

## **The Effects of Radon in Water Supplies**

Radon is a familiar airborne menace, but many people may not be aware of the radon dangers that may also exist in drinking water. Radon, an invisible gas that occurs nearly everywhere on earth, is one of America's most significant environmental risks, according to the Environmental Protection Agency. While radon is more harmful to your health when inhaled, it also can be damaging when consumed through drinking water. Radon is second only to cigarette smoking as a leading cause of lung cancer in the United States and is estimated to contribute to 13,600 lung cancer deaths each year. In addition, approximately 200 cancer cases per year result from exposure to radon from public groundwater systems.

### **What is Radon?**

Radon is a naturally occurring gas that is colorless, odorless, tasteless and chemically inert. It is emitted by the decay of uranium in the earth's crust and is dangerous because it is radioactive. Exposure to radon occurs primarily through radon gas in the soil and underlying rocks seeping up into a home or building through cracks in the foundation or unsealed masonry of concrete blocks. If untreated radon can accumulate to dangerous levels, especially in basements. Appropriate ventilation is the best way to prevent the situation from becoming critical. While the EPA estimates that water sources make up only about five percent of a home's total radon exposure, radon that seeps into household water can also pose serious health risks. Effects from radon-contaminated water can be manifested in two ways. The first threat comes from drinking the affected water, which can lead to cancer of internal organs, specifically the stomach and kidney. The second danger comes from inhaling radon released into air from tap water as it is drawn from the spout, such as when showering, washing hands and cleaning dishes. Lung cancer can result from inhaling radon. Radon enters water systems through the soil and surrounding rock of a water supply. It also can enter a water system through cracks in water pipes either in the municipal distribution system or in the home or building. Only water supplies serving more than 15 residences or 25 people are bound by maximum Radon levels of 300 pCi/L proposed by the EPA. (pCi/L = pico-Curies per liter. A Curie is the radioactivity from one gram of pure Radium, and pico is a prefix meaning one-trillionth.) Radon content in groundwater may actually range anywhere from less than 100 pCi/L to occasionally more than 1,000,000 pCi/L. Levels of 1,000-5,000 pCi/L are fairly common. The federal Safe Drinking Water Act requires the EPA to regulate the amount of radon present in public drinking water supplies. However, according to the EPA, there are an estimated 27,000 water systems across the United States that exceeds the proposed maximum contaminant level (MCL), particularly in smaller systems.

## **Detecting Radon in your Water**

If you are concerned about radon in your water, contact your local water utility and ask for a copy of the latest report to the State EPA. If you have a private water supply, your water is not regulated by the EPA so you will need to have the water tested yourself. Your county or state health department should be able to provide you with the name of a certified water-testing laboratory in your area.

**Removal Of Radon From Drinking Water** Since a person can be exposed to radon both through contaminated drinking water and inhaling radon gas emitted from water during general use, it is important to remove radon at the point of entry, the source that supplies water to the entire house. A "GAC bed" (granular activated carbon) is used to remove radon from water as it enters the building. Unlike any other water treatment system, the unit used to remove radon never needs to be replaced because its capacity to adsorb radon is virtually infinite. If the unit contains at least two or three cubic feet of carbon with a water flow rate of about five to seven gallons per minute, the system will settle into an equilibrium between adsorption and disintegration, to prevent radioactive radon and its radioactive "daughters" (polonium, bismuth and lead) from escaping. However, over time, radioactive buildup of these elements does develop in the GAC bed. Shielding the bed with a foot of plain water is the most common remedy for buildup problems. For example, a 12-inch GAC bed should be placed in a 36-inch barrel filled with water. Everpure, Inc., a leading manufacturer of water filtration systems for residential and commercial use, offers a full line of systems to meet all water quality needs. Filtration systems for residential and commercial use, offers a full line of systems to meet all water quality needs.

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