

## Have Radionuclides Been Detected in Texas Groundwater ?

Radionuclides are types of atoms that are radioactive. The most common radionuclides in drinking water are radium, radon, and uranium. Most of the naturally-occurring radionuclides emit alpha particles.

In 1974, the United States Congress passed the Safe Drinking Water Act. This law requires the U.S. Environmental Protection Agency (EPA) to determine the safe levels of contaminants in U.S. drinking water. The EPA conducts research of drinking water to determine the level of a contaminant that is safe for a person to consume over a lifetime and that a water system can reasonably be required to remove from it, given present technology and resources. This safe level is called the maximum contaminant level (MCL). Some treatment technologies include reverse osmosis, ion exchange, and aeration.

Radionuclides have been found in some Texas aquifers. The U.S. EPA has set the MCL of gross alpha radiation in drinking water at 15 picocuries per liter (pCi/L). Most of the groundwater in Texas with gross alpha radiation greater than the MCL is found in the Hickory Aquifer in Central Texas (Figure 1) and the Dockum Aquifer of West Texas (Figure 2). The Edwards-Trinity Plateau (Figure 3), Gulf Coast (Figure 4), and Ogallala (Figure 5) aquifers also have a significant number of wells with high levels of gross alpha radiation. Although contamination from human activity can be a source of radionuclides, most of the radionuclides found in Texas groundwater occur naturally within the aquifer's geologic formation.

### References:

- *Water for Texas 2007*, Texas Water Development Board, pages 228 – 229, <https://www.twdb.texas.gov/waterplanning/swp/2007/>
- Major and Minor Aquifers of Texas maps, <https://www.twdb.texas.gov/mapping/maps.asp> (under the “Natural Features” heading)
- *Drinking Water Problems: Radionuclides*, Texas AgriLife Extension Service, B-6192 (English), B-6192S (Spanish), <https://agrilifebookstore.org/>
- *Commonly Encountered Radionuclides*, U.S. EPA, <http://www.epa.gov/rpdweb00/radionuclides/index.html>
- *Safe Drinking Water Act*, U.S. EPA, <http://www.epa.gov/lawsregs/laws/sdwa.html>

For additional Frequently Asked Questions (FAQs) related to groundwater quantity, groundwater quality, septic systems, water wells, administrative entities, and publications, visit the Texas Groundwater Protection Committee's FAQ webpage at <http://tGPC.state.tx.us/frequently-asked-questions-faqs/>.