

# RADON IN WATER

(Adapted by Aquatek Lab from the Connecticut Department of Public Health (CT DPH) document *Radon and You*.)

## WHAT IS RADON?

Radon is a radioactive gas that occurs in nature as a result of the radioactive decay of uranium. You cannot see it, smell it, or taste it. Radon can be found at high concentrations in soils and rock containing uranium. Well water that passes through underground areas containing uranium may be another source of radon. Exposure to radon increases your risk of developing lung cancer.

## HOW DOES RADON ENTER THE HOME?

Radon in well water can contribute to the indoor air levels of radon gas in your home. Radon is released into the air as water flows into sinks, tubs, and appliances. Household activities that use hot water, such as showering and washing dishes or clothes, can release large amounts of radon particularly in the rooms where this water is used. Scientists are now looking at the possibility that the drinking of water with high amounts of radon may cause other types of cancer.

The concentration of radon in water is usually given in picocuries per liter (pCi/L). While the average concentration of radon in U.S. groundwater is below 1,000 pCi/L, levels in groundwater have been found above 1,000,000 pCi/L. The highest amounts have been found in the Northeast. Private wells tested in Connecticut indicate an average radon level of about 3,000 pCi/L. There are reduction systems available which are very effective in reducing any elevated level of radon in water.

## WHAT IS THE STANDARD FOR RADON IN WATER?

There is currently no federal standard for radon in water. However, the Connecticut Department of Public Health has a recommended guideline of 5,000 pCi/L in private well water. This is only a guideline with no statutory or regulatory authority.

## IF YOUR RADON IN WATER EXCEEDS 5,000 pCi/L, SHOULD YOU TREAT THE WATER?

Most authorities do not recommend treatment based on a single sample result. Radon levels in water can vary significantly over time. Therefore it is important to obtain at least two sample results before deciding to install a treatment system. These samples should be taken at least three months apart.

## CAN RADON IN WATER CONTRIBUTE TO YOUR RISK OF DEVELOPING CANCER?

There are many factors that can effect your risk for developing lung cancer. The risk that you and your family will experience from drinking and taking showers with water containing radon is determined by several factors. These include the concentration in the water, the amount of water that you drink and the number and length of showers you take. Other factors include the number of years that you have been exposed to elevated levels of radon, the amount of ventilation in your bathroom, your smoking history and the number and types of sources of radon in all the buildings that you have lived and worked in.

In most homes and buildings the primary lung cancer risk results from breathing air contaminated with soil gas entering through openings in the foundation or slab. In homes that use private wells, radon in water may contribute to the radon exposure and resulting lung cancer risk. Occupants of these homes will be inhaling radon gas that leaves the water during showering and other water uses. Occupants exposed to radon while drinking the water may also increase lung exposure. This may occur as a result of radon being absorbed in the stomach and carried to the lungs by the blood stream. There is still controversy over the risk associated with ingested radon and there is continuing research in this area.

## HOW CAN I REDUCE RADON IN MY DRINKING WATER?

Two systems are currently available for treating water having elevated radon. The whole house granular activated carbon (GAC) filter system can be used to treat water with radon levels between 10,000 and 15,000 pCi/L. Although GAC systems are the least expensive to install (\$1,000 to \$1,500), the filter tanks can give off gamma radiation and the carbon granules must be changed each year to avoid radioactive buildup and a reduction in treatment efficiency. Aeration systems (\$3,000 to \$4,500) are effective on all levels of radon in water. They operate by forcing radon gas from the water using air bubbles and then venting it outside the home. Both of these systems are under constant development and a number of variations of each system are on the market. Be certain that you purchase a system that is capable of treating the highest level of radon that may be expected in your well.

## WHERE CAN I GET ADDITIONAL INFORMATION?

EPA SAFE WATER HOTLINE: (800) 426-4791

STATE RADON OFFICES: Connecticut - (860) 509-7367

Massachusetts- (413) 586-7525

Rhode Island - (401) 222-2438