

I am a small woodland owner, and take pride in being a good steward of the land and water quality. SB 931 is a solution in search of a problem, and instead of an improvement, actually creates 3 problems;

- 1) SB931's proposed notification system would burden landowners by too often causing a weather window to be missed, increasing costs and decreasing the applicator's ability to complete projects under contract. This is especially concerning for small landowners such as myself, as we are normally last on applicator priority lists, and too often have to scramble to make our project happen.
- 2) The proposed narrow notification requirement in this bill will lead to greater confusion for FERNS subscribers, as landowners are likely to renew notifications daily until an application is completed. The required notification of completion is problematic as applications may still be ongoing at 5 PM, or since most sites do not have cell service, landowners may not be able to return to a cell service area by 5PM.
- 3) Real time notification to all subscribers could subject landowners and applicators to harassment and sabotage, which would be very disruptive, expensive, and cause a weather window to be missed.

HB 2098, now in the House Ag and Land Use Committee, would continue the Pesticide Use Reporting System (PURS). PURS was created in 1999 but defunded in 2007 and has remained so since. Reauthorizing and funding PURS, not creating a new system, should be a priority.

Forestry comprises about 4% of the total pesticide use in the state. Over the last 8 years, forestry pesticide compliance rate has been 92%, the highest rate of all pesticide use categories. For the past 3 years there have been no violations or civil penalties levied against aerial forestry pesticide applications. Nearly every year, aerial forestry pesticide applications have the lowest complaint count. Spray drift of a pesticide is already prohibited by state and federal law, so this matter is already addressed.

In 2015, the legislature passed HB 5019 which, in addition to notification elements, added substantial new enforcement resources for pesticide investigations to ODA. In the past two years nearly 50% of ODA's investigation cases were related to Cannabis use, although Cannabis use provides no funding for these investigations. Directing OLCC to fund Cannabis use investigations would be a positive step in restoring ODA's investigative ability.

Forested watersheds have always provided the highest quality water of any land use. Aerial spraying is essential to controlling pervasive noxious weeds and invasive species such as Scotch boom, Himalayan blackberry, false brome, and 150 other species identified by the ODA. Spraying is only needed 2 to 3 times in a 45+ year growing cycle, and on steep and remote sites, is the only practical option, allowing for well controlled application at precise rates to protect native plants and vulnerable seedlings, such as Douglas fir, from invasive species. Aerial spraying is also used by local small tree farmers as well as local berry and vegetable farmers to protect their crops.

I am a registered professional engineer, with 45 yrs experience on over 500 environmental projects, with an emphasis on health risk assessments and all facets of water quality, including over 100 water treatment projects.

All herbicides go through exhaustive years-long research to gain label approval, which define appropriate application, timing, and other restrictions. All herbicides and their application are closely regulated by DEQ, ODA, and ODF, with an aerial applicator requiring extensive training, multiple licenses, and substantial investment in the latest GPS tracking units, precision application equipment, and real-time meteorology.

With today's analytics, any water source will have a number of constituents detected, with very few, if any, approaching EPA's drinking water standards or health advisories. Human health-based criteria (HHC) form the core of the 1972 Clean Water Act and assumes daily consumption of 2 L/d water and 17.5 g/d (175g/d in Oregon) fish for a 154 lb person over a 70 year life. Zero risk is impractical and so the default additional cancer risk for the general population was set as 10^{-6} (i.e. 1 in a million), which is considered a "de minimus" risk to 10^{-4} (i.e. 1 in 10,000), as determined by State risk management policy (subject to EPA approval). The range of 10^{-4} to 10^{-6} additional cancer risk is at the core of all risk assessments and standards for drinking water, air, hazardous waste, and all other environmental issues.⁽¹⁾ The water MCL (maximum contaminant level) generally represents a 10^{-6} additional cancer risk. It should be noted that;

- a) Very few people are exposed to an MCL or health advisory every day over their lifetime, since sources change, people move, do other activities, and/or drink other fluids. Constituents regularly exceed the MCL or a health advisory warrant investigation and if necessary, a site specific risk assessment.
- b) There are numerous other factors affecting human health, such as; lifestyle, food, heredity, dermal exposure to chemicals (such as benzene from gasoline), excessive drinking, and tobacco use. Tobacco use alone is responsible for 1 in 5 deaths, and can shorten a man's life expectancy by 12 years and a woman's by 11 years. A one in five death rate is equivalent to a 200,000 in a million additional risk. With significant background factors, finding definitive causation from short-term MCL or health advisory exposure will always be a challenge.
- c) Water sources around the world are constantly influenced by traces of human byproducts, including persistent pharmaceuticals which are disruptors to fish and aquatic life, and personal care products, which can be chemical precursors for THM in drinking water. Today, these are frequently the greatest challenge in meeting drinking water standards.

At the HB 2656 committee testimony, I heard several claims trying to link aerial herbicides application to examples of water quality issues. With my extensive background in hazardous wastes, water treatment, and environmental risk assessment, I researched the facts behind each claim and found that there was no imminent danger linked to herbicide application. In fact, I found that qualified professionals from various agencies were on top of each example and did their job well, demonstrating that the current regulatory system and scientific community is working well to protect the public and provide an ample safety margin. It appeared that the proponents of this bill did not like the answers that the agencies provided in each example, and actively sought to nefariously distort the situation and create unwarranted public fear and suspicion.

The three examples researched include;


Rockaway Beach

The City of Rockaway Beach historically did not treat Jetty Creek water and in 1980 had a Giardia alert, so in 1982, the City built a water treatment system. This system underperformed due to contaminants found in City wells and water quality alerts continued for coliform bacteria, trihalomethane (THM), and sodium from the wells until a new water treatment system was completed in 2013, using state-of-the-art ultrafiltration + mixed media filtration to produce excellent water quality. Winter turbidity is readily treated by this system, and like many other western Oregon cities, is able to draw from storage during turbidity spikes. All water quality issues were traced to contaminants from the wells, which provide 37% of the City's water, with the remainder from Jetty Creek. Between about 2004 to 2016, the Jetty Creek watershed was 80% harvested,

although none of the constituents associated with the recent water quality alerts originate from the watershed. Sulfometuron-methyl was detected once in 2013, but at a level far below the MCL. The City was projected to run out of water in a dry year (1 in 10 reoccurrence) and its distribution system has 43% leakage, with a significant portion of Jetty Creek's low summer flow needed to satisfy a state mandated baseline flow for fish. Unfortunately, the contaminated wells continue to be a necessary water source until the City is able to invest in leak mitigation and/or an alternate water source⁽²⁾ ⁽³⁾

Triangle Lake

Residences at Triangle Lake are situated on small lots on both sides of Highway 36 within a very narrow strip of land between a forested hillside and the lake. In this strip, there are also individual septic tanks, individual wells/springs, and parking, creating a crowded "grandfather" setting that existed well before the Clean Water Act and if judged by today's health standards, would not be permitted. In 2012, Triangle Lake School participated in the Department of Agriculture's (USDA) analysis of rural drinking water across the country. All of the 22 participating Oregon schools use groundwater wells for drinking water and were located in agricultural and rural areas, with none connected to a public water supply.

DEQ and OHA collected, packaged and shipped water samples from the 22 schools, using USDA sample kits and all samples followed strict chain-of-custody protocol and were sent to USDA's contract laboratory in Minnesota, for analysis for  [177 pesticides or pesticide breakdown products \(pdf\)](#).

The purpose of this sampling project was to collect data on the national prevalence of pesticides and pesticide breakdown products in school well water. Participation in this project was voluntary and the collected data was used for national research and assessing the risk posed by these chemicals for children during their developmental years. The study found no pesticides or their breakdown products in levels that would cause a public health concern. Only one sample detected a herbicide (imazapyr) and it was well below the level of concern. The measured concentrations were too low (parts per trillion) to harm the health of children or school staff who drink it on a regular basis.

Besides the Triangle Lake School, additional samples of urine, soil around homes, and drinking water were taken from local residents by DEQ/OHA, following strict laboratory and chain of custody protocol that would eliminate confounding factors. Only one sample detected a herbicide (hexazinone) at less than 1/1000th of the level of concern.

Sandy Newman, a local resident summed up this study as follows;

"None of our urine samples contained any atrazine and our levels of 2,4-D were actually less than what would be expected for the average American. The water and soil samples had no detectable amounts of any of the 126 pesticides tested for. The results of fall 2011 urine tests conducted by OHA do not support and are in stark contrast to the unrealistically high ... levels of 2,4-D and atrazine self-reported by the Pitchfork Rebellion in samples they supposedly took in the spring of 2011 and sent to a relative at Emory University.

The study was specifically designed to uncover not only if there was presence of pesticides, but also if any exposure was coming from forestry applications. I know the care that foresters and farmers take when apply these important chemicals. I have never witnessed the massive drift that some allege is occurring and the testing confirms that this simply isn't happening. Despite accusations, we simply are not seeing a health or environmental concern from forestry applications of herbicides." (ref; Eugene Register Guard, 5/18/2016)

Detroit Lake algal bloom

For 80+ years, Salem got its drinking water supply from the North Santiam River, near Stayton, using slow sand filters, which is a centuries old process best suited for reliably high quality raw water. The sand acts as a matrix to create a thin biological debris layer that actually does most of the filtration. It is anticipated that the top layer of sand will slowly plug and then an inch or so will be scraped off, exposing a new sand surface. Slow sand filters are capital intensive, requiring a lot of space and are extremely vulnerable to

turbidity and algal spikes, which will quickly foul the surface and create preferential flow paths through the bed, which will soon degrade finished water quality. Slow sand filters have few (if any) new applications in today's developed world, as there is usually insufficient space and less certainty of meeting water quality standards. The water treatment industry has generally moved away from slow sand filters and on to more advanced processes, such as mixed media pressure filtration and ultrafiltration.

In May/June 2018, there were 4 blue-green algal bloom advisories at the lake, which led to a June 12 precautionary health advisory for cyanotoxins aimed at protecting vulnerable groups of people in Salem. It recommended they use bottled water, and emphasized it was still safe for the general population. The City drew from its aquifer storage and recovery (ASR) system and added a powdered activated carbon process to remove the cyanobacteria associated with blue-green algal blooms.

Oregon's Harmful Algae Bloom Surveillance Program indicated that over the past 12 summers, OHA has issued 14 advisories for algae blooms in Central Oregon, on five lakes and reservoirs. Lake Billy Chinook has had advisories during each of the last three summers, and Wickiup Reservoir was affected in 2014. Haystack Reservoir, Crane Prairie Reservoir and Paulina Lake have also had advisories since 2006.⁽⁴⁾ Odell Lake and Crescent Lake also have a history of green-algae blooms. All of these examples are in National Forests, with minimal timber harvest.

Salem's Public Works Department had observed algae blooms in Detroit lake since 2010, but 2018 was the first time elevated toxin levels were observed in the drinking water. The blooms can cause problems for people and pets spending time in contaminated lakes during the summer. They can cause rashes and other types of skin irritation, as well as indigestion if swallowed. Pets, which are smaller and often consume more lake water, are particularly vulnerable.

Blue-green algae blooms require water bodies with long detention, sunshine, and nutrients (such as phosphorus and nitrogen, which are often present around human activity), no one knows precisely what causes them to appear, or why some release more toxins than others. "We really don't know what happened here" said Peter Fernandez, Salem Public Works Director.

There was no scientific link between today's forest practices and this, or any other, blue-green algae bloom.

References;

- 1) Human Health Criteria Final Issue Paper, DEQ, May 2011
- 2) Water Management and Conservation Plan, City of Rockaway Beach, HBH Consulting Engineers, 2010
- 3) Turbidity Analysis for Oregon Public Water Systems, Water Quality in Coast Range Drinking Water Source Areas, State of Oregon Dept of Environmental Quality, June 2010
- 4) Blue-Green Algae to Become More Prevalent, Experts Say, Bend Bulletin, June 12, 2018