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PUBLIC WORKS DEPARTMENT

## WATER QUALITY FAQs

The City of Beloit Water Resources has been informed that water samples collected in one well on November 7, 2018, March 13, 2019, June 26, 2019, and September 18, 2019, indicated the presence of combined radium above the levels allowed in the state and federal State Drinking Standards. An average of the four tests is used to determine if the results are in compliance. We have removed that well from service and you do not need to use an alternative (e.g., bottled) water supply. A complete notice of this can be found on [www.beloitwi.gov](http://www.beloitwi.gov).

### **What is the City of Beloit doing about the radium exceedance in one of the wells?**

The City of Beloit has temporarily taken the well out of service while staff works through the process of selecting, designing and implementing a mitigation solution. The Wisconsin Department of Natural Resources and the Wisconsin Public Service Commission will review and approve the mitigation project before it can move forward.

### **What is radium?**

Radium (Ra) is a naturally occurring 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 through 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.

### **What are the health risks of radium in drinking water?**

There is no immediate health risk from short-term low dose exposure to radium. 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. If you have a specific health concern, please contact your doctor.

### **Did the City have to shut down the well?**

The City of Beloit responded swiftly to be proactive to the situation. The City was not required by Wisconsin Department of Natural Resources to shut down the well exceeding the combined radium levels. The well can remain in service while implementing practices to reduce the radium levels. Low doses of radium over short periods of time are not shown to have negative health impacts.

### **When will the City use the well again?**

The City does not plan to return the well to service until mitigation practices have been implemented. The City would consider returning the well to service in the event of the loss of

another well. A public notice would be issued prior to returning the well to service. Repeated notices would be issued quarterly while the well is in service and exceeding the level.

#### **What can be done to mitigate the radium level in the community well?**

There are several options to reduce or eliminate the presence of radium in the well. These options could include the following:

- Blend high radium water with water from sources containing lower levels of radium.
- Find an alternative water supply or construct a new well into a low-radium aquifer.
- Soften or apply another effective radium removal treatment technique to the water supply.

#### **How does radium get into our water supply?**

Radium naturally occurs in some of Wisconsin's groundwater. 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.

#### **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. Beloit's well with the elevated radium is located in the deep sandstone aquifer.

Please direct any additional questions to Director of Water Resources William Frisbee at 608-364-6699 or [Frisbeew@beloitwi.gov](mailto:Frisbeew@beloitwi.gov)