

Probing Question: Could your kitchen counters be radioactive?

October 2 2008, By Sue Marquette Poremba



Rock of Ages granite quarry, Barre, Vt. (Barbara Morgan)

Verde Butterfly. Black Galaxy. Kashmir Gold. If you've remodeled your kitchen in the last decade, chances are you encountered one of the 1,600 varieties of granite imported into the United States from 64 different countries. According to recent market research, demand for natural stone countertops has increased 5 percent annually between 2001 and 2006, with granite being the most popular option. And why not? Granite is not only durable, resistant to mold and mildew, and easy to clean, but because no two pieces of granite are alike, your counter will have its own unique look.

However, over this past summer, several national news stories questioned the presence of radiation and radon emissions from granite. Could the granite counters in your kitchen be radioactive?

Yes, it is possible, though studies to date suggest the risk is relatively low, said Stephen Poterala.

"Granite, as a rock, is prone to having more radioactive metals in it due to the method by which it forms," explained Poterala, a materials science graduate student. "Typically, the uranium and thorium that produce radioactive minerals will crystallize into granite because they don't crystallize well into other rocks."

As a natural source of radiation, granite contains 10 to 20 parts per million of uranium (as opposed to something like limestone, which contains 1 to 5 parts per million of uranium). So yes, there is a good chance your kitchen countertop will be at least minimally radioactive.

But that's not necessarily a cause for alarm, noted Poterala. Background radiation from many sources in the natural environment is part of our everyday lives. Naturally occurring radiation in the air and soil, from cosmic rays and even from inside our own bodies (from the food we eat) makes up an estimated 80 percent of our total radiation exposure.

In the case of granite countertops, he added, radiation is not the direct health concern; it's radon. "There's a potential that the rock might be releasing radon into the household," he said. Radon is an odorless and colorless gas that is emitted during the natural decay of uranium and, according to the Environmental Protection Agency (EPA), is the second leading cause of lung cancer in the United States, responsible for approximately 20,000 lung cancer deaths annually.

Radiation is measured in units called millirems (mrems), with the average annual dose per person estimated at 360 mrems or 0.04 mrem per hour. According to tests performed on natural stone countertops by W.J. Llope, associate professor of physics at Rice University's Bonner Nuclear Laboratory, most natural stone countertops emitted radiation "at

0.1 to 0.3 mrem per hour," and were "not a significant risk." However, "a handful of samples" emitted 3 to 4 mrem per hour, a rate "the EPA would consider dangerous assuming long-term exposure and would recommend remediation."

The best way to determine that granite is safe to use for countertops, Poterala said, is to scan it before installation in your kitchen using equipment like a Geiger counter or a gamma-ray spectrometer, an instrument for measuring the distribution of intensity of gamma radiation. Unfortunately, in the United States, most granite suppliers don't have the means or facilities for testing granite for radioactivity, and the EPA doesn't regulate granite for radon. At this moment, it's up to the consumer to arrange for their granite to be tested.

If your countertops are already installed, Poterala noted, there are home kits on the market that test for radon. Because radon is a by-product of radioactive materials decaying, "if the radon findings are negative, you can assume you don't have a radiation problem," Llope has said, since radon is a byproduct of radioactive materials decaying. If the results come back positive, you could opt to have the house tested professionally. The American Association of Radon Scientists and Technologists lists the names of qualified professionals who conduct radon and radiation testing on its Web site, www.aarst.org. Added Poterala, "If unsafe levels of radon are found in a room of your home, that's when action should be taken."

Even so, that doesn't mean ripping out those expensive counters. "Usually, to lower radon levels, you need to increase ventilation in the area," Poterala said. That can usually help clear out any radon that has accumulated in the area.

The most important thing, he added, is to not automatically assume granite countertops are unsafe because of a few stories in the media.

"This is not a situation where people should have a knee-jerk reaction and remove their countertops before they understand what's going on," he said. "Get test results to determine if there really is a hazard."

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