

► *the question*

**CAN RADIUM BE REMOVED  
FROM WATER?**

Several methods are available to remove radium from well water. Ion exchange and reverse osmosis units can be purchased for home installation. For people with high blood pressure, an undesired effect of ion exchange is the addition of sodium to the treated water. For more information about treatment devices that have been evaluated by the Department, please contact your local District EQC Office or visit our web site at <http://www.scdhec.net/water>.

**FOR MORE INFORMATION**

**(888) 849-7241**

**(Toll-Free Community Line)**

**For general information, contact your  
local District EQC Office**

Aiken, Orangeburg, Barnwell, Bamberg,  
Allendale, and Calhoun Counties contact  
*(803) 641-7670*

Richland, Lexington, Newberry, and Fairfield  
Counties contact  
*(803) 896-0620*

Florence, Dillon, Marion, Marlboro, Darlington,  
and Chesterfield Counties contact  
*(843) 661-4825*

Greenwood, Abbeville, Laurens, Saluda,  
Edgefield, and McCormick Counties  
*(864) 223-0333*

**You may also obtain current information by  
visiting our web site at  
<http://www.scdhec.net/water>.**

Some of the text contained in this brochure was adapted from information provided by the Maryland Department of the Environment, the Illinois Department of Health, and the Agency for Toxic Substances and Disease Registry.

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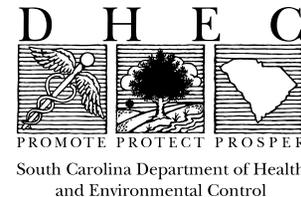
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# Facts About Radium

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## WHAT IS RADIUM?

Radium is a naturally occurring, silvery-white, radioactive material that can exist in several forms called isotopes. Radium is formed when uranium and thorium (two other natural radioactive substances) decay (break down) in the environment. Radium is almost everywhere: in soil, water, rocks, plants, and foods at low levels.

Radium only degrades by radioactive decay. Each isotope of radium releases radiation at its own rate. The concentrations of radium-226 and radium-228 in drinking water are generally low, but there are some areas where high concentrations of radium occur due to geologic sources.

In the U.S., radioactivity is usually measured in units called “curies.” The level of radioactivity in water is usually very low and is measured in picocuries (one picocurie equals one-trillionth of a curie) per liter (pCi/l).

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## HOW CAN I BE EXPOSED TO RADIUM?

In radiation biology, the term “dose” has a specific meaning. Dose refers to the amount of radiation absorbed by an organ or tissue. It is often expressed in millirems. Since radium is in the environment, you are always exposed to it. You may be exposed to higher levels of radium if you live in an area where it is released into the air from the burning of coal or other fuels, or

if your drinking water is high in natural radium.

Some of the radiation from radium is always being released into the environment. It is this release of radiation that causes concern. Radium-228, for example, releases half of its radiation in about six years; radium-226 releases half of its radiation in about 1,600 years.

During the decay process, alpha and beta radiation are released. Alpha particles can travel only a short distance and cannot pass through your skin. Beta particles can penetrate your skin, but they cannot go all the way through your body.

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## IS RADIUM IN MY WATER?

Surface water is usually low in radium but groundwater can contain significant amounts of radium due to local geology. Drinking water from wells can contain radium-226 and radium-228 at levels above regulatory standards. High radium levels can be due to the presence of radium in the rock or sands from which the well water is drawn.

Public water supply wells are regularly tested for radium. Radium has been



detected in some public and home wells located in the “Inner Coastal Plain” region of the state. If you own a home well and live in the following counties that are located in the Inner Coastal Plain region, you may want to have your well water tested for radium: Aiken, Southern Edgefield, Lexington, Orangeburg, Richland, Calhoun, Kershaw, Sumter, Lee, Darlington, Chesterfield, Florence, Dillon, and Marlboro.

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## CAN RADIUM MAKE ME SICK?

The amount of radiation received through showering, washing, or other uses of radium-containing water is insignificant. Radium in water may pose a hazard to human health when the water is used for drinking. No more than 20 percent of the ingested radium stays in the body. The rest is excreted in the feces and urine. The remaining radium behaves similarly to calcium and is deposited in the bones. Alpha radiation emitted by radium may then damage tissue and, over time, lead to bone cancer.

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## WHAT LEVELS OF RADIUM ARE SAFE?

Most people are exposed daily (background exposure) to radium levels less than 500 millirems of radiation. The EPA’s maximum contaminant level (MCL) for radium in public water supplies is 5pCi/l. The MCL has been set well below levels for which health effects have been observed. It is therefore assumed to be protective of public health.