

# Radon

## What is Radon & Why is it a concern?

Radon is a radioactive gas that comes from the breakdown of naturally occurring uranium in soil and rock. It is invisible, odorless and tasteless, and can only be detected by specialized tests. Radon enters homes through openings that are in contact with the ground, such as cracks in the foundation, small openings around pipes, and sump pits.

Radon, like other radioactive materials, undergoes radioactive decay that forms decay products. Radon and its decay products release radioactive energy that can damage lung tissue in a way that causes the beginning of lung cancer.

The more radon you are exposed to, and the longer the exposure, the greater the risk of eventually developing lung cancer. Radon is the second leading cause of lung cancer in the United States, resulting in 15,000 to 22,000 deaths per year.

Testing your home for radon is easy and homes with high levels of radon can be fixed (mitigated). The New Jersey Department of Environmental Protection (DEP) recommends that all homes be tested for radon.

## Interpreting your test results:

The test report will usually give your radon reading in picoCuries per liter (pCi/L). PicoCuries per liter is a measure of how much radiation is in a liter of air, which is about the size of a quart. Sometimes results will be given in Working Levels (WL). You can calculate the pCi/L level by multiplying the WL reading by 200.

The DEP and the Environmental Protection Agency (EPA) both recommend that you take action to mitigate your home if your test results indicate radon levels of 4.0 pCi/L of radon or more. If you used two or more short-term tests at the same location, the results should be averaged.

There is no truly "safe" level of radon since lung cancer can result from very low exposures to radon – however, the risk decreases as the radon concentration decreases. If your test result is less than 4.0 pCi/L, you may want to discuss with mitigation companies whether the radon level can be brought down still further. In about half of the homes that have been mitigated in New Jersey, radon levels have been brought to less than 1 pCi/L.

### **Radon Risk for Smokers and Nonsmokers**

**(Source: National Academy of Sciences, Biological Effects of Ionizing Radiation, Sixth Report, 1998)**

Radon Level (in pCi/L)	Odds for non-smokers* of developing lung cancer due to radon if exposed to this level over a lifetime	Odds for smokers* of developing lung cancer due to radon if exposed to this level over a lifetime**
20	1 in 27	1 in 5
8	1 in 68	1 in 13
4	1 in 135	1 in 26
2	1 in 270	1 in 52
0.4***	1 in 1,350	1 in 260

\*Smokers are defined as individuals who have smoked at least 100 cigarettes in a lifetime; non-smokers have never smoked or smoked

less than 100 cigarettes in a lifetime.

\*\*This is in addition to the risk of lung cancer from smoking itself.

\*\*\*Average outdoor radon concentration.

## **Mitigating your home:**

The most common type of radon mitigation system is the sub-slab depressurization system. This system uses venting and sealing to lower radon levels in the home. A pipe is installed that runs from below the basement flooring to above the roofline, with a fan at the top that draws radon out from under the slab. Cracks and openings in the foundation are sealed. The radon is vented through the pipe to the outside, where it is quickly diluted.

The average price of such a system is around \$1,200, although prices can range from \$500 to \$2,500, depending on characteristics of the home and the underlying soil. You can install the system yourself, if you are highly experienced in making home repairs, or you can hire a New Jersey certified radon mitigation company to do the work for you. New Jersey certified radon mitigation professionals meet specified education and experience standards and must take continuing education classes each year to maintain their certification. It is against the law for uncertified contractors to do mitigation work in New Jersey.

After your home has been mitigated, make sure the mitigator does a post-mitigation test to prove the system is working properly. Retesting your home every two years will tell you whether or not your system is still working effectively in reducing the radon level to below 4 pCi/L.

Information obtained from NJDEP.