

INDUSTRIAL HYGIENE REPORT

North High School

Report to: Vonnie Good, Risk Management

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

On-site: November 6-9, 2012

Report: December 1, 2012

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 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, November 6 to Friday, November 9 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

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, 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 differentials 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 4.0 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

November 12, 2012

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
NORTH HS
400

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4470349	410	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.5	2012-11-12
4470350	411	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.1	2012-11-12
4470352	412	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.0	2012-11-12
4470353	413	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.6	2012-11-12
4470354	414	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.2	2012-11-12
4588201	415	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.5	2012-11-12
4588202	417	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.3	2012-11-12
4470351	INFANT	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	1.0	2012-11-12

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

Radon test result report for:
NORTH HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4588249	101	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588250	102	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588251	103	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.8	2012-11-12
4588252	104	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.6	2012-11-12
4588253	105	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588254	106	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.5	2012-11-12
4588255	107	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588257	108	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.6	2012-11-12
4588248	109	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588247	110	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588243	111	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588239	112	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	1.7	2012-11-12
4588238	113	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588237	114	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588236	115	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588235	116	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588234	118	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588233	120	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588230	122	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588231	122A	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588229	123	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.7	2012-11-12
4588228	124	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.6	2012-11-12
4588227	125	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588226	126	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588225	127	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588224	128	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588223	129	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.5	2012-11-12
4588222	130	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588221	131	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.7	2012-11-12
4588220	132	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.9	2012-11-12
4588219	133	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.5	2012-11-12
4588218	134	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588217	135	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.8	2012-11-12
4588216	136	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.8	2012-11-12
4588244	ASST PRINCIPAL	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588256	ATHLETIC OFFICE	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588259	BOYS LOCKER RM	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12

Radon test result report for:
NORTH HS
MAIN

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4588241	CONFERENCE RM	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	1.8	2012-11-12
4588261	CUSTODIAN OFFICE	2012-11-06 @ 5:00 pm	2012-11-09 @ 3:00 pm	0.7	2012-11-12
4588246	FOOD SERV OFFICE	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588258	GIRLS LOCKER RM	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588245	HEALTH ASST	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588242	MAPPS	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	1.1	2012-11-12
4588240	MEDIA WORK ROOM	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	1.6	2012-11-12
4588214	OFFICE	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588213	OFFICE MANAGER	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	0.6	2012-11-12
4588215	PRINCIPAL	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588262	TECH ROOM	2012-11-06 @ 5:00 pm	2012-11-09 @ 3:00 pm	1.3	2012-11-12
4588263	WEIGHT ROOM	2012-11-06 @ 5:00 pm	2012-11-09 @ 3:00 pm	1.1	2012-11-12
4588232	WOOD SHOP OFFICE	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588260	WRESTLING	2012-11-06 @ 4:00 pm	2012-11-09 @ 3:00 pm	0.9	2012-11-12

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November 12, 2012

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
NORTH HS
PORTABLES

Kit #	Room Id	Started	Ended	pCi/L	Analyzed
4588212	P1	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588203	P10	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588211	P2	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588210	P3	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588209	P4	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588207	P5	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588208	P6	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588206	P7	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588205	P8	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12
4588204	P9	2012-11-06 @ 3:00 pm	2012-11-09 @ 3:00 pm	< 0.3	2012-11-12

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