



FACTSHEET: URANIUM

INTRODUCTION

This factsheet provides basic information for private water well owners regarding uranium in their well water. To determine if water is generally safe to drink, water test results are compared to the US Environmental Protection Agency (EPA) [Primary Drinking Water Regulations](#) table of contaminants and the EPA [Secondary Drinking Water Standards](#). The above standards only apply to public water systems, but the quality and health implications are the same for private well owners. In addition, the Wyoming Department of Environmental Quality (WDEQ) has a set of standards (Water Quality Rules and Regulations (WQRR) Chapter 8 Table 1) for water quality based on class of use, including domestic, agriculture and livestock. Keep your analytical results and your sampling documentation with your well information for future reference if there is a question about change in water quality.

WHAT IS URANIUM?

Uranium is a naturally occurring radioactive mineral present in certain types of rocks and soils found throughout the United States, including Wyoming. Uranium breaks down (decays) very slowly over time to other elements, including radium and radon gas.

WHAT CAUSES URANIUM IN MY WATER?

The level of uranium in groundwater is heavily influenced by geology. Concentrations of uranium can vary based on the type of rock, with granites, lignite coals, alkaline sandstones and shales typically having higher concentrations. In addition, wells completed in fractured bedrock or deep water sources can have higher concentrations of uranium than shallow wells or surface water supplies.

Uranium is common in Wyoming groundwater. High concentrations of nitrates in groundwater, especially shallow groundwater can mobilize uranium.

WHAT IS THE STANDARD FOR URANIUM IN GROUNDWATER?

Uranium is regulated under the US EPA Primary Drinking Water Regulations. The US EPA has set a maximum contaminant level for uranium at 30 micrograms per liter (ug/L).

IS URANIUM IN MY WATER A HEALTH CONCERN?

Health effects related to uranium are due to the chemical effects of uranium, and not due to radiation. The majority of exposure to ingested uranium comes from food intake. The risk from uranium in groundwater is dependent on the concentration of uranium in your groundwater, the amount of water drank on a daily basis, and the number of years the water has been consumed. The majority of ingested uranium is generally rapidly eliminated from the body; however a small amount is absorbed into the bloodstream. Long-term ingestion of elevated uranium concentrations may cause kidney damage and/or cancer.

HOW DO I TEST FOR URANIUM IN MY WATER?

A list of certified labs can be found on the WDEQ Know Your Well Webpage (deq.wyoming.gov/wqd/know-your-well). Contact your selected laboratory for testing procedures and sample bottles.

The recommended approach for testing is to first have your water tested for gross alpha activity. If the gross alpha result is less than 5 Picocuries/Liter (pCi/L), then no additional testing for radionuclides (radium 226, radium 228 or uranium) is necessary since the result will

be less than the drinking water standards. If the gross alpha result is greater than or equal to 15 pCi/L then testing for uranium should be conducted.

WHAT CAN BE DONE TO TREAT MY WATER FOR URANIUM?

The information below is intended as an information source only. The WDEQ suggests you discuss appropriate water treatment options with a qualified water treatment specialist, since other constituents in your water may affect the selection of the appropriate water treatment method.

If there is uranium in your groundwater, generally only water used for consumption (i.e. drinking, cooking) needs to be treated. Treatment can be accomplished by point-of-use systems such as reverse osmosis and distillation, or whole-house systems such as anion exchange.

REFERENCES

- Agency for Toxic Substances and Disease Registry, February 2013, ToxFAQs™ *Natural and Depleted Uranium, CAS #7440-61-1.*
- Nolan, Jason and Weber, Karrie, 2015, *Natural Uranium Contamination in Major US Aquifers Linked to Nitrate*, Environmental Science & Technology Letters.
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- Water Systems Council, Wellcare®, May 2007, *Information for you about Uranium and Groundwater*
- World Health Organization, 2017, *Guidelines for Drinking Water Quality, Chapter 9, Radiological Aspects*