducted by utilizing blank, duplicate, and spiked samples per the recommendations found in ORS 332.166-.167. The test kit labeled "Check In" room is the blanks. It tested at <0.3 pCi/L, confirming the lab results.

#### 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.

The World Health Organization has set their action level at 2.7 pCi/L. Salem Keizer School District 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. In this case, increased ventilation was insufficient. Therefore, two subslab depressurization systems were installed in in this school.

### Sample Data Attached

March 24, 2017

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

Radon test result report for:

**SK  
CANDALARIA**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
7151244	1	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151245	1	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151246	2	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151247	3	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151248	4	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151251	5	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	0.6 ± 0.2	2017-03-20
7151249	6	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	0.6 ± 0.3	2017-03-20
7151250	6A	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	1.2 ± 0.3	2017-03-20
7151255	CHECK IN	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151240	COUNSELOR	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	1.7 ± 0.3	2017-03-20
7151241	CUSTODIAN	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	4.8 ± 0.4	2017-03-20
7151243	DUNGEON	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	14.2 ± 0.6	2017-03-20
7151253	PE OFFICE	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151254	PE OFFICE	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	< 0.3	2017-03-20
7151242	PRINCIPAL	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	1.5 ± 0.3	2017-03-20
7151235	SPEECH	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	3.0 ± 0.3	2017-03-20
7151252	STAFF RM	2017-03-14 @ 8:00 am	2017-03-17 @ 10:00 am	1.0 ± 0.3	2017-03-20

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