Tap Water Contaminants Linked to Uterine Cancer Risk

Researchers looking at uterine cancer risk call for the reevaluation of community water disinfection and treatment processes.

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Public water supply contaminants may increase the risk of uterine cancer, according to a study published in JAMA Network Open. Higher levels of trihalomethanes and haloacetic acids, byproducts of the water treatment and disinfection process, in drinking water were linked to a higher risk for uterine cancer, especially endometrioid tumors, among a cohort of California women.

“Uterine cancer is the sixth most diagnosed malignancy in women worldwide, and increasing incidence trends motivate research into exogenous risk factors,” the authors wrote, referring to risk factors not arising from the body. “Exposure to drinking water contaminants is potentially modifiable, underscoring the need for future research and attention to this important public health issue.”

There are two main types of cancer of the uterus, or womb. Endometrial cancer affects the inner lining of the uterus, while uterine sarcoma develops in the muscle and support structures of the uterus. The American Cancer Society estimates that there will be 68,270 uterine cancer diagnoses and 14,450 uterine cancer deaths in 2026. Up to 10% of uterine cancers are sarcomas.

Endometrial cancer is the fourth most common cancer among women in the United States. The endometrial cancer death rate in Black women (9.0 per 100,000 deaths) is nearly double that in white women (4.6 per 100,000), likely due to differences in access to high-quality treatment.

Uterine sarcoma is a rarer type of uterine cancer. Leiomyosarcoma and endometrial stromal sarcoma are the most common types of uterine sarcomas. Black women tend to have uterine leiomyosarcomas twice as often as white women.

To learn more, check out Cancer Health's basics on Uterine and Endometrial Cancer.

For the study, researchers followed 53,100 California teachers from 1995 to 2020, tracking associations between water contaminant levels (trihalomethanes, haloacetic acids, nitrate, arsenic and uranium) in community water supplies and incidence of uterine cancer, including endometrial tumors and nonendometrial tumors. All teachers were cancer-free, and none had undergone a hysterectomy at the start of the study.

For women whose addresses were linked to a community water supply for 10 or more years, higher levels of trihalomethanes were associated with a higher risk for uterine cancer, specifically endometrial tumors. Chloroform, a type of trihalomethane, was associated with the highest risk for uterine cancer and endometrial tumors.

Higher levels of the five most common haloacetic acids in drinking water were linked to a greater incidence of nonendometrial tumors. Arsenic, nitrate and uranium levels were not linked to uterine cancer rates.

The findings build on a previous study looking at endometrial cancer among a group of postmenopausal women in Iowa. In an commentary accompanying the study, Boston-based researcher Shady Abohashem, MD, MPH, called for a reevaluation of water treatment regulations.

"Clinicians counseling patients with newly diagnosed endometrial cancer rarely think of the tap," wrote Abohashem. "This study is a reminder that, for environmental cancers, the most important exposures are often the ones we have stopped noticing."

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