

NC Radon Program

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The Three R's of Radon Mitigation:

Repair, Reduction and Removal

If your home has a confirmed radon level above 4 pCi/l, the US Environmental Protection Agency (EPA) recommends that you fix your home in order to reduce the radon level. This will reduce your risk of health impacts from radon (i.e. lung cancer). The technology for reducing radon levels in homes has been well researched and tested in many homes and is generally very successful in reducing radon levels. The EPA recommends that you select a contractor with specific skills and knowledge of how to reduce the levels of radon in homes. The best indication of these skills is that the contractor has successfully completed the mitigation program of the National Environmental Health Association (NEHA) or the National Radon Safety Board (NRSB). If you want to attempt to fix your home yourself, make sure to follow EPA recommendations. There are two basic strategies that can be employed to reduce radon levels in your home. The first is to remove radon after it enters the home. The second, which is used the most, is to prevent the radon from entering the home by removing it near the

soil surface under the home.

Designing a system to reduce levels of radon in a home begins with the existing construction of the home. In North Carolina, home construction is generally one of three types:

1. [Slab-on-grade](#)
2. [Basement](#)
3. Crawlspace

[Heat Recovery Ventilation Systems](#)

are sometimes employed to aid in Radon removal.

Although a home may have a combination of these features, the basic approach for removing radon for each foundation type is to remove the radon gas coming out of the soil surface before it can enter the home. For a good general introduction to radon mitigation, see the [EPA Booklet Consumer's Guide to Radon Reduction](#).

Suction is used to remove the radon gas. A pipe may be inserted under the slab, and an electric fan connected to it to remove the soil gas. This is called an active system, because it uses a fan. In some cases the fan may not be necessary because the air in the pipe will be heated as it moves through a pipe passing through the living area. This air will rise and draw the cooler air after it. This "chimney effect" can put suction on the soil surface and remove the radon in such a case. This is an example of a passive system. For both the active and

passive radon systems, the radon is exhausted to the outside after being suctioned away from the soil surface.

Some slab on grade or basement construction homes may have components that require specific design features to construct a radon reduction system. For example, the radon removal system for homes with drainage tiles around the outside may place suction on the drain tile system to reduce the radon level. For homes with block walls that may be in contact with the soil surface, placing a suction point on the block wall may be required. Another example is the case of a home with a sump pit enclosure. A radon reduction system may be constructed to use the sump pit as a suction point. For more detailed information on these types of systems see the

[Oak Ridge National Laboratory Builder's Foundation Handbook](#).

In some cases, ventilation systems such as a Heat Recovery Ventilation (HRV) System may be used to reduce radon levels. In some cases this can cause a significant increase in heating and/or cooling costs and should be used only in accordance with EPA guidance and good HVAC maintenance practices.

After a reduction system is in place, EPA requires (among other things), that the system be tested for radon reduction within 30 days of installation. Testing should not be done earlier than 24 hours after installation. For active systems, the contractor must provide an alarm to notify the resident if the system is not operating as designed.

A radon reduction system must not cause violations of applicable plumbing, electrical, or fire codes. For this reason, detailed guidance is needed and should be followed by anyone attempting to construct such a system. The EPA Publication on [Radon Mitigation Model Standards](#) will provide guidance.

More information on radon reduction is available in the EPA publication: [Consumers Guide to Radon Reduction](#)

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If you have any questions, please contact the NC Radon Program (919) 571-4141 or catherine.rosfjord@ncdenr.gov

More Information:

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Radon Testing Devices Information

2

