



Radium in Drinking Water Fact Sheet

What Is Radium?

Naturally occurring radium (Ra) is a radioactive element contained in many rock formations, usually in small amounts. There are two forms of radium that can most likely be transferred from the rock into Wisconsin (WI) groundwater: Ra-226 and Ra-228. As they naturally break down over time, (a process called radioactive decay), they give off different types of radioactive particles. Ra-226 gives off alpha particles; Ra-228 gives off beta particles. However chemically, they both behave like calcium and magnesium, the two major components of water hardness.

How does radium get into the water supply?

Radium naturally occurs in some of Wisconsin's groundwater. Nearly 70% of Wisconsin residents receive drinking water from groundwater resources. Groundwater moves slowly through the pores and cracks in underground layers of unconsolidated material and rock called aquifers. As it moves through the aquifer, minerals and other elements, including radium, can be dissolved out of the rock into the groundwater. Some rock more effectively transfers radium into groundwater than others. Eventually, the water can be drawn into nearby drinking water wells as the water is extracted.

Under the requirements of the federal Safe Drinking Water Act (SDWA), all community public water systems must routinely monitor their water source(s) for certain radioactive substances, elevated levels of these indicator parameters are discovered, additional testing is required to measure the actual levels of Ra-226 and Ra-228.

Ridgeway's Well #1 was put on emergency standby as of June 12, 2024, due to a higher average last quarter. This is a minimal issue as this well is not the main well and is only used once a month. Well #1 is a 40,000 gallon reservoir and combined with the 150,000 gallon tower, the water has been diluted and at no point exceeded the maximum limit.

What makes a well likely to have high levels of radium?

Location may be the biggest factor in determining if a well is likely to have a high level of radium present. In Wisconsin, the highest radium levels occur in water from two types of rock aquifers; the deep sandstone in Wisconsin's eastern quarter and the crystalline granite rock found in the north central part of the state. Wells located in these aquifers may be most likely to contain elevated levels of radium. However, elevated radium may also occur in other areas if conditions are right.

What are the health risks of radium in drinking water?

The National Academy of Sciences has concluded that long-term exposure to elevated levels of radium in drinking water may result in an increased risk of bone cancer. When ingested into the body from drinking water, radium can accumulate in the bones; just like calcium does from milk. When consumed in high doses, or at a lower dose extended over a lifetime, the risk increases. The background exposure risk from other radioactive elements in food, in the air, etc. was considered in setting the radium drinking water standard. Your local Public Health Department or family doctor is the best resource for determining how important the risk of exposure may be to your overall health.

How can I find out if my water is safe to drink?

All community public water systems are required to notify consumers, on a quarterly basis, if any contaminant, including radium, goes above the maximum contaminant level (MCL) allowed by the federal and state drinking water codes. The MCL for combined Ra-226 and Ra-228 is currently 5 pCi/l (picocuries per liter of water). A picocurie is a measurement describing the rate of radioactive decay.

In addition, all public water systems are required to complete a Consumer Confidence Report (CCR) each year. CCR's must include information on all regulated contaminants found in the drinking water system throughout the year.

If you would like to view your community's CCR, visit the Wisconsin Department of Natural Resources (DNR) website dnr.wi.gov, Search: Drinking Water Select the Water Quality Data link where you may search for public water systems by city or system name.



More information: dnr.wisconsin.gov/topic/DrinkingWater
Call toll free: 1-888-WDNRINFO (1-888-936-7463)