IMPORTANT INFORMATION ABOUT YOUR DRINKING WATER

Donala Water and Sanitation

High Levels of Combined Radium

Este informe contiene información muy importante sobre su agua potable. Tradúzcalo o hable conalguien que lo entienda bien.

Our water system recently violated a drinking water requirement. Although this situation is not an emergency, as our customers you have a right to know what happened, what you should do, and what weare doing to correct this situation.

We routinely monitor for the presence of drinking water contaminants. On July 23, 2021 we were notified that our system exceeds the maximum contaminant level (MCL) for Combined Radium. TheMCL is 5 pCi/L. The average level over the last year was 6.7 pCi/L.

NOTE: This advisory is NOT related to COVID-19. The Centers for Disease Control and Prevention (CDC) has stated that the "Virus that causes COVID-19 has not been detected in drinking water." For additional information on COVID-19 and drinking water, you can refer to the Colorado Department ofPublic Health and Environment's website: https://covid19.colorado.gov.

What does this mean? What should I do?

- **You may want to use an alternative drinking water supply (e.g. bottled). If you havespecific health concerns, consult your doctor.**
- Some people who drink water containing radium -226 or -228 in excess of the MCL over manyyears may have an increased risk of getting cancer.
- If you have an infant, severely compromised immune system, are pregnant, or are elderly, you may be at increased risk and should seek advice from your doctor about drinking this water. General guidelines on ways to lessen the risk of infection by bacteria and other disease-causingorganisms are available from EPA's Safe Drinking Water Hotline at 1-800-426-4791.

What is being done?

- Immediate: Increased blending rates to dilute radium and increased surface water blending tolower the radium level as well as future purchases of surface water to lower radium levels.
- Long Term: Engage engineering firm to evaluate potential treatment process changes to resolveradium maximum contaminant level issue.

We anticipate resolving the problem by **August 31, 2023**. For more information, please contact **JeffHodge** at **GM@Donalawater.com** or **719-488-3603**, or **15850 Holbein C/S CO 80921**.

For further information you may access the EPA webpage on Natural Radionuclides in Public Drinking Water: https://www.epa.gov/radtown/natural-radionuclides-public-drinking-water#about

**Please share this information with all the other people who drink this water, especially those who may not have received this notice directly (for example, people in apartments, nursing homes, schools, and businesses). You can do this by posting this notice in a public place or distributing copies by hand or mail.*

This notice is being sent to you by: Donala Water and Sanitation - CO0121175
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Radium 226 and 228 talking points

Chronic vs Acute health threats

- Rad 226 & 228 is a chronic health threat. It will take many years of consuming water over the MCL of 5 pCi/L to see the effects of radium 226 & 228.
- Radium 226 & 228 is **NOT** an acute health risk. Acute health risks have immediate health effects.

Radium 226 & 228 (Maximum Contaminate Level) MCL

- USEPA - MCL is 5 pCi/L combined
- WHO - MCL is 1 Bq which equals 27 picocuries
- SDWA and USEPA develop MCL levels together WHO develops MCL for other countries

MCL Violation Details

- The MCL is calculated using a RAA. Our Current RAA is 6.7 pCi/L
- Holbein WTP is one of three water sources for our distribution system and the **ONLY** one that is in violation. The other two sources are the Lower Plant and the CSU connection.

Why did this happen

- Radionuclides have been increasing in all wells across the Front Range
- Increased water demand has increased contaminants in the water.
- This was a much more sudden increase in the wells than historical data indicated

What we have done already

- We have reduced run times at the Holbein plant and made up the additional water needed by longer run times at the lower plant and increased flows through the CSU connection
- We blend water from the lower plant and the CSU connection to reduce the 226 & 228 levels in the water you get at your tap
- We are not using wells that have been higher in 226 & 228 in the past

What will we do in the future

- We are testing all our wells for contaminants (Aug 2021, results in Oct 2021)
- We are in the planning stages of getting new treatment processes online to permanently reduce radium levels

Acronym	Meaning
USEPA	United States Environmental Protection Agency
CDPHE	Colorado Department of Heath and Environment
MCL	Maximum Contaminate Level
pCi/L	Picocurie
Bq	Becquerel
WHO	World Health Organization
SDWA	Safe Drinking Water Act
RAA	Rolling Annual Average
WTP	Water Treatment Plant
CSU	Colorado Springs Utilities

EPA Facts about Radium

What is radium?

Radium is a naturally occurring radioactive metal that exists as one of several isotopes. It is formed when uranium and thorium decay in the environment. In the natural environment, radium is found at low levels in soil, water, rocks, coal, plants, and food.

What are the uses of Radium?

In the early 1900s, radium was wrongly used to treat rheumatism and mental disorders and as a general tonic. Radium was also used to make luminous paints for watch dials, clocks, glow in the dark buttons, and military instruments. The use of radium for these purposes was discontinued because of the health hazards from these types of exposures. Radium has also been widely used in radiation treatment of cancer, but this use has largely been replaced by other radioactive materials or methods. Radium-226 has also been used in medical equipment, gauges, and calibrators, and in lightning rods. Alpha emitters such as radium and plutonium can be used as components of a neutron generator.

How does radium change in the environment?

Radium is not a stable element. As radium decays, it releases radiation and forms decay products. Like radium, many of these decay products also release radiation and form other elements. The decay process continues until a stable, nonradioactive decay product is formed. Radiation is released during the decay process in the form of alpha particles, beta particles, and gamma radiation. Alpha particles can travel only short distances and cannot penetrate human skin. Beta particles are generally absorbed in the skin and do not pass through the entire body. Gamma radiation, however, can penetrate the body.

Isotopes of radium decay to form radioactive isotopes of radon gas. The time required for a radioactive substance to lose 50 percent of its radioactivity by decay is known as the half-life. The half lives are 3.5 days for radium-224, 1,600 years for radium-226, and 6.7 years for radium-228, the most common isotopes of radium, after which each forms an isotope of radon. Radon is known to accumulate in homes and buildings.

How are people exposed to radium?

Since radium is present at relatively low levels in the natural environment, everyone has some level of exposure from it. However, individuals may be exposed to higher levels of radium and its associated external gamma radiation if they live in an area where there is an elevated level of radium in soil. In addition, radium is particularly hazardous because it continuously produces radon, which can diffuse into nearby homes.

An individual can be exposed to radium through contact with waste from ore at former radium processing facilities, former radium dial facilities, or radium dials. In addition, exposure to radium can occur if radium is released into the air from burning coal or other fuels, or if drinking water

taken from a source that is high in natural radium is used. Individuals may also be exposed to higher levels of radium if they work in a mine or in a plant that processes ores. Phosphate rocks, which can contain relatively high levels of uranium and radium, are also a potential source of exposure. The concentration of radium in drinking water is generally low, but there are specific geographic regions in the United States where higher concentrations of radium may occur as a result of geologic sources.

Radium exposure therefore can be from gamma radiation from radium decay products, lung exposure from radon gas and its decay products, and inhalation and ingestion exposure.

How does radium get into the body?

Radium can enter the body when it is inhaled or swallowed. Radium breathed into the lungs may remain there for months; but it will gradually enter the blood stream and be carried to all parts of the body, with a portion accumulating in the bones.

If radium is swallowed in water or with food, most of it (about 80 percent) will promptly leave the body in the feces. The other 20 percent will enter the blood stream and be carried to all parts of the body. Some of this radium will then be excreted in the feces and urine on a daily basis; however, a portion will remain in the bones throughout the person's lifetime.

Is there a medical test to determine exposure to radium?

Urinalysis and bone biopsy tests are sometimes used to determine if individuals have ingested a source of radioactivity such as radium. Radon, a decay product of radium, can also be measured in air that is exhaled from the body. Another technique, gamma spectroscopy, can measure the amount of radioactivity in portions of the body. These tests require special equipment and cannot be done in a doctor's office. There is no test that can detect external exposure to radium's gamma radiation alone.

How can radium affect people's health?

Exposure to radium over a long period may result in many different harmful effects. If inhaled as dust or ingested as a contaminant, risk is increased for several diseases, including lymphoma, bone cancer, and hematopoietic (blood-formation) diseases, such as leukemia and aplastic anemia. These effects take years to develop. If exposed externally to radium's gamma radiation, risk of cancer is increased in essentially all tissues and organs, though to varying degrees. However, in the environment, the greatest risk associated with radium is actually posed by its direct decay product radon. Radon has been shown to cause lung cancer.

What recommendations has the U.S. Environmental Protection Agency made to protect human health?

Please note that the information in this section is limited to recommendations EPA has made to protect human health from exposure to radium. General recommendations EPA has made to protect human health at Superfund sites (the 10^{-4} to 10^{-6} cancer risk range), which cover all radionuclides including radium, are summarized in the fact sheet "Primer on Radionuclides Commonly Found at Superfund Sites."

For uranium mill tailing sites with radium contamination, EPA has established a radium level of 5 picoCuries per gram (pCi/g) above background as a protective health-based level for cleanup of soil in the top 15 centimeters. These regulations under 40 Code of Federal Regulations (CFR) Part 192.12 are often Applicable or Relevant and Appropriate Requirements (ARARs) at Superfund sites. The EPA document **"Use of Soil Cleanup Criteria in 40 CFR Part 192 as Remediation Goals for CERCLA Sites" provides guidance** to EPA staff regarding when the use of 5 picoCuries per gram (pCi/g) is an ARAR or otherwise recommended cleanup level for any 15 centimeters of subsurface radium-contaminated soil other than the first 15 centimeters. This document is available online at: http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/umtrcagu.pdf.

If regulations under 40 CFR Part 192.12 are an ARAR for radium in soil at a Superfund site, then Nuclear Regulatory Commission regulations for uranium mill tailing sites under 10 CFR Part 40 Appendix A, I, Criterion 6(6), may be an ARAR at the same site. Criterion 6(6) requires that the **level of radiation, called a "benchmark dose,"** that an individual would receive be estimated after that site was cleaned up to the radium soil regulations under 40 CFR Part 192.12. This benchmark dose then becomes the maximum level of radiation that an individual may be exposed to from all radionuclides, except radon, in both the soil and buildings at the site. The EPA document **"Remediation Goals for Radioactively Contaminated CERCLA Sites Using the Benchmark Dose Cleanup Criterion 10 CFR Part 40 Appendix A, I, Criterion 6(6)" provides** guidance to EPA staff regarding how Criterion 6(6) should be implemented as an ARAR at Superfund sites, including using a radium soil cleanup level of 5 pCi/g in both the surface and subsurface in estimating a benchmark dose. This document is available online at: http://www.epa.gov/superfund/health/contaminants/radiation/pdfs/part40.pdf.

EPA has established a Maximum Contaminant Level (MCL) of 5 picoCuries per liter (pCi/L) for any combination of radium-226 and radium-228 in drinking water. EPA has also established a MCL of 15 pCi/L for alpha particle activity, excluding radon and uranium, in drinking water. Radium-226 is covered under this MCL.

For more information about how EPA addresses radium at Superfund sites

Contact Stuart Walker of EPA:
(703) 603-8748 or walker.stuart@epa.gov,
or visit EPA's Superfund Radiation Webpage:
http://www.epa.gov/superfund/resources/radiation/