

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Schirle School

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

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#### PURPOSE

Periodic radon monitoring was performed November 30- December 2, 2015 to measure the background levels in all classrooms, offices and staff workrooms that are in contact with the ground or below ground level. Three test locations, the Principal's Office, the Community Room and Classroom B3, were above EPA's Action Level of 4.0 picoCuries per liter (pCi/l) and eight locations were just below the Action Level but above the District's retest threshold level of 2.7 pCi/l. Follow up radon tests in these eleven locations were conducted following EPA retest protocols.

#### SAMPLE RESULTS

In the Principal's Office, the radon level measured in the first test was of 4.6 pCi/l. The follow up test in mid-December found the radon level was much lower at 1.7 pCi/l.

In the Community Room, the radon level measured in the first test was of 4.7 pCi/l. The follow up test found the radon level was much lower at 1.5 pCi/l.

In Classroom B3, the radon level measured in the first test was of 5.1 pCi/l. The follow up test found the radon level was much lower at 1.5 pCi/l.

The other rooms tested because of the initial measurements were just below the Action levels also now had significantly lower radon levels. These retested rooms were Classrooms B2, B4, E7, Conference Room, PE teacher office, Speech, Staff Computer Room, and Time Out room with levels now at 0.9 – 2.1 pCi/l.

#### TEST METHOD

Radon Air-Chek short-term test devices were used in these tests 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.

These short-term devices work by trapping room air inside the grains of charcoal with 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 December 14 through December 16, 2015 during normal and routine operation of the school.

## **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. In some cases, increasing the ventilation is not adequate. In these instances, other radon mitigation methods are employed.

## **Sample Data Attached**

<b>Kit #</b>	<b>Room Id</b>	<b>Started</b>	<b>Ended</b>	<b>pCi/L</b>	<b>Analyzed</b>
4925887	B2	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.9	2015-12-21
4925888	B3	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.5	2015-12-21
4925889	B4	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.8	2015-12-21
4925892	COMMUNITY RM	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.5	2015-12-21
4925883	CONF RM	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.5	2015-12-21
4925890	E7	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.5	2015-12-21
4925891	PE OFFICE	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	0.9	2015-12-21
4925982	PRINCIPAL	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.7	2015-12-21
4925884	SPEECH	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	2.1	2015-12-21
4925885	STAFF COMPUTER R	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	0.9	2015-12-21
4925886	TIME OUT	2015-12-14 @ 8:00 am	2015-12-16 @ 1:00 pm	1.3	2015-12-21