The World Health Organization and EPA have identified Radon gas as the leading cause of lung cancer for non-smokers in 2010.

To address this epidemic, National Radon Action Month has been announced for January, 2011.

The EPA estimates that over eight million homes in the United STates have a radon problem and the toxic gas claimed the lives of over 20,000 Americans in 2010 (more than fires and carbon monoxide combined).

What is Radon?

Radon is naturally occurring, odorless, and colorless gas produced by the breakdown of uranium in soil, rock, and water.

Because radon is a gas, it can enter buildings through openings or cracks in the foundation.

The radon gas itself decays into radioactive solids, called radon daughters. The radon daughters attach to dust particles in the air, and can be inhaled.

The inhalation of radon daughters has been linked to lung cancer.

Radon has been identified as the second leading cause of lung cancer in the United States (second only to smoking.)

The Environmental Protection Agency reports that radon causes between 15,000 and 22,000

lung cancer deaths every year in the U.S.

These startling statistics have prompted the EPA to designate January as National Radon Action Month in the U.S. View the E.P.A. Press Release Here: http://www.epa.gov/radon/nram/

Every home should be tested for radon regardless of where the home is located, the age of the home, foundation type, or whether or not the home is in an area where homes are “prone to having radon problems.”

Homes with elevated radon levels have been found in practically every county in the United States.

The U.S. Environmental Protection Agency has established that if a home or building is found to have a radon level of 4 pCi/l or higher, action should be taken to reduce it.

In most cases, radon levels can be reduced to 2 pCi/l or lower with the installation of an active (fan-assisted) venting system. As of September, 2009; The World Health Organization has established an action level of 2.7 pCi/l (100 Becquerel per cubic meter.)

Radon’s primary hazard is caused from inhalation of the gas which tends to collect on dust in the air.

The problem arises when these elements stick to the delicate cells lining the passageways leading into the lungs.

How Radon Enters

Radon moving through soil pore spaces and rock fractures near the surface of the earth usually

escapes into the atmosphere.

Where a house is present, however, soil air often flows toward its foundation for three reasons: (1) differences in air pressure between the soil and the house, (2) the presence of openings in the house's foundation, and (3) increases in permeability around the basement (if one is present).

In constructing a house with a basement, a hole is dug, footings are set, and coarse gravel is usually laid down as a base for the basement slab.

Then, once the basement walls have been built, the gap between the basement walls and the ground outside is filled with material that often is more permeable than the original ground. This filled gap is called a disturbed zone.

Radon moves into the disturbed zone and the gravel bed underneath from the surrounding soil. The backfill material in the disturbed zone is commonly rocks and soil from the foundation site, which also generate and release radon.

The amount of radon in the disturbed zone and gravel bed depends on the amount of uranium present in the rock at the site, the type and permeability of soil surrounding the disturbed zone and underneath the gravel bed, and the soil's moisture content.

The air pressure in the ground around most houses is often greater than the air pressure inside the house. Thus, air tends to move from the disturbed zone and gravel bed into the house through openings in the house's foundation.

All house foundations have openings such as cracks, utility entries, seams between foundation materials, and uncovered soil in crawl spaces and basements.

Radon can move through cracks in rocks and through pore spaces in soils. Radon moves more

rapidly through permeable soils, such as coarse sand and gravel, than through impermeable soils, such as clays.

Fractures in any soil or rock allow radon to move more quickly.

Radon in water moves slower than radon in air. The distance that radon moves before most of it decays is less than 1 inch in water-saturated rocks or soils, but it can be more than six feet, and sometimes tens of feet, through dry rocks or soils.

Because water also tends to flow much more slowly through soil pores and rock fractures than does air, radon travels shorter distances in wet soils than in dry soils before it decays.

For these reasons, homes in areas with drier, highly permeable soils and bedrock, such as hill slopes, mouths and bottoms of canyons, coarse glacial deposits, and fractured or cavernous bedrock, may have high levels of indoor radon.

Exposure

The primary routes of potential human exposure to radon are inhalation and ingestion.

Radon in the ground, groundwater, or building materials enters working and living spaces and disintegrates into its decay products.

Although high concentrations of radon in groundwater may contribute to human exposure through ingestion, the radiation dose to the body due to inhalation of radon released from water is usually more important.

The Environmental Protection Agency (U.S. E.P.A.) and the Surgeons General’s Office have

urged widespread testing for radon.

They estimated that as many as 20,000 lung cancer deaths are caused each year by radon.

Next to smoking, radon is the second leading cause of lung cancer. EPA says that nearly one in three homes checked in seven states and on three Indian lands had screening levels over 4 pCi/L, the EPA's recommended action level for radon exposure.

Radon is a national environmental health problem. Elevated radon levels have been discovered in virtually every state.

The EPA estimates that as many as 8 million homes throughout the country have elevated levels of radon.

State surveys to date show that one out of five homes have elevated radon levels.

Indoor radon has been judged to be the most serious environmental carcinogen to which the general public is exposed and which the EPA must address.

Based on current exposure and risk estimates, radon exposure in single-family houses may be a causal factor in as many as 20,000 of the total lung cancer fatalities which occur each year.

Radon decay products (polonium- 218 and polonium-214, solid form) can attach to the surface of aerosols, dusts, and smoke particles which may be inhaled, and become deeply lodged or trapped in the lungs.

Once lodged, they can radiate and penetrate the cells of mucous membranes, bronchi, and other pulmonary tissues.

Some scientific studies of radon exposure indicate that children may be more sensitive to radon. This may be due to their higher respiration rate and their rapidly dividing cells, which may be more vulnerable to radiation damage.

National Radon Action Month is January, 2011. Take this opportunity to make sure your family is safe. Testing for radon is easy and inexpensive. If elevated levels of radon are detected, a radon mitigation system can be installed to fix the problem.

To learn more about radon gas, visit these informative websites: Environmental Protection Agency, World Health Organization, Centers for Disease Control (CDC), National Cancer Institute, American Lung Association, U.S. Surgeon General, American Cancer Society , Toxic Substances and Disease Registry.