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Evidence so far: Tungsten not a health threat

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Frank X. Mullen Jr.
RENO GAZETTE-JOURNAL
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Water quality experts hired by the city of Fallon said there's no reason to think the relatively high tungsten levels in Fallon's water supply threaten residents' health.

"We've searched and searched for an indication of a health risk, and we've found nothing," said Bob Meyer, senior health risk analyst for Shephard Miller, a Colorado-based environmental firm.

But no one knows whether tungsten is a clue to the cause of the Churchill County leukemia cluster, has other health effects, or is a benign false lead in the cancer cluster probe.

Because there's no red flag on tungsten, Shepard Miller recommended that Fallon do nothing to remove the metal from its water supply. The U.S. Environmental Protection Agency has set no maximum contaminant level for tungsten, which leaves cities no guidelines for removing it from water.

"How would they know when they were at safe levels?" Meyer asked.

But he noted that research on tungsten is limited to studies of tungsten dust, which can cause lung disease in people who work with the metal, and studies of tungsten compounds, which can be toxic.

Rats were fed 150 times the level of tungsten found in Fallon's water but showed "little detectable effect," one study concluded. Other scientists fed large amounts of tungsten, more than 500 milligrams, to guinea pigs, a diet that killed some of them.

A study published in 2000 concluded that tungsten intake had no bearing on the incidence of various diseases, including leukemia, Meyer said.

No other research has so far been found on the metal in association with cancer, scientists said.

"With tungsten, you run into a wall of a lack of information," Meyer said. "But as of now, there doesn't seem to be any potential health effects, particularly in connection with leukemia."

Since 1997, 16 children associated with the Fallon area have been diagnosed with leukemia and three have died. Federal scientists analyzed the urine of 205 residents and discovered unexpectedly high levels of tungsten.

Subsequent tests showed Fallon's drinking water also is relatively rich in the metal, leading officials to wonder whether the contaminant may be linked to the cancer cluster.

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Why Fallon is focus

Natural water sources contain traces of many materials, including metals. Some metals, such as molybdenum, are essential for human health. Others, like arsenic, can be toxic even in very small concentrations.

The U.S. Environmental Protection Agency decides which substances affect human health and sets standards, known as "maximum concentration limits," which are measured in parts per billion.

That's an extremely small measurement. One "part per billion" of water is the equivalent of one penny in \$10 million.

The standard for arsenic, for example, is 50 ppb and scheduled to be reduced to 10 ppb in 2006. Tungsten has no MCL standard because it hasn't been a suspected health threat until now.

The average level of tungsten in Fallon's municipal water is 25 ppb. According to recent analysis of drinking water samples, Reno-Sparks, Carson City, Lovelock, Fernley and Washoe County have an average of only 1ppb to 2.5 ppb of tungsten in their water.

Lovelock, where federal scientists the CDC plans to replicate the Fallon tests, has less than 2 ppb in its drinking water, according to tap water assays commissioned by the Reno Gazette-Journal.

"I wasn't surprised to see the results," said Lovelock Mayor Ray Espinoza. "We have a very low mineral content in our water. I expect the same results from the CDC tests."

Unraveling the enigma

Because Fallon seems an exception to surrounding communities, the metal might be a clue to the cancer cluster mystery, said an Arizona-based researcher.

Mark Witten, a toxicologist and professor of pediatrics at the University of Arizona in Tucson, has done tree-ring studies in Fallon and in Sierra Vista, Ariz., which has a leukemia cluster of nine children.

"You've got two small military and farming communities, a thousand miles apart, and both have leukemia clusters and high levels of tungsten in the environment," he said "What are the odds? The data from the tree rings shows we may be on to something."

The tree core samples indicated a 45 percent increase in tungsten levels in Fallon and a 72 percent increase in the metal in Sierra Vista over the last 20 years.

Witten said he and his colleague, Paul Sheppard, a tree-ring expert and an assistant professor at the University of Arizona, plan to take more core samples from trees in northern Nevada to determine the extent and the levels of tungsten in the area's environment. Witten also is planning other tests relating to tungsten's effects on human cells and their DNA.

He said the results of those studies, paid for with his own funds, won't be available for months.

Even if investigators find another Nevada community that mirrors Fallon's tungsten levels, he said, it won't rule out the metal's possible involvement in the cancer cluster.

"Tungsten may not cause leukemia, but it may play some role in the clusters," he said. "It could be a co-factor."



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