

Periodic Graphics

A collaboration between C&EN and Andy Brunning, author of the popular graphics blog *Compound Interest*

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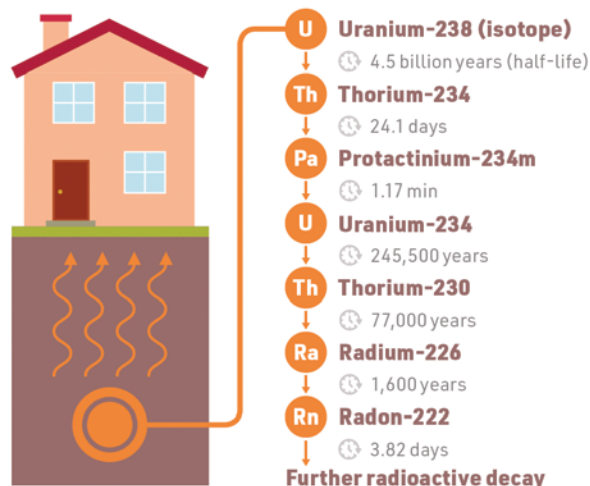
To see more of Brunning's work, go to compoundchem.com. To see all of C&EN's Periodic Graphics, visit cenm.ag/periodicgraphics.

WHAT ARE THE RISKS OF RADON?

Naturally occurring radon accounts for most of the background radiation we're exposed to. And elevated radon levels in buildings pose a risk to our health. Here we look at where radon comes from and how it can affect us.

WHERE DOES RADON COME FROM?

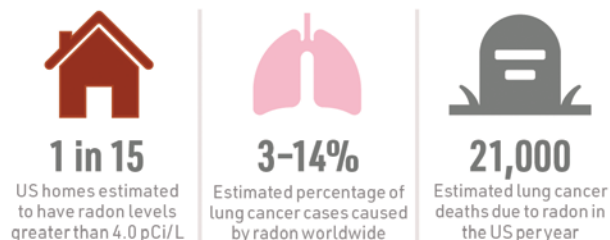
Uranium is found in varying levels in the ground. Uranium isotopes undergo radioactive decay into other elements, including radium, which decays to produce radon. Radon itself decays into other radioactive elements.



Radon is a gas that emanates from the ground, particularly in areas with lots of granite or shale in the soil. Radon accumulates in confined parts of houses, particularly in basements. Radon levels are measured in picocuries per liter of air (pCi/L).



HOW DOES RADON AFFECT OUR HEALTH?



Radon is a major cause of lung cancer. People who smoke are 25 times as likely as people who don't smoke to develop lung cancer from radon.

HOW CAN RADON BE DETECTED?

α Track detectors

α Particles generated by radon damage plastic material, making microscopic tracks that can be counted in a lab to determine radon concentration.



Activated carbon adsorption detector

Activated carbon in the detector adsorbs radon. Radon concentration is estimated by measuring the radiation emitted from the sealed detector.



Electret ion chambers

Radon radiation ionizes air molecules. A positively charged Teflon disk attracts negative ions, reducing the disk's charge proportional to radon concentration.

Continuous radon monitors

These detectors require electric power and continuously measure and record the levels of radon and its decay products.