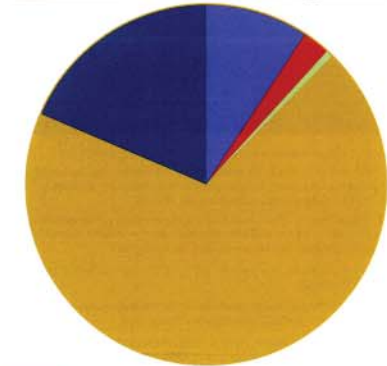




Radiation: It's All Around Us

It's in the air we breathe, in the water we drink, in the soil and rock we stand on, and in the sun's rays we like to bask in! Added to this is the radiation we get from man-made sources, such as x-rays, medical treatments, building materials, etc.

Typical Contributions to Radon Content of Indoor Air (pCi/L)



- 69.3% Soil around house
- 18.5% Well water
- 9.2% Outdoor air
- 2.5% Building materials
- .5% Public water supplies

Radiation in Granite is Not Dangerous

Numerous scientific studies conclude that there are two ways in which countertops, tiles and other finishes made of granite might emit any level of radiation. The first is by the release of tiny amounts of the radioactive gas, radon. The second is by direct radiation from the surface itself to the homeowner. In both cases, the radiation emitted is from the same process – natural radioactive decay of one element into another. Compared to other radiation sources in the home and outside, the risk to the homeowner from radioactivity or radon gas emitted from a granite countertop or tiles is practically non-existent. The U.S. EPA reports: "Based on existing studies, most types of granite used in countertops and other aspects of home construction are not typically known to be major contributors of radiation and radon in the average home."^[4]

The Florida Department of Health (DOH) goes a bit further with a recent statement: "Staff from the Florida Department of Health's Bureau of Radiation Control and from DOH's Radon Program have had the opportunity over the years to survey various granite samples for gamma emissions, including a few granite counter tops, and have yet to find granite thought to be a significant gamma radiation hazard. The term 'significant' is used because there was measurable gamma radiation from the granite as there is always around us, just not at level of concern."^[5]



About the Marble Institute of America

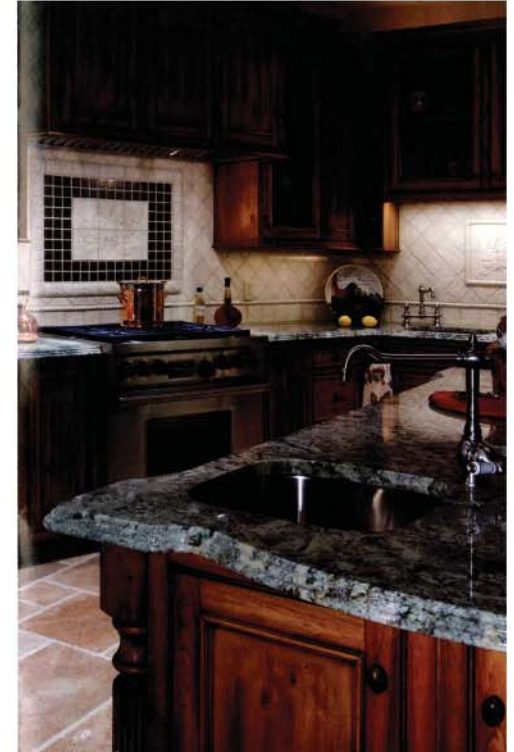
For over 60 years the Marble Institute of America (MIA) has been the world's leading information resource and advocate for the natural stone industry. MIA members include marble, granite, limestone, sandstone and other natural stone producers and quarriers, fabricators, installers, distributors and contractors around the world.



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The Truth About
 Granite
 and
 Radon/Radiation





Recent media reports have called into question the safety of granite countertops. Fueled by the manufacturers of competing synthetic products, these misleading and inaccurate reports have made granite and radon a confusing and emotional issue for consumers, many of whom are now concerned about installing granite countertops in their homes or are worried about the countertops they already have. The scope of these concerns is unfounded.

As two leading authorities on indoor environmental exposures, Dr. John McCarthy, of Environmental Health & Engineering, and Dr. John D. Spengler, of the Harvard School of Public Health, recently concluded: "A considerable amount of research has been published in peer-reviewed scientific literature and all of it comes to the same conclusion: the levels of radon coming off a granite countertop are not excessive and not showing any risk for the population in their homes."

In fact, noted authorities on granite, radon and risk recently confirmed what independent scientific studies^[1] conducted over the years have found: Granite countertops are not known to pose a health risk to consumers.

To help you better understand the **truth** about granite, radon, radioactivity and natural stone the Marble Institute of America has produced this brochure.

Some Frequently Asked Questions and the Answers

Q. What is radon?

A. It is a naturally occurring gas found throughout our environment. It is commonly found in the basements of homes built in the Midwestern and Eastern regions of the U.S. According to the EPA, the primary source of radon – by far – in any home is the soil surrounding the structure.^[2] Radon is radioactive and prolonged exposure at elevated levels in a closed environment may increase health risks. Government studies show the most effective remedy for elevated concentrations of radon in the home is to increase ventilation, usually by adding vent fans to enclosed spaces like basements. As recently stated by the American Association of Radon Scientists and Technologists (AARST) in its *Position Statement: Granite Countertops and Radon Gas*: "Soil, sand and rock underneath the home are the primary sources of indoor radon gas." The AARST states that, "while natural rocks such as granite may emit some radon gas, the subsequent levels of radon in the building that are attributable to such sources are not typically high."^[3]

Q. How dangerous is radon?

A. Radon is not like carbon monoxide, which is produced by automobiles, home furnaces and water heaters. Concentrations of carbon monoxide can kill quickly. At elevated levels, naturally occurring radon may increase health risks if people are exposed to these high levels over long periods of time. However, if a home, basement or other building is properly ventilated, the radon concentrations drop to those commonly found outdoors. Because radon is commonly emitted from the ground across much of the United States, we can never completely isolate ourselves from it. The government says such environmental exposure is safe.

Q. How much radon is being emitted by my granite countertop?

A. Several scientific studies conducted through the years have found that it is extremely unlikely your granite countertop is emitting harmful levels of radon. Indeed, Richard E. Toohey, Ph.D., CHP, president of Health Physics Society (HPS),

a scientific and professional organization whose members specialize in occupational and environmental radiation safety, recently indicated the risk, if any, is too small to be measured. As noted earlier, AARST has stated, "While natural rocks such as granite may emit some radon gas, the subsequent levels of radon in the building that are attributable to such sources are not typically high."

Q. Is my countertop safe?

A. Studies conducted by respected scientists have found that the granite most commonly used in U.S. countertops is safe for use in homes. In fact, the highest radon emissions ever reported in these studies would create concentrations that are significantly lower than EPA guidelines to take any action. The primary source of radon in any structure is most likely to be the soil beneath it. If, however, you are concerned about the radon concentration levels in your home, you should have the overall air quality tested by a reputable radon testing organization.

Q. I've seen pictures of Geiger counters clicking on a granite countertop. Doesn't this prove the countertop is dangerous?

A. No. Geiger counters do NOT measure radon gas. They only measure radiation, and are not capable of identifying the sources or types of radiation measured. Different levels of radiation are all around us every day. The leading source of radiation is the sun, which means that people in Denver, living at a higher altitude, are exposed to higher levels of radiation than people living in Des Moines. Some elements found in granite can emit radiation, though the mere detection of radiation should not be confused with levels and/or types of radiation that would be considered health risks. Health risk is not simply a function of radiation – it requires an analysis of the level of radiation, the nature of the radiation source and the exposure levels and durations. Some radioactive elements, for example, have such a short half-life that they pose no health risk to anyone standing literally inches away. Common sources of radiation in homes include such things as concrete blocks, smoke detectors, television sets, Brazil nuts and even bananas and potatoes.

Q. What about food that is prepared directly on the granite surface? Is there a chance that it could absorb radiation, which later would be ingested by those eating the food?

A. The only way that radioactive elements can get into a meal is if they were dissolved in water and absorbed into the food. However, granite is one of the most insoluble materials known to man and the amount that could be dissolved is miniscule in comparison to the radioactive elements commonly found in the food (in meat or from uptake by soil or airborne particles during growth). Radioactive energy given off at the granite surface will enter food that is directly in contact with the surface but, like all energetic rays, it changes into heat and/or non-radioactive particles. These processes happen quickly so the radiation does not remain in the food.

If you have further questions about radon and granite, contact the Marble Institute of America by sending an email to radoninfo@marble-institute.com, calling 440-250-9222, or visiting www.marble-institute.com.



[1] Independent research studies include those cited above, as well as:
 • Al-Jarallah MI, et al. 2005. Correlation between radon exhalation and radium content in granite samples used as construction materials in Saudi Arabia. *Radiation Measurements*, 40, 625-629.
 • NCRP Report No. 95. 1987. Radiation exposure of the U.S. population from consumer products and miscellaneous sources. National Council on Radiation Protection and Measurements. Bethesda, MD.
 [2] US Environmental Protection Agency. 2007. "A Citizen's Guide to Radon" US EPA 402-K-07-009.
 [3] American Association of Radon Scientists & Technologists, August 2008, "Position Statement: Granite Countertops and Radon Gas"
 [4] U.S. Environmental Protection Agency. 2008. *Are Granite Countertops Radioactive?* http://radiation.custhelp.com/cgi-bin/radiation.cgi/php/enduser/std_adp.php?p_faqid=5315&rp_created=1217344512&rp_sid=nr8t6th&rp_accessibility=0&rp_redirect=&rp_lva=5309&rp_sp=cF9zcmNoPSZwX3NvcnRfYnk9JnBlZ3JpZjZlNvcnQ9JnBlcm93X2NudD0zLDMmcF9wcm9kcz0xNjksMTg2JnBlYjY2F0cz0mcF9wdj0yLjE4NlZwX2N2PSZwX3NlYXJjaF90eXBpWFuc3dlenMuc2VhcmNoX235JnBlcGFnZT0x&rp_li=&rp_topview=1
 [5] Florida Department of Health. 2008. *Radon – Radiation and Granite Countertops*. <http://www.doh.state.fl.us/Environment/community/radon/granite.htm>