

# INDUSTRIAL HYGIENE REPORT

## Pringle Elementary School

Report to: Vonnie Good, Risk Management

by: Kathy Ellis Senior Industrial Hygiene Consultant and  
DeEtta Burrows, MSPH, CIH Wise Steps, Inc.

On-site: February 18-21, 2013

Report: March 3, 2013

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### **PURPOSE**

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

### **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.

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 Monday, February 18 to Thursday, February 21, 2013, 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 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 at or 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 from uranium 238, and produces radon. 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. Pressure differential between the building and the soil surrounding the foundation can draw soil gases into the building.

The US EPA has set an action level of 4 pCi/L. At or above this level of radon, the EPA recommends 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**  
**PRINGLE**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4597323	1-2 OFFICE	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.5	2013-02-26
4597350	CONF A	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.9	2013-02-26
4597351	CONF B	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.1	2013-02-26
4597322	COUNSELOR	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	2.7	2013-02-26
4597346	CUSTODIAN	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.0	2013-02-26
4597316	HEALTH OFFICE	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.9	2013-02-26
4597333	KITCHEN	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.7	2013-02-26
4597354	LRC OFFICE	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	2.1	2013-02-26
4597347	MEDIA	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.3	2013-02-26
4597348	MUSIC	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.7	2013-02-26
4597349	PE OFFICE	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.3	2013-02-26
4597352	PPC	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.9	2013-02-26
4597319	PRINCIPAL	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.5	2013-02-26
4597324	RM 1	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.1	2013-02-26
4597342	RM 10	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.2	2013-02-26
4597341	RM 11	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.2	2013-02-26
4597340	RM 12	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	2.1	2013-02-26
4597339	RM 13	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.7	2013-02-26
4597338	RM 14	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.6	2013-02-26
4597332	RM 15	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.2	2013-02-26
4597321	RM 16	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.7	2013-02-26
4597320	RM 17 OFFICE	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	2.6	2013-02-26
4597326	RM 18	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.9	2013-02-26
4597327	RM 19	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.9	2013-02-26
4597325	RM 2	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.6	2013-02-26
4597328	RM 20	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.8	2013-02-26
4597329	RM 21	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.9	2013-02-26
4597330	RM 22	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.0	2013-02-26
4597331	RM 23	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.0	2013-02-26
4597353	RM 25 LRC	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.2	2013-02-26
4597334	RM 3	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.2	2013-02-26
4597335	RM 4	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.4	2013-02-26
4597336	RM 5	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.3	2013-02-26
4597337	RM 6	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.7	2013-02-26
4597345	RM 7	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	2.0	2013-02-26
4597344	RM 8	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.5	2013-02-26
4597343	RM 9	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.2	2013-02-26

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February 27, 2013

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

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Radon test result report for:

**SK  
PRINGLE**

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Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4597317	SPEECH	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	0.7	2013-02-26
4597318	STAFF RM	2013-02-18 @ 12:00 pm	2013-02-21 @ 11:00 am	1.8	2013-02-26

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