



Kansas Radon Program

Engineering Extension
133 Ward Hall

Kansas State University
Manhattan, KS 66506
(800) 693-5343

www.kansasradonprogram.org



***Techniques have
been developed to
reduce radon levels
to less than 4 pCi/l.***

Radon Levels Can Be Reduced

Mitigating your home

Radon is a naturally occurring radioactive gas produced from the decay of uranium that is found in nearly all soils. Outdoors, radon is diluted to low concentrations and poses no problem. However, once inside an enclosed space, radon can accumulate to significant levels.

The amount radon builds up indoors depends on type of construction, effects of air handling equipment, and concentration of radon in underlying soil.

Radon can be a problem in old homes, new homes, drafty homes, insulated homes, homes with basements, homes without basements – homes of all types.

Soil composition under and around a house affects indoor radon levels because it affects the ease with which radon migrates toward a house.

Normal air pressure differences between the house and the soil can create a slight vacuum in the home that can draw radon gas from the soil into the building.

Radon gas can enter a home from the soil through dirt floors, cracks in concrete floors and walls, floor drains, sumps, joints, and tiny cracks or pores in hollow-block walls.

Radon levels are generally highest in basements and ground floor rooms in contact with the soil. Factors such as design, construction, and ventilation of a home affect radon's entry routes and forces, which can draw radon indoors.

Because no level of radon is considered absolutely safe, radon levels in a home should be reduced as much as reasonably possible. Action should be taken to reduce radon levels in a home if the average annual level is higher than 4 picocuries per liter (pCi/l).

In most cases, you can reduce radon levels to 2 pCi/l or lower.

You reduce radon levels in homes by preventing radon entry, increasing ventilation, and removing radon and its decay products from the air.

Preventing radon entry is the preferred approach. One of the most effective techniques is ventilation of the soil under the home so radon is sucked away before it can enter. This method is called soil depressurization.

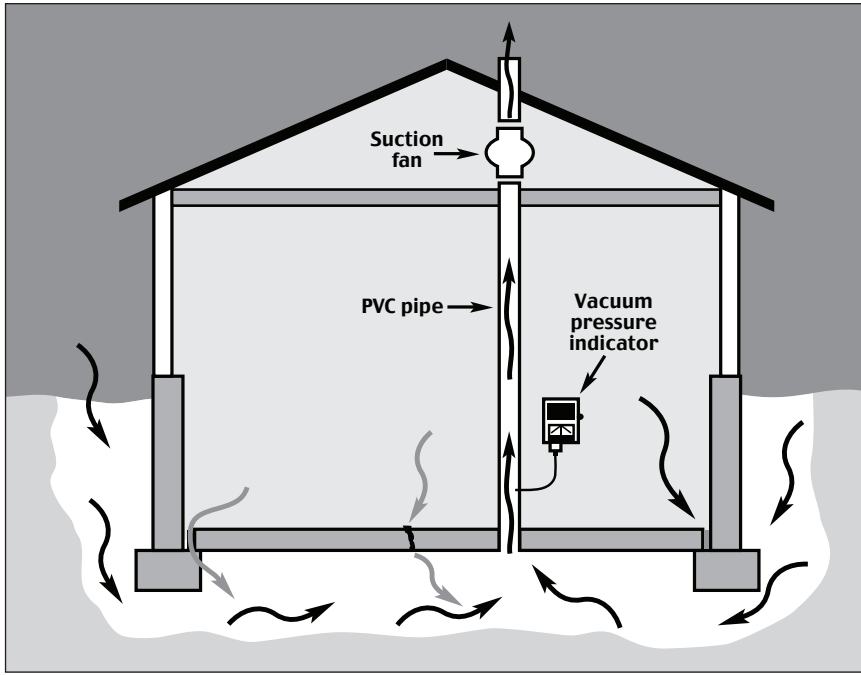
A system to accomplish this can be installed in an existing home, or more economically installed during the construction of a new home. It is the most common and usually the most reliable radon-reduction method. Suction can be applied to sumps, drain tiles, block walls, and under membranes in crawl spaces. A fan draws the radon through sealed plastic pipes, releasing it to the outdoor air above the roofline.

Other methods of reducing radon levels include sealing potential entry points, increasing inside air pressure to slow radon entry, or installing a heat-recovery ventilator to permanently manage home ventilation.

When radon testing indicates elevated levels, a trained contractor is the best choice to correct the problem.

In most cases, homes can be fixed for \$800 to \$2,000. There may be trained experts in your area who can test for you. Make certain you hire a firm or individual that is a radon professional measurement specialist listed in a National Radon Measurement Proficiency program, such as National Environmental Health Association (NEHA) (www.neha.org) or National Radon Safety Board

Radon Levels Can Be Reduced



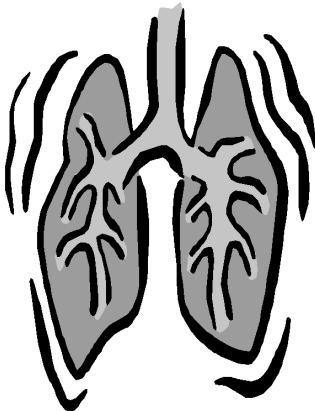
The following are some essential concerns:

- Will the system have a warning device to indicate when the system is not operating properly?
- Who will be responsible for a post-installation test to determine the performance of the system?
- Is there a guarantee to reduce radon levels to below EPA's guideline of 4 pCi/l or lower?
- Will the system be labeled and an owner's manual or instructions be provided?
- A two- to seven-day test to confirm lowered radon levels should be conducted soon after work has been completed.

Remember, even if high radon levels were to be found, tried and proven techniques can be adopted to maintain safe conditions for your family

Visit the Kansas Radon Program on the Internet at <http://www.engext.ksu.edu/radon>.

“Radon is the second leading cause of lung cancer after tobacco smoke.”



(NRSB) (www.nrsb.org). Lists of these firms and suppliers of test kits are available from the above listed Web sites or from the Kansas Radon Program Coordinator at 1-800-693-5343. Names of these contractors appear in a national listing, though large rural areas of the state are not well served.

Some do-it-yourselfers may be able to fix their own homes, but it is not a simple task. If you plan to do any of the work yourself, you should call the Kansas Radon Program to obtain EPA's technical guidance documents and other information, which may enable you to act effectively.

Radon contractors should be compared, just like other home repair specialists. A thorough inspection, written proposal, and references from the contractor are essential for you to make a good judgment.



Notice of nondiscrimination

Kansas State University is committed to nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities and employment (including employment of disabled veterans and veterans of the Vietnam Era), as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries concerning Title VI of the Civil Rights Act of 1964, Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, the Age Discrimination Act of 1975, and the Americans With Disabilities Act of 1990, has been delegated to Clyde Howard, Director of Affirmative Action, Kansas State University, 214 Anderson Hall, Manhattan, KS 66506-0124, (Phone) 785-532-6220; (TTY) 785-532-4807.