

# INDUSTRIAL HYGIENE REPORT

## RADON TESTING REPORT

### Houck Middle 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: January 28–31, 2014

Report: February 6, 2014

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#### **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 Tuesday, January 28 to Friday, January 31, 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:  
**SK**  
**HOUCK**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4735500	101	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735501	102	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735502	103	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735503	104	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	0.8	2014-02-04
4735504	105	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	0.7	2014-02-04
4735505	106	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735506	107	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	0.5	2014-02-04
4735507	108	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735508	109	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735509	110	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735510	111	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735511	112	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735512	113	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735513	114	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735515	115	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735516	116	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735499	117	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735517	118	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735518	119	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735525	120	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735526	121	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735529	122	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735530	123	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735531	124	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735532	125 OFFICE	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735535	126 OFFICE	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735536	127	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735528	128	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735527	129	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735538	ACTIVITIES OFF	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735493	ASSIST PRIN	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735498	BANDUCCI	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735497	BOOKKEEPER	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735534	BOY'S PE	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735490	CONF RM	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735496	CSOC	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735537	CUSTODIAN	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04

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

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Radon test result report for:  
**SK**  
**HOUCK**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4735522	DEBBIE M	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735540	GAME ROOM	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735533	GIRL'S PE	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735491	HEALTH	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735539	KITCHEN	2014-01-28 @ 9:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735523	MEDIA 1	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735519	MEDIA 3	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735520	MEDIA 4	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735521	MEDIA CONF	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735524	MEDIA STORAGE	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735488	OFF MANAGER	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735494	OFFICE STORAG	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735492	PASSROOM	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735489	PRINCIPAL	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735514	SC STORE RM	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04
4735495	SRO	2014-01-28 @ 8:00 am	2014-01-31 @ 9:00 am	< 0.3	2014-02-04

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