

# DEQ Statewide Water Quality Toxics Assessment Report



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Quality

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*DEQ is a leader in  
restoring, maintaining and  
enhancing the quality of  
Oregon's air, land and  
water.*

## **This report is called the first statewide assessment of toxics in water across Oregon. Why is this information so significant?**

This study provides DEQ with a baseline for the presence of toxic chemicals in Oregon waters across the state. Some basins such as the Willamette are well studied and a large amount of background data exists; however, for other locations, there are no data for these chemicals. DEQ will build on this data to continue its water quality toxics monitoring program. During the years 2008 through 2013, we surveyed 15 water basins in all parts of the state.

## **Based on data collected, what should Oregonians be most concerned about in regard to toxic chemicals in the state's rivers and streams?**

While the chemicals we found in the water were primarily below levels of concern, they were present in most areas. There's much we don't know about the effects many chemicals have on aquatic life, either on their own or as chemicals mix with each other. We want people to be more aware of the toxic chemicals they use and dispose of, as well as what chemicals are in Oregon's waters. It's important for all Oregonians to take responsibility to ensure that we do our part in preventing the chemicals we use in our everyday lives from reaching the environment. By choosing products that don't contain toxic chemicals, we can reduce toxic chemicals in the environment.

## **What chemicals did you look for?**

We looked for a broad range of toxic chemicals – more than 500 in all – ranging from current-use pesticides and consumer product constituents to industrial chemicals (solvents and dyes), flame retardants, PCBs, metals (including copper, lead, arsenic, cadmium), and now-banned or “legacy” pesticides (such as DDT and dieldrin).

We detected 128 specific chemicals – about a quarter of all chemicals we looked for.

## **What were the top three most-detected chemicals?**

As expected, metals such as arsenic, barium and manganese were detected most frequently at nearly every site. These metals have natural sources as well as human sources which contribute to their presence. As far as man-made chemicals are concerned, the most frequently detected, completely man-made chemical was diuron, a current-use herbicide.

## **What are the toxics of greatest concern that you tracked from this study? And why are these chemicals a concern?**

The continued presence of legacy pesticides that are no longer used in the U.S. is concerning. We only measured these in a limited number of basins, so the remainder of the 15 basins we examined need to be assessed.

In addition, the presence of current-use pesticides at about 50 percent of sites, often as mixtures, is concerning. The source of these is not only agriculture but also likely roadside vegetation control, stormwater runoff and household use (lawn and garden care products).

Legacy pesticides are very persistent and bio-accumulate up the food chain, making them a concern for humans. Research shows that even low levels of pesticides (current-use) in aquatic environments may affect fish and other aquatic organisms.

**What are the geographic “hot spots” around the state for toxic chemicals in the water?**

Anywhere in the state where there are population, agricultural and industrial centers.

**Why are the Willamette and Hood basins particular problem areas?**

The Willamette basin is a center for population, agricultural and industrial activity. The Hood basin historically has been an agricultural center, with increased population in recent years. Both show impacts from toxic chemicals. These chemicals are used in everyday life, present in wastewater and stormwater as well as in industrial discharges and agricultural runoff. In addition, previous activities in these basins contribute to the presence of legacy contaminants in the water.

**What do you mean exactly by “environmental and human health criteria or aquatic life benchmarks”? Are these the same things? If a chemical is “above the human health criteria,” what does that mean?**

Aquatic life and human health criteria are regulatory standards established by DEQ as part of its responsibilities under the federal Clean Water Act. We use these criteria to establish limits on permitted discharges (under the National Pollutant Discharge Elimination System). Criteria are derived to prevent impacts to aquatic life and human health.

Benchmarks are guidance values established by the U.S. Environmental Protection Agency. We use these values to evaluate concentrations of chemicals in water; they’re derived to protect aquatic life. These values have no regulatory implication and cannot be used in a permitting situation.

If a chemical is “above the human health criteria,” it means the chemical is present in the water at a level that has the potential to affect persons who may be eating the fish and drinking the water from that water body.

**What do you have to say about pesticide readings from this study? Based on your data, should current pesticide use be curtailed?**

Although typically at very low levels, we detected current-use pesticides in every basin. Every effort should be made to keep these chemicals from reaching their non-targeted aquatic environment.

**Are “legacy” or now-banned pesticides such as DDT still a problem in our waters?**

Yes. Legacy pesticides are still present in Oregon’s environment and are still reaching the water. Once in the water, these pesticides can remain in the sediment for many years. These pesticides are also taken up in the food chain and can bio-accumulate in fish tissue, leading to human and wildlife health impacts.

**The report mentions arsenic at levels above human health criteria in Eastern Oregon and coastal estuaries. Which specific areas are of concern and why, and what may causing these high levels?**

Arsenic levels of concern were found in several basins in Eastern Oregon (including the Klamath, Malheur, Oregon Closed Lakes in south-central Oregon, Owyhee, Powder and Umatilla) and



coastal estuaries. The toxic form of arsenic is inorganic arsenic. This form is often associated with natural geology and rock formations but can also be a result of industrial activities. Oregon is naturally high in arsenic-containing geology, so it's likely these high levels are naturally occurring, making management of this issue difficult.

**According to your data, several metals – particularly copper and lead – are at levels above aquatic life criteria. What does that mean?**

This means that there is the potential for adverse impacts to aquatic life (fish, aquatic insects, etc.) from the presence of these metals in the water. At most sites, these levels were over the chronic criteria, meaning the effects would not result in an organism's death but could cause serious but non-lethal effects such as reduced reproduction, reduced growth and olfactory impairment.

**What will DEQ do with this data?**

DEQ will use this data to guide the next phase of its Statewide Toxics Monitoring Program. This data provides a base to build on. We'll re-sample several sites in the next phase of monitoring to evaluate changes over time. In addition, we'll examine new sites to provide improve geographic sampling coverage.

**What geographic areas require further sampling?**

Several follow-up samplings will occur over DEQ's next five-year cycle of monitoring. These include revisiting basins and sampling for chemicals not included in the original sampling. These basins include the Willamette, Umpqua, Rogue, Klamath and northeast Oregon basins. In addition certain areas, such as the coastal estuaries, warrant follow-up investigations for legacy pesticides and inorganic arsenic.

**Is DEQ sharing this information with other government agencies?**

Yes. DEQ shares this information with other agencies, such as the Oregon Health Authority and EPA, to assist with their programs.