

# PROTECT YOUR FAMILY FROM RADON



There are so many things to consider when having a new home built – so many choices to make. How many bedrooms should you have? Is the kitchen large enough? Do you need a basement?

You may even be concerned about environmental issues, such as the fumes from new building materials and furnishings. But are you concerned about radon? You should be.

## WHAT IS RADON?

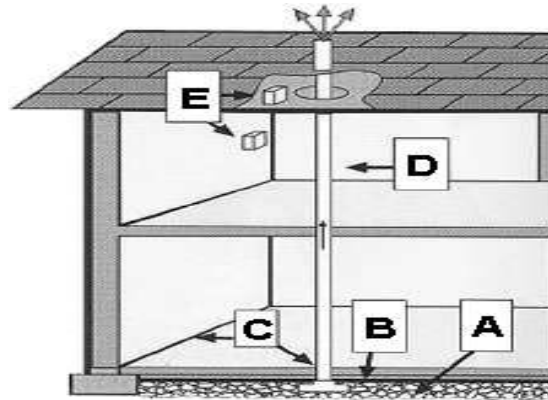
Radon causes an estimated 21,000 lung cancer deaths each year. Exposure to radon gas is the second-leading cause of lung cancer (after smoking) in the United States. It is the earth's only naturally-produced radioactive gas and comes from the breakdown of uranium in soil, rock and water. You cannot see or smell radon, but it can become a health hazard when it accumulates indoors. It can enter your home through cracks and openings in the foundation floor and walls. When radon decays and is inhaled into the lungs, it releases energy that can damage the DNA in sensitive lung tissue and cause cancer.

## RADON ENTRY

Radon can enter your new house through cracks or openings in the foundation. The differences in air pressure between the inside of a building and the soil around it also play an important role in radon entry. If the air pressure of a house is greater than the soil beneath it, radon will remain outside. However, if the air pressure of a house is lower than the surrounding soil (which is usually the case), the house will act as a vacuum, sucking radon gas inside.

## TALK TO YOUR BUILDER

You and your builder can design your new house to be radon resistant. For \$350 to \$500, on average, your builder can take the following five simple steps to deter radon from entering your home.



- Aggregate beneath the slab or flooring system
- Lay polyethylene sheeting on top of the gravel layer
- Seal and caulk the foundation thoroughly.
- Include a gas-tight venting pipe from the gravel layer through the building to the roof.
- Rough-in an electrical junction box for the future installation of a fan, if needed.

These features create a physical barrier to radon entry. The vent pipe redirects the flow of air under the foundation, preventing radon from seeping into the house.

## DID YOU KNOW?

High radon levels have been found in every county in Tennessee.

Levels can vary widely, even from home to home in the same neighborhood.

Radon resistant construction techniques provide an average of \$65 per year in energy savings for the homeowner.

## **RADON IN TENNESSEE**

Today, it is known that portions of Tennessee have an even higher incidence rate for elevated radon levels than originally thought. Some of these areas of higher radon concentrations include Nashville-Davidson County, Williamson and Rutherford Counties, The Central Middle Tennessee Area, Knoxville-Knox County and the Tri-Cities area of East Tennessee as well as karst (a land area that includes sinkholes, springs, sinking streams, and caves) areas scattered throughout the state. In many of these areas, the percent of single-family homes with elevated levels of radon range from thirty to fifty percent. This compares to 6 percent of single-family homes on a national basis. Radon gas is found in even more West Tennessee homes than originally projected.

### **TESTING: THE FINAL WORD**

The only way to know if your new home has a radon problem is to test. The EPA recommends that average annual indoor radon levels do not exceed 4 pCi/L. If your home is built with a passive radon system, you should test it immediately after moving in to make sure that radon levels are below the EPA guideline. Remember: If your radon level is 4 pCi/L or above, a fan can be installed easily to lower radon levels well below this guideline.

Even if you must install a fan, adding a radon control system to a house under


construction is much less expensive than installing one after the house is built. The average cost for a radon control system in an existing house is between \$800 to \$2,500. It is also more aesthetically attractive to install these components during construction.

### **RESOURCES**

Technical documents detailing radon resistant construction techniques are available from EPA website at [www.epa.gov/iaq/radon/construc.html](http://www.epa.gov/iaq/radon/construc.html).

Tennessee Radon Program  
401 Church St., 8<sup>th</sup> Floor Tower  
Nashville, Tennessee 37243  
Radon Hot Line 1-800-232-1139  
Fax Number 615-532-0199  
Email [TDEC.Radon@tn.gov](mailto:TDEC.Radon@tn.gov)  
[www.tn.gov/environment/ea/radon](http://www.tn.gov/environment/ea/radon)

The Tennessee Department of Environment and Conservation is committed to principles of equal opportunity, equal access and affirmative action. Contact the EEO/AA Coordinator at 1-888-867-7455 or the ADA Coordinator at 1-866-253-5827 for further information. Hearing impaired callers may use the Tennessee Relay Service (1-800-848-0298).

 and Tennessee Department of Environment and Conservation, Authorization No. 327200, 20,000 copies. This public document was promulgated at a cost of \$0.08 per copy. October 2008.

## **Building a New Home**

# **Have You Considered Radon?**



**Radon Hot Line  
1-800-232-1139**