

Building A New Home?

What You Should Know About Radon

Radon is a radioactive gas that comes from the soil. Exposure to radon gas is the second-leading cause of lung cancer (after smoking) in the United States. About 14,000 people die each year from radon-related lung cancer.

Radon is produced from the natural breakdown of the uranium found in most rocks and soils. As it further breaks down, radon emits atomic particles. These particles are in the air we breathe. Once inhaled, they can be deposited in our lungs. The energy associated with these particles can alter cell DNA, thus increasing the risk of lung cancer.

Radon usually does not present a health risk outdoors because it is diluted in the open air. Radon can, however, build up to dangerous levels inside a house.

RADON FACTS

- Radon cannot be detected by sight, smell, or taste.
- High levels of radon have been found in every State.
- 1 out of every 15 homes is estimated to have high radon levels.
- Levels can vary widely, even from home to home in the same neighborhood.
- Radon is the second-leading cause of lung cancer.

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 five simple steps inside to deter radon from entering your home.

These construction techniques will be familiar to your builder. There is no need to hire a special contractor or architect. Many builders already incorporate some of these steps in the construction of their houses to control moisture or increase energy efficiency.

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 4.0 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 4.0 pCi/L or above, a fan can be installed easily to lower radon levels well below this guideline.

Where To Find Free Information

- National Service Center for Environmental Publications (NSCEP)

Online: <http://www.epa.gov/ncepihom/>

Call 1-800-490-9198 / (513) 489-8695 (fax)

Or write:

U.S. Environmental Protection Agency
National Center for Environmental Publications (NSCEP)
P.O. Box 42419
Cincinnati, OH 45242

- EPA's Radon Hotline: 1-800-55-RADON (1-800-557-2366)

Also Available

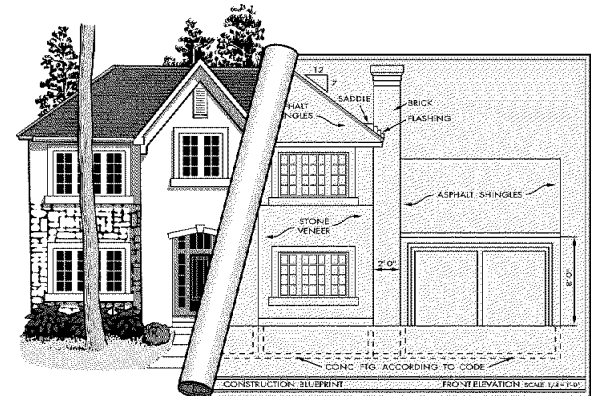
- The Council of American Building Officials One- and Two-Family Dwelling Code Appendix F also details radon-resistant techniques. Call (708) 799-2300.

To gain more information about building a radon-resistant house or testing an existing home, please contact the Radon Office in your State.



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Radon-Resistant Construction in New Homes



Prevention:
It's a good idea!



Why Should You Build Homes with Radon-Resistant Techniques?

They Make Homes Safer from Radon!

These construction techniques help block radon from entering the home. The occupants will benefit from lower radon levels in their new home.

They Are Easy to Upgrade When There is a Need to Increase the Radon Reduction

If high radon levels are found, the techniques allow for easy and inexpensive installation of a fan for increased radon reduction in the home. Every new home should be tested for radon by the homeowner after occupancy.

They are Cost-Effective for Home Buyers

It is more cost-effective to include radon-resistant techniques while building a home, rather than installing a radon reduction system in an existing home.

As an Example:

Materials and Labor Costs

Radon-Resistant Techniques

\$350 - \$500

vs.

Retrofitting an Existing Home

\$800 - \$2,500

(a 128% to 400% saving!)

Some construction companies successfully use this as a marketing advantage.

It Improves the Home's Energy-Efficiency

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

What are Radon-resistant construction techniques?

The techniques may vary for different foundations and site requirements, but the basic elements are:

A. Gas Permeable Layer

This layer is placed beneath the slab or flooring system to allow the soil gas to move freely underneath the house. In many cases, the material used is a 4-inch layer of clean gravel.

B. Plastic Sheetting

Plastic sheeting is placed on top of the gas permeable layer and under the slab to help prevent the soil gas from entering the home. In crawlspaces, the sheeting is placed over the crawlspace floor.

C. Sealing and Caulking

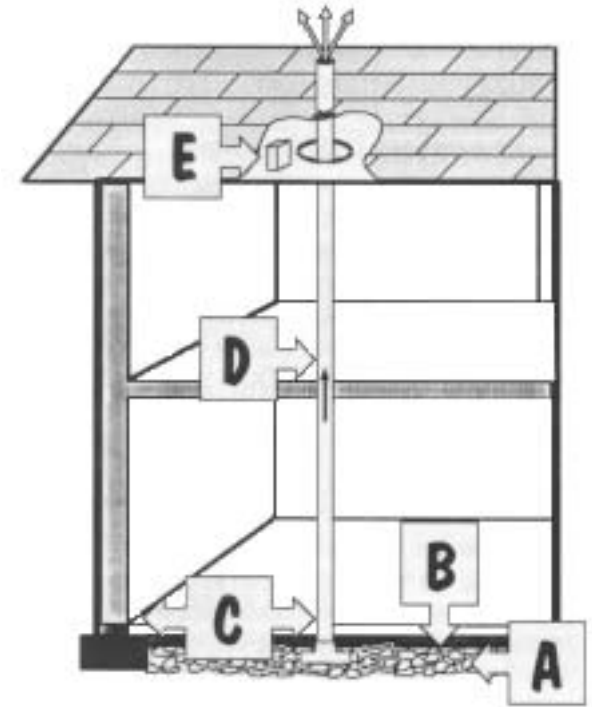
All openings in the concrete foundation floor are sealed to reduce soil gas entry into the home.

D. Vent Pipe

A 3- or 4-inch gas-tight or PVC pipe (commonly used for plumbing) runs from the gas permeable layer through the house to the roof to safely vent radon and other soil gases above the house.

E. Junction Box

An electrical junction box is installed in case an electric venting fan is needed later.



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.

For Architectural Drawings and Technical Information

Detailed model building standards, architectural drawings of radon systems, and fact sheets on alternative radon installations are available from EPA at no charge by phoning 1-800-55-RADON (1-800-557-2366).

For More Information

Many publications and resources are available to you for free through the EPA on their website. Here are just a few suggestions:

- [Home Buyers and Sellers Guide to Radon](#)
- [Consumer's Guide to Radon Reduction](#)
- [EPA's Map of Radon Zones](#)

- [Model Standards and Techniques for Control of Radon in New Residential Buildings](#), developed by the U.S. Environmental Protection Agency and the building industry with details on how to install radon-resistant techniques in your new home.

- [Architectural Drawings of Radon-Resistant Construction Techniques](#)

A growing number of municipalities located in areas known to have high radon potential now require or recommend that passive radon systems be installed in all new houses. Contact your [State Radon Office](#) to determine if you are building your new home in such an area.