

# INDUSTRIAL HYGIENE REPORT

## West High School

Report to: Vonnie Good, Risk Management

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On-site: January 28-31, 2013

Report: February 12, 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, January 28, 2013 to Thursday, January 31, 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 4.0 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

All test locations, except two, were below the EPA's action level of 4.0 picoCuries per liter (pCi/l).

One test location in Room B105B had a radon level of 5.8 pCi/L. Another test location, Room B117, had a radon level @4.9 pCi/L.

It is recommended that the operation of the ventilation systems for these two rooms be checked to make sure that the amount of outdoor air supplied has not been shut off. If possible increase the amount of outdoor air to these two rooms, then retest the rooms for radon levels.

### **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.

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  
WEST

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4597063	A100	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.7	2013-02-05
4597062	A100A	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597064	A100C	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597061	A101	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.5	2013-02-05
4597057	A102	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.0	2013-02-05
4597058	A102D	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	2.0	2013-02-05
4597060	A103	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.2	2013-02-05
4597065	A104	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.4	2013-02-05
4597059	A107	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597052	A113	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597056	A115	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597055	A116	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597054	A117	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.7	2013-02-05
4597053	A117A	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.7	2013-02-05
4597051	B101	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597041	B104A	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.4	2013-02-05
4597042	B104A	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.3	2013-02-05
4597043	B104B	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.5	2013-02-05
4597045	B105	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	2.3	2013-02-05
4597046	B105A	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.7	2013-02-05
4597047	B105B	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	5.8	2013-02-05
4597048	B105C	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	1.4	2013-02-05
4597049	B107	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597050	B107B	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597031	B112	2013-01-28 @ 8:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597030	B113	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	1.4	2013-02-05
4597032	B117	2013-01-28 @ 8:00 am	2013-01-31 @ 10:00 am	4.9	2013-02-05
4597033	B119	2013-01-28 @ 8:00 am	2013-01-31 @ 10:00 am	0.9	2013-02-05
4597034	B120	2013-01-28 @ 8:00 am	2013-01-31 @ 10:00 am	0.5	2013-02-05
4597035	B121	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597036	B122	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.6	2013-02-05
4597037	B123	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597040	B125	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.7	2013-02-05
4597039	B126	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597038	B127	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597044	B128	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597025	C106 H	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.7	2013-02-05

Radon test result report for:

SK

WEST

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4597020	C106E	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.7	2013-02-05
4597021	C106F	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.8	2013-02-05
4597022	C106G	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597024	C106G	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	1.0	2013-02-05
4597023	C106H	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.5	2013-02-05
4597026	C107A	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.6	2013-02-05
4597027	C107B	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.9	2013-02-05
4597028	C107C	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.7	2013-02-05
4597029	C107D	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	1.2	2013-02-05
4597019	C108	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597016	C109	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597018	C110	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.7	2013-02-05
4597014	C112A	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.8	2013-02-05
4597013	C112B	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.6	2013-02-05
4597012	C112C	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597011	C112D	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597010	C112E	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.7	2013-02-05
4597017	C118	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597015	C119	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	0.6	2013-02-05
4597008	C126	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597009	CAMPUS MONITOR	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597066	D102B	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597094	D103A	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	0.6	2013-02-05
4597095	D103A	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597069	D111	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597070	D112	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.5	2013-02-05
4597071	D113	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597072	D114	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597073	D116	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597074	D117	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597075	D118	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.6	2013-02-05
4597087	D120	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597082	D120A	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	0.8	2013-02-05
4597083	D120B	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.1	2013-02-05
4597084	D120C	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.1	2013-02-05
4597085	D120D	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597086	D120E	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05

Radon test result report for:

SK

WEST

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4597081	D122	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597079	D123	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597080	D123B	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597078	D124	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597077	D125	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	0.6	2013-02-05
4597076	D126	2013-01-28 @ 9:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597093	D128	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597092	D130	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.2	2013-02-05
4597091	D131	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.1	2013-02-05
4597090	D132	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.2	2013-02-05
4597089	D133A	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597088	D134	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	< 0.3	2013-02-05
4597096	E114	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	2.1	2013-02-05
4597098	E122	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	2.6	2013-02-05
4597100	E125	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.6	2013-02-05
4597099	E127	2013-01-28 @ 10:00 am	2013-01-31 @ 10:00 am	1.4	2013-02-05
4597006	OFFICE MANAGER	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05
4597007	PRINCIPAL	2013-01-28 @ 8:00 am	2013-01-31 @ 9:00 am	< 0.3	2013-02-05