HEALTH PHYSICS SOCIETY

"Specialists in Radiation Safety"

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Letters to the Editor
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Radioactive Ghosts?

In a recent New York Times article ("What's Lurking in Your Countertop?" Home Section, July 24, 2008), it was reported that a radon measurement contractor measured a radon concentration in one house and reported it to be 100 pCi/L. He attributed this to the granite countertop.

I am not a person associated with the countertop industry at all so have no preconceived notions in that department, but I am a radiation specialist with over 35 years of experience, including measurements of indoor radon levels. Ask me or any other radiation specialist and we would say that there is something very odd about that 100 pCi/L result.

It isn't a surprise that some granite emits radiation. So do other items in our households. The amount of radiation emitted from granite can vary depending on the amount of natural uranium and/or thorium concentration.

What is surprising is this 100 pCi/L result and what was missing from the article is that the measurement process was not valid for the determination of ambient radon air concentration in the kitchen. Obviously, one measurement in one house does not mean everyone should start removing their granite countertops.

Granite countertop external dose rate measurements that have been reported are about one and a half times greater than background dose rate measurements (or about 20 microroentgen/h). When one goes through the calculations, determining the amount of uranium in the countertop from this measurement and the amount of radon emanating from this), we find an average kitchen ambient radon concentration of 0.13 pCi/L, less than one-thirtieth of the EPA recommended limit and one-eighth of the natural ambient radon concentration in households across the United States.

This calculation is very conservative in that it assumes that there is no mixing of air between the kitchen and other rooms in the home. If air in the kitchen of the house flows easily into other rooms, then the radon concentration would likely be lower than the above calculation indicates. It should also be noted that some samples of granite from Brazil and Africa may contain uranium

concentrations ten times higher than assumed here; even so, this worst case could not create any additional significant risk from radon.

No action needs to be taken to remove granite countertops in existing homes. For those who are concerned, valid radon concentration monitoring should be conducted in the living areas of the home. Radon measurement devices should be placed where they measure the ambient air of the room. If the granite countertop is believed to be a cause for concern, some action might be considered. However, it would be more effective in terms of risk reduction to take steps to mitigate radon concentrations throughout the home. The cost of such mitigation would likely be less than 10% of the cost of replacing kitchen countertops and would very likely result in a much greater overall risk reduction.

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