

RADIUM IN PRIVATE WATER WELLS FREQUENTLY ASKED QUESTIONS



Q: What are the sources of radium in water wells?

A: Certain rock types have naturally occurring trace amounts of mildly radioactive elements. Radium is constantly being produced at very low levels in rocks and soil by the decay of uranium and thorium. Radium dissolves as water passes through soil and bedrock. In most cases, groundwater is likely to contain higher levels of radium than surface water but in some areas surface water carries elevated levels of radium into groundwater. The amount of radium in well water varies with the concentration of radium in the bedrock or surface water.

Q: What are the potential health effects from drinking water containing radium?

A: Immediate health risks from drinking water containing low radioactivity levels are small. The United States Environmental Protection Agency (EPA) considers radium to be a cancer-causing agent in humans. Whether this contaminant will have an impact on your health or the health of your family will depend on a number of factors including how high the concentrations are, how long you have been exposed to contaminated water, and whether you were exposed by drinking, breathing in, or touching contaminated water. Whether or not a person develops health effects will also depend on a number of other factors including diet, lifestyle, general health status, smoking status, and exposures to other contaminants. The Kansas Department of Health and Environment assessed the rates for all cancers combined for Hamilton, Kearny and Finney counties and did not find higher rates for these cancers compared to the state. If you are concerned, you should talk to your health care provider and develop a plan for screening.

Q: What levels are considered acceptable for radium found in water wells?

A: For public water supply systems, the EPA established a maximum drinking water contaminant level of 5 picoCuries per liter (pCi/L) for radium-226 and radium-228 combined. For more information on how this contaminant level was developed, please refer to EPA's Federal Register 40 CFR Parts 9, 141, and 142 National Primary Drinking Water Regulations; Radionuclides; Final Rule: <https://www.govinfo.gov/content/pkg/FR-2000-12-07/pdf/00-30421.pdf>.

Q: Should I test my private water well for radium?

A: If you use your private well for drinking water purposes you should have your well tested. You can contact your local KDHE district office to ask for assistance in sample collection and testing (http://www.kdheks.gov/befs/dist_office.html). Additionally, you can go to KDHE's Private Water Well website http://www.kdheks.gov/wellwateraware/local_resource_map.htm to access contact information for certified water well testing labs, sampling protocols, testing procedures and guidance documents. It is recommended that you retest your drinking well water periodically because the levels of contaminants may vary over time.

Q: Are the public water supplies in my community safe?

A: Yes. The Safe Drinking Water Act (SDWA) authorizes and permits EPA to set national standards for drinking water contaminants. Through the Kansas Department of Health and Environment all public water supply systems are required to monitor and comply with those standards.

Q: What if my test shows elevated levels of radium in my private well? How do you treat it and what are the costs?

A: If elevated levels are found, consider using bottled water for drinking and cooking, research how to connect your home with a local public water supply or consider in-home treatment methods. The two most common methods for homeowners are water softeners (ion exchange) and reverse osmosis units. Please visit https://www.watersystemscouncil.org/download/wellcare_information_sheets/potential_groundwater_contaminant_information_sheets/5785181Radium_Update_June_2007.pdf for more information. Although there are no filtration-style devices currently certified for radium reduction, there are several reverse osmosis systems and cation (salt-based) softeners certified for radium 226/228. You can get the complete list of the NSF (National Sanitation Foundation) International certified Radium 226/228 systems here: <http://info.nsf.org/Certified/DWTU/Listings.asp?ProductFunction=044%7CRadium+226%2F228+Reduction&ProductFunction=058%7CRadium+226%2F228+Reduction&ProductType=&submit2=Search>

Q: Are there ways to mitigate the health impacts for people who have been consuming contaminated water for a long period of time?

A: Most ingested radium leaves the body through feces, but a smaller percentage will be carried through to different parts of the body. Whether or not a person develops health effects will also depend on a number of other factors including diet, family history, lifestyle, general health status, smoking status, and exposures to other contaminants. If you have elevated levels of radium in your water supply, it is recommended that you test your home for radon and install a radon mitigation system if your home has elevated radon levels. Radium decays into radon. Radon is a radioactive gas which becomes aerated through use of water in the home (such as in showers and from faucets). Elevated levels of radon gas in your home can increase your risk for lung cancer. If you are concerned, you should talk to your health care provider about all of these factors and develop a plan for screening.

Q: If livestock drink contaminated water is the meat or milk contaminated?

A: The brevity of lifetime for cattle limits the time for any mineral residue buildup. There are no studies that show a mineral buildup in the meat or milk.

Q: If root vegetables are grown in areas with soil or water contamination is it safe to eat?

A: The brevity of lifetime for plants limits the time for any mineral residue buildup. Generally, if the amount measured in soil and water used to grow produce is low, the amount deposited in the produce would likely fall below the detection limits.

Sources:

- Agency for Toxic Substances and Disease Registry. 1999. Radium ToxFAQs™. Available at <https://www.atsdr.cdc.gov/toxfaqs/tfacts144.pdf>. Accessed on July 14, 2019.
- United States Environmental Protection Agency. Undated. Radium 226 and Radium 228 (combined) Fact Sheet. Available at <https://safewater.zendesk.com/hc/en-us/sections/202366238>. Accessed on July 14, 2019.
- Water Systems Council. 2007. Wellcare® information for you about Radium & Groundwater. Available at https://www.watersystemscouncil.org/download/wellcare_information_sheets/potential_groundwater_contaminant_information_sheets/5785181Radium_Update_June_2007.pdf. Accessed on July 14, 2019.