

INDUSTRIAL HYGIENE REPORT

Bush Elementary School

Report to: Vonnie Good,

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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 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 Tuesday November 13 to Friday November 16 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). One test location was slightly below the action level, Classroom 12 @ 3.0 pCi/L.

It is recommended that the operation of the ventilation system for this room 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.

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.

Radon Act 51 passed by Congress set the natural outdoor level of radon gas (0.4 pCi/L) as the target radon level for indoor radon levels. 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

November 13, 2012

**** LABORATORY ANALYSIS REPORT ****

Radon test result report for:
BUSH
MAIN

| Kit # | Room Id | Started | Ended | pCi/L | Analyzed |
|---------|------------|----------------------|----------------------|-------|------------|
| 4470332 | CAFETERIA | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.6 | 2012-11-13 |
| 4470327 | COMMUNITY | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.7 | 2012-11-13 |
| 4470334 | COMPUTER | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.1 | 2012-11-13 |
| 4470346 | COUNSELOR | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.8 | 2012-11-13 |
| 4470345 | CSOC | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.6 | 2012-11-13 |
| 4470329 | CUSTODIAN | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.5 | 2012-11-13 |
| 4470344 | HEALTH | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | < 0.3 | 2012-11-13 |
| 4470333 | LIBRARY | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.2 | 2012-11-13 |
| 4470328 | MUSIC | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.2 | 2012-11-13 |
| 4470348 | OFFICE | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.7 | 2012-11-13 |
| 4470331 | PE TEACHER | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.9 | 2012-11-13 |
| 4470347 | PRINCIPAL | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.7 | 2012-11-13 |
| 4470339 | RM 1 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.1 | 2012-11-13 |
| 4470330 | RM 12 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 3.0 | 2012-11-13 |
| 4470340 | RM 2 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.9 | 2012-11-13 |
| 4470341 | RM 3 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.0 | 2012-11-13 |
| 4470342 | RM 4 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.7 | 2012-11-13 |
| 4470343 | RM 5 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.6 | 2012-11-13 |
| 4470338 | RM 6 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.4 | 2012-11-13 |
| 4470337 | RM 7 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.0 | 2012-11-13 |
| 4470336 | RM 8 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.8 | 2012-11-13 |
| 4470335 | RM 9 | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 0.9 | 2012-11-13 |
| 4470326 | STAFF | 2012-11-06 @ 8:00 am | 2012-11-09 @ 9:00 am | 1.7 | 2012-11-13 |

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