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## **Radon & Home Health**

*By: Patrick Breen*

Continuing from last month's article regarding health effects of a well sealed home I will devote this month's space entirely to radon. It is a topic unto itself. There exists some confusion, and some controversy, about home health and radon. Confusion lies mostly in understanding what it is. Controversy circles around what levels are acceptable inside your home.

To begin with, radon and exposure to radiation, is naturally occurring – everywhere. We as a species have evolved with some level of constant exposure. The reason it is of some concern regarding our home is that this structure can siphon and encapsulate much higher levels than what's found naturally occurring in the outdoors; and from an evolutionary standpoint we now spend an exorbitant amount of our time indoors.

Radon is emitted from the earth and is associated with granite, dark shale, dirty quartz, phosphate and some beach sand. The Black Hills contains quite a bit of granite, shale and quartz. Radon is a gas that is odorless, tasteless and is not visible by the naked eye. More specifically it is the isotopes from this gas that causes concern. One isotope in particular (RN-222) because it has a half life of 3.8 days. This progeny, or “daughters” as they are called are what we typically refer to as radon.

These progeny attach themselves to air-borne particles of which we then breathe into our lungs. It is on these particles that the radon isotopes deteriorate emitting alpha particles. It is this increased radiation exposure directly on lung tissue that can result in cancer. Estimates of 15-21 thousand lung cancer deaths are attributed to radon annually.

Isotopes are measured in Picocuries per liter (pCi/L). The naturally occurring average level of pCi/L outdoors is .4, while the average indoor level is 1.3 pCi/L. Recommended action level for radon mitigation in your home is 4 pCi/L, or approximately 10 times what we are exposed to in nature.

Homes contain higher levels for several reasons, the primary one being the fact that most well built homes will have a negative pressure in comparison to the outdoors. This in turn draws, or sucks, radon into the structure. Some other factors are a tight seal, general lack of ventilation, atmospheric pressure and permafrost that caps the soil.

It is almost impossible to have no radon in a house, but it is possible to lower the level within recommended guidelines in every home. But, here lies the controversy: what exactly is the acceptable level and what is actually safe. Studies differ slightly in their findings.

The facts are: the nature of a well built home will raise radon levels, thousands of deaths a year are attributed to radon, smoking is a multiplier of the effects, and you as a home owner have the power to do something about it. Start by picking up a testing canister to determine your radon level as well as visit a couple web sites for more in-depth information. Here are two that I recommend: [www.physics.isu.edu/radinf/radon.htm#intro](http://www.physics.isu.edu/radinf/radon.htm#intro), [www.epa.gov/radon/index.html](http://www.epa.gov/radon/index.html)