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fast facts

advancing safety, health, and workplace rights in the legislative branch

Indoor Air Quality - Radon

September 2008

Radon, a decay product of uranium, is a naturally occurring gas that seeps out of rock and soil. In areas where it is present, radon gas will seep into buildings, exposing occupants and visitors and can pose significant health issues. Approximately 20,000 people die from lung cancer as a result of residential and occupational exposure to radon gas each year.

Uranium, which is naturally radioactive, is found in rock in various locations around the world. Whether or not an area of the country has the potential to have measurable levels of radon is a function of local geology. The United States Environmental Protection Agency (EPA) periodically publishes updated maps of the location of uranium-bearing rocks and sediments and the likelihood of finding measurable levels of radon inside buildings built over these formations. This website (<http://www.epa.gov/iaq/wheretheyoulive.html>) can provide you with the estimated

indoor levels of radon by state and country.

There are several common units of measurement for the amount of radioactivity in a substance. The terms “REM” or “Sieverts” are often used. But in the case of radon, professionals will use picocuries per liter of air (pCi/L) as the unit of measurement when talking about the concentration of radon gas in air or water.

When radon decays, it emits an alpha particle which travels less than 10 centimeters (½ inch) in air and about 60 micrometers in tissue. However, as it travels, it ionizes many other molecules until it loses its energy. Fortunately, alpha particles can easily be blocked by the layer of dead skin that covers our bodies. However, if radon gas gets into the body and decays, live cells have fewer defenses and can be killed or suffer cellular changes that could lead to cancer. People can be exposed to radon gas by inhaling it either from the air or as it is released from running water, perhaps from a bathroom shower or kitchen faucet.

Several agencies have occupational and public health standards

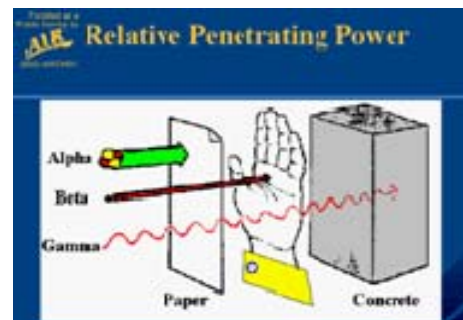


Figure 2: Alpha particles have limited penetration.

for exposure to radon gas. The Occupational Safety and Health Administration (OSHA) has a workplace exposure limit of 100 pCi/L for 40-hours over 7 consecutive work days (29 CFR 1910.1096(c) (1)). The EPA has set a standard for radon gas in the air in homes at 4 pCi/L and in water at 300 pCi/L.

In the workplace, industrial hygienists might use an Alpha Track to conduct short- and long-term analyses of radon gas levels. In the home, similar devices might be employed by investigators. Homeowners can purchase commercially-available test canisters. These are placed in various areas of the building or home, usually one on each level. After the conclusion of the sampling period, the canisters are sent to a laboratory for analysis. A report comes back within a week or two. If radon levels exceed EPA guidelines, remedial actions such as increasing ventilation, sealing cracks and seams in foundations and floor slabs, and sub-slab ventilation systems are sometimes used.

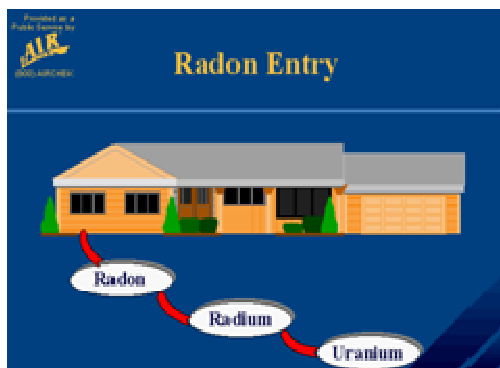


Figure 1: Decay products and vapor pathways of radon into homes and buildings.



Figure 3: Commercially available home radon test kits.

The Office of Compliance has tested underground facilities in the Legislative Branch Campus and has found radon levels well below both the EPA guidelines and the OSHA exposure standards. We join with the EPA and the Surgeon General of the United States in strongly suggesting that each employee have his or her home tested.

For further information on radon and how you can protect yourself and your family, please visit this website: <http://www.epa.gov/radon/>.

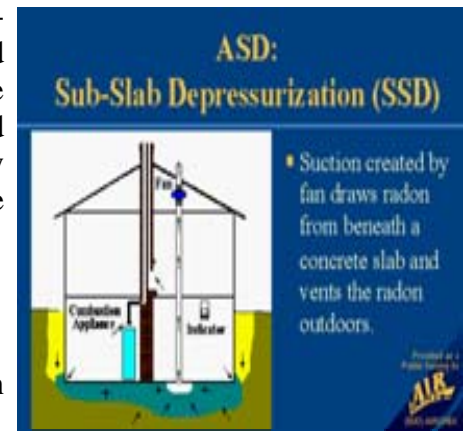


Figure 4: Radon mitigation.

fast stats

- Radon is a naturally occurring radioactive gas that you cannot see, smell, or taste.
- Radon is the leading cause of lung cancer for non-smokers and claims 20,000 lives annually.
- The U.S. Surgeon General and the EPA recommend that all homes be tested for radon.
- You can purchase radon test kits and test your home yourself. To find a qualified tester or mitigation contractor, contact your state radon office.
- The OOC has tested underground facilities in the Legislative Branch Campus and has found radon levels well below both the EPA guidelines and the OSHA exposure standards.



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