

The following article was written by Daniel Schaffer for Oregon Environmental Council based on interviews with Durene Putney. Durene reviewed the article and asked to submit it as her written testimony to the Oregon legislature supporting HB 3076.

Arsenic in Paradise

Durene Putney's bucolic house lies on the Rogue River beside Big Butte Creek estuary in Trail, Oregon, halfway between Medford and Crater Lake in Jackson County. She will be the first person to tell you that she lives in a little corner of paradise.

Lost Creek Lake drifts onto the edge of her property and Diamond Lake glistens on a nearby hillside. Casey State Park frames the green vistas seen from her living room window. Expansive federal lands that are managed by the Army Corps of Engineers extend the magnificent panoramas as far as the eye can see. The Rogue River, one of just eight rivers named in the Wild and Scenic Rivers Act of 1968, courses through some the most breathtaking wilderness areas in all of Oregon. "I like to say I enjoy a view of eternity," Durene says.

The only problem with Durene's little corner of paradise is that it's heavily laced with a sinister down-to-Earth health hazard: arsenic. A naturally occurring material found virtually everywhere, arsenic levels in the Rogue River Valley have likely become more concentrated due to a variety of factors, including volcanic activity, mining and the release of natural materials during river- and stream-side construction projects. The presence of arsenic is unavoidable. But, as Durene will attest, that doesn't mean you don't want to know about its presence.

Durene was raised in Portland. She graduated with a Bachelor of Arts degree from Southern Oregon University in Ashland and later earned a Master's degree in music education from Lewis and Clark in Portland.

Eager to return to southern Oregon, she became a music teacher at public and private schools in Medford, where she remained for more than 20 years. Along the way, the Phoenix High School chamber choir group, which she directed, earned a state championship in 2005. It's an honor that remains one of the highlights of her career. She's even

prouder of her three children and two grandchildren. An additional grandchild is expected to arrive this summer – an event that Durene enthusiastically awaits.

“In 2000, I moved to Trail, some 25 miles up the road from Medford,” Durene says. “I knew that was where I wanted to eventually retire and I was eager to get a head start on all that my new home and its surroundings had to offer.”

She eagerly tilled her garden, grew a trove of fruits and vegetables, and prepared many of her meals with plants she had harvested from her land. “I am an avid soup and stew maker and used well water to prepare the stock.” She also spent a good deal of the summer months swimming in her pool filled with water drawn from her well.

Within a year after her retirement in 2009, Durene began to experience an unsettling array of symptoms that signaled serious illness. Her blood pressure rose precipitously and her thyroid levels skyrocketed. She had to cope with continual dizziness. She felt weak and sore. Splitting headaches became commonplace and she grappled with intense – and often debilitating – gastro-intestinal problems that would persist for days on end. Over time, the problems became more acute. Yet, no one could figure out what was going on.

On November 10, 2011, less than two years after she first began to experience disquieting health problems, Durene awoke to discover that she could no longer stand on her own. She was rushed to Providence Hospital in Medford, where she underwent a battery of tests that failed to shed light on ailments that now seemed to threaten her life.

“Over the course of my four-day stay,” she says, “I saw an allergist, cardiologist, endocrinologist, rheumatologist and neurologist. No one was able to say what troubled me. For them, my ailments had become even more of a puzzle. Nothing that I was experiencing made sense and without understanding the causes of my distress, it was impossible to devise a treatment. The response, she says, “was to send me home with a walker.”

On Thursday, November 17, three days after her release from the hospital and with no relief in sight, Durene returned to her family doctor for additional consultation. Her doctor decided to send her to Ashland Community Hospital to test for heavy metal concentrations.

The results were not just conclusive; they were startling. Her arsenic readings stood at 234 micrograms per liter ($\mu\text{g}/\text{L}$) of urine. The normal range is 0 to 34 $\mu\text{g}/\text{L}$. That meant the concentrations of arsenic in Durene's system were 8 times higher than the highest levels found in healthy people. The tests also revealed that she was contaminated with high levels of cadmium, mercury and lead.

"I was sick for reason," she says, "and the reason was dangerously high levels of toxic substances in my system, especially high levels of arsenic."

Treating arsenic poisoning is no easy matter. Even under the best of circumstances, alleviating the symptoms takes time and, in some instances, it is impossible to return a person to complete health.

In Durene's case, doctors considered using "chelation," injecting chemical agents into her system to draw and isolate the arsenic from her bloodstream to reduce toxic levels. While this treatment is used in acute arsenic poisoning cases such as Durene's, it carries significant health risks, notably increasing the prospects for hypertension. As a result, her doctors chose to forego the treatment and simply allow her to dilute the arsenic levels in her system over time through diet and exercise. Time, in essence, would be the cure.

"Arsenic has changed my life," Durene asserts. Everyday activities at the center of life's necessities and joys – activities that she once took for granted – have been transformed into "calculated" events calling for constant study and caution. Drinking a glass of water, eating fruits and vegetables, and preparing healthy lunches and dinners using fresh ingredients from her garden have all become complicated, stressful matters requiring the utmost personal attention.

She won't eat salmon and other fish that come from the Rogue River because she is concerned that it might contain high concentrations of

arsenic and heavy metals. When purchasing local groceries, especially fresh produce and meats, she never fails to inquire about the source of the products. She now diligently purchases distilled water for drinking and cooking.

“Food and water,” she laments, “are no longer my friends.”

Five years on, Durene says, she still lives with the consequences of arsenic poisoning. The symptoms have persisted despite the care she has taken to ensure that no additional arsenic was entering her system. Even today, she attributes her bouts with muscle weakness, peripheral neuropathy (sharp, tingling sensations) and severe headaches to the residual impacts of arsenic poisoning. It was only last year that her health tests recorded levels within the normal range.

“I am an active person and I am thankful that my life has returned to near normal. But my experience with arsenic poisoning impacts virtually every decision I make – both large and small.”

And more than her health has been affected. Durene notes that while her insurance covered a substantial portion of the expense, she still had to pay thousands of dollars in out-of-pocket money for deductibles and co-payments. In addition, she estimates she has spent \$20,000 to install and maintain a reverse osmosis water system designed to cleanse her water of arsenic. She has also placed a special filter on her kitchen faucet as an additional precaution. To ensure that her water continues to be free of dangerous levels of arsenic and other heavy metals, she now tests it once a year – at a cost of \$250. She worries that the water should be tested even more often but has decided to forego the expense.

Durene’s experience offers a cautionary tale about the potential life-altering impact of well water contamination. Yet her experience is also an inspiring story of resilience and an example of how individuals, faced with difficulties not of their own making, can overcome adversity and move on despite the daunting obstacles that have been placed in their path.

“What is most unsettling about my experience, Durene says, “is that despite my best intentions to shield myself from potential health risks

and to pursue a healthy life-style, I became a victim of forces beyond my control and knowledge.”

She notes, for example, that she had her water tested in 2000 when she bought the property. The results were negative. The problem was that the tests focused largely on water levels and flows and provided readings for only a limited number of heavy metals. Arsenic, unfortunately, was not among them. When she finally tested her well again in 2011, at the urging of doctor after her symptoms became dire, the findings revealed concentrations 13 times the maximum level set by the US Environmental Protection Agency. “In hindsight, I should have tested my water much more often. But the truth is arsenic poisoning was not a point of discussion, in either the news or among my neighbors.”

Durene also laments that the very activities that made for a “healthy life-style” turned out to be activities that actually accelerated the pace of poisoning and worsened her condition. Growing her own food, cooking meals with well water, and swimming in her pool were making her sick. The more she engaged in these healthy activities following her retirement, the sicker she got. “My environment was saturated with arsenic and I didn’t know it.”

Durene acknowledges that her acute case of arsenic poisoning is not a commonplace occurrence. Nevertheless, she asserts that high levels of arsenic and other heavy metals are likely to be found in wells and waterways throughout the region. As a consequence, many of her neighbors are potentially at risk of contamination. She cites an example of a local resident down the road who has exhibited symptoms similar to hers and the sudden onset of diabetes that her former husband experienced when he was living in her home. Some health officials believe that arsenic poisoning can induce elevated levels of glucose in the blood.

Despite her personal tribulations, Durene remains a cheerful and optimistic person. But she has become a fierce advocate for reform to help ensure that others do not have experience what she has.

She cites a number of measures that should be taken, not only to reduce the risk of arsenic poisoning but also to better treat patients when they become toxic. She calls for a vigorous public educational program to let people know about the potential health hazards posed by well water contamination with arsenic and heavy metals. She asserts that doctors and other health professionals should be better trained to diagnose and treat arsenic poisoning. She urges Oregon to pass legislation that makes well testing mandatory on a periodic basis and that requires landlords to inform potential tenants about the levels of contaminants in the water. She recommends that the government provide grants and low-interest loans to cover the cost of well testing, which many residents simply cannot afford. And she would like to see Oregon's Department of Environmental Quality launch and then maintain a comprehensive survey program that would enable the state to measure and track the full extent of the problem.

"We hear a lot about climate change and other issues that are likely to have a profound impact on our environment and health. Those issues should not be ignored. Yet, it's also true that arsenic and heavy metal contamination are major health risks throughout much of the state, especially in rural areas," Durene says.

"We need to address this risk with the same level of attention and resources that we would any other critical environmental and public health issue. It's a major concern that has been ignored for far too long. Unfortunately, I'm living proof of the adverse consequences of our ignorance and neglect."

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