Granite Countertops and Radon

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Recently, there have been several news stories regarding granite countertops potentially affecting radon levels in the home. They have resulted in an increased number of phone calls to the Radon Program and have caused some concern among residents that have granite countertops, floors and fireplaces.

Radiation is all around us. Naturally-occurring radiation is present in the environment, and we are all exposed to it. The three primary sources of natural radiation are: 1) terrestrial radiation from soil and soil gases; 2) cosmic radiation from the sun and outer space; and 3) and internal radiation due to naturally-occurring radiation in the body.

Most rocks have a small amount of radioactivity in them due to the presence of minerals containing the radioactive elements of uranium, thorium and potassium. Granite may contain more of these elements than other types of rocks. The Marble Institute of America technical bulletin addresses this issue: http://www.marble-institute.com/industryresources/truthaboutgraniteradonradiation.pdf

For a homeowner that wants to know what to do about testing their home because they have granite:

The New Jersey Department of Environmental Protection (DEP) recommends that all homes be tested for radon. The testing device must be placed in the lowest *livable* level of the home -- that is, the lowest level of the home that is used, or could be used, as a living space. This would include, for example, a first floor without a basement, and a finished or unfinished basement, but not a crawl space. Test kits

should not be placed in areas exposed to direct sunlight, drafts, high heat, or high humidity; or in kitchens, bathrooms, laundry rooms or closets. It is not recommended to conduct radon tests in kitchens because moisture, heat and exhaust systems can impact the testing conditions.

If a homeowner is insistent regarding testing of the kitchen area because of granite, in addition to testing the lowest livable level of the home, they can test a room adjacent to the kitchen. The test should be conducted in accordance with the routine radon testing instructions and approved methods. The device should not be placed under a bowl or in any way be confined or covered because the radon concentration would be artificially enhanced and it would not provide the true concentration in the home.

The recommendations above are based on the following US Environmental Protection Agency (EPA) Frequently Asked Questions document for **radon** which can be found below and at http://iaq.custhelp.com/cgi-bin/iaq.cfg/php/enduser/std_alp.php

What advice does the EPA have for consumers who have granite countertops?

While natural minerals such as granite may occasionally emit radon gas, the levels of radon attributable to such sources are not typically high. EPA believes the principal source of radon in homes is soil gas that is drawn indoors through a natural suction process. To reduce radon risk you should first test the air in your home to determine the radon level. There are many home radon test kits available at the retail level and on-line, starting at about $25.

If your home has a high radon level, a level of 4 picoCuries per liter (pCi/L) of air or more, there are ways to mitigate or reduce the radon level in almost any home. Contact your state radon office (www.epa.gov/iaq/whereyoulive.html) just click on your state), or a professional radon testing and mitigation firm (www.epa.gov/radon/radontest.html) for assistance. A specially-trained and qualified professional may be equipped to test for other sources (such as granite or diffusion from drinking water) when evaluating the nature and source of your home's radon problem. The key to reducing risk is to test your home for radon and then make decisions as appropriate.

Learn more, read our Citizen's Guide to Radon at www.epa.gov/radon/pubs/citguide.html

New Jersey Department of Environmental Protection - Radon Program

Are the levels of radon in granite dangerous to humans or animals?

While radon levels attributable to granite are not typically high, there are simply too many variables to generalize about the potential health risks inside a particular home that has granite countertops. It is prudent to limit your family's exposure to radon whenever possible. EPA recommends that indoor air have a radon level as far below 4 picoCuries per liter (pCi/L) of air as possible. There are easy ways to test the air in your home for radon, and high radon levels can be reduced with proven and inexpensive technology. EPA believes the most significant source of radon risk is soil gas. Regardless of source, all homes should be tested for radon.

Does the EPA believe that there's radon in granite countertops?

Granite is a natural mineral formed by earth's geology. It is mined and used to produce commercial products such as countertops. It is possible for any granite sample to contain varying concentrations of uranium that can produce radon gas. Some granite used in countertops may contribute variably to indoor radon levels. However, EPA has no reliable data to conclude that types of granite used in countertops are significantly increasing indoor radon levels.

For more information on radiation and countertops click here

Has EPA done studies on radon in granite countertops?

EPA is aware of a few studies that have conducted limited research on radon in granite countertops. EPA will continue to review this research. The U.S. Surgeon General and EPA recommend that all homes be tested for radon in indoor air. It's easy and inexpensive to test homes with do-it-yourself radon test kits that are commonly available at the retail level and on-line.

Does the EPA have plans to conduct a study on radon in granite countertops?

EPA will continue to monitor and analyze the evolving research on this issue and will update its recommendations as appropriate.

EPA also has a **radiation** Frequently Asked Questions document which can be found at
http://radiation.custhelp.com/cgi-bin/radiation.cfg/php/enduser/std_alp.php
Search for "granite" to find six questions and answers regarding granite at the above link.

In addition, the testing recommendation is based upon the DEP's Frequently Asked Questions document which provides answers to radon testing questions. Portions of the document are given below and the entire document may be found at http://www.njradon.org/download/Radon%20FAQ%202007.doc

New Jersey Department of Environmental Protection - Radon Program

What is radon and why is it a concern?

Radon is a radioactive gas that comes from the breakdown of naturally occurring uranium in soil and rock. It is invisible, odorless and tasteless, and can only be detected by specialized tests. Radon enters homes through openings that are in contact with the ground, such as cracks in the foundation, small openings around pipes, and sump pits.

Radon, like other radioactive materials, undergoes radioactive decay that forms decay products. Radon and its decay products release radioactive energy that can damage lung tissue. The more radon you are exposed to, and the longer the exposure, the greater the risk of eventually developing lung cancer. Radon is the second leading cause of lung cancer in the United States, resulting in 15,000 to 22,000 deaths per year. Radon is the leading cause of lung cancer for non-smokers.

In view of the potentially serious public health problem, the U.S. Environmental Protection Agency (EPA) and the Department of Environmental Protection (DEP) recommend that you take action to mitigate your home if your test results indicate radon levels of 4 pCi/L of radon or more. There is no safe level of radon since lung cancer can result from low exposures to radon, however, the risk decreases as the radon concentration decreases. If your test result is less than 4 pCi/L, you may want to discuss with mitigation companies whether the radon level can be brought down still further. In about half the homes that have been mitigated in New Jersey, radon levels have been brought to less than 1 pCi/L.

How do I test my home for radon?

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The New Jersey Department of Environmental Protection (DEP) recommends that all homes be tested for radon. Homeowners can test for radon themselves or hire a New Jersey certified radon measurement company to perform the testing. Some certified radon measurement companies sell test kits, and test kits are often available in hardware stores or from local health departments. A list of certified companies, including companies that can mail you a "do-it-yourself" test, is available at http://www.njradon.org or call the Radon Section at **(800) 648-0394**.

If you buy your test from a retail store, make sure that the kit is labeled with the New Jersey certification number of the company that produced the test kit (the number will begin with "MEB9" followed by 4 digits). If you hire a contractor to do the test, make sure the technician who places and picks up the test device is certified by the State, by checking their DEP certificate or calling the Radon Information Line. It is against the law to do radon testing or mitigation without certification in New Jersey.

How is a radon test conducted?

If you do the test yourself, the process is very simple. You need only follow the testing instructions and complete the form that accompanies the test device. The device should then be mailed without delay to a laboratory using a pre-addressed envelope enclosed with the kit.

The following guidelines should be used by both homeowners and measurement companies. For both long-term and short-term tests, the testing device must be placed:

- in the lowest ***livable*** level of the home -- that is, the lowest level of the home that is used, or could be used, as a living space. This would include, for example, a first

floor without a basement, and a finished or unfinished basement, but not a crawl space.

- in a location where it will not be disturbed.
- at least 20 inches from the floor, at least 4 inches away from other objects and at least 36 inches away from doors, windows or other openings to the outside. The tests only need to be placed one foot away from exterior walls that have no openings. If suspended from the ceiling, it should be in the general breathing zone.

Test kits should not be placed:

- in areas exposed to direct sunlight, drafts, high heat, or high humidity; or
- in kitchens, bathrooms, laundry rooms or closets.

In addition, attic and window fans, fireplaces and wood stoves (unless they are the primary heat source) should not be used for the duration of the test. They will affect air pressure in the house which will in turn affect radon concentrations. Air conditioning can be used if it circulates inside air rather than bringing in air from the outside.

For short-term tests, it is very important to maintain "closed house conditions," since ventilation can increase or decrease radon levels in unpredictable ways. This means all windows and doors that let in outside air, on all floors, must be kept closed except for normal entrances and exits. You need to maintain closed house conditions until the short-term test is finished. For tests that last less than four days, closed house conditions must be started at least 12 hours before you begin the test.