

# INDUSTRIAL HYGIENE REPORT

## Straub Middle School

Report to: Vonnie Good, Risk Management

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On-site: March 11-14, 2013

Report: March 24, 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, March 11 to Thursday, March 14, 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

Two test locations were above the EPA's action level of 4.0 picoCuries per liter (pCi/l). Classroom 117 had a detectable level at 5.4 pCi/L, and Classroom 118 had a radon level of 4.2 pCi/L.

It is recommended that the operation of the ventilation system for these rooms be checked to make sure that the amount of outdoor air supplied has not been lowered or shut off. If possible increase the amount of outdoor air to this room. Retest these rooms.

### **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  
STRAUB**

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4601835	RM 101	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	1.0	2013-03-19
4601836	RM 102	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.8	2013-03-19
4601834	RM 103	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.6	2013-03-19
4601837	RM 104	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.8	2013-03-19
4601833	RM 105	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.9	2013-03-19
4601832	RM 107	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	1.3	2013-03-19
4601831	RM 108	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	1.7	2013-03-19
4601838	RM 111	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	1.0	2013-03-19
4601839	RM 116	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	1.3	2013-03-19
4601830	RM 117	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	5.4	2013-03-19
4601829	RM 118	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	4.2	2013-03-19
4601828	RM 120	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.7	2013-03-19
4601827	RM 122	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.6	2013-03-19
4601826	RM 125	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601824	RM 129	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601840	RM 136	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601841	RM 143	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601823	RM 151	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601822	RM 152	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	1.0	2013-03-19
4601820	RM 155	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.8	2013-03-19
4601819	RM 162	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601821	RM 169	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.8	2013-03-19
4601849	RM 222	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	0.5	2013-03-19
4601847	RM 228	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601848	RM 232	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601844	RM 237	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601843	RM 238	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601842	RM 239	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601845	RM 241	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601846	RM 246	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601850	RM 248	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19
4601825	RM124	2013-03-11 @ 1:00 pm	2013-03-14 @ 3:00 pm	< 0.3	2013-03-19