How’s the Water? Is it Safe to Swim?

Bacteria and Sewage

Concerns about the danger that pollution poses to Willamette River swimmers date to at least the late 18th century, and the largest danger to the health of swimmers has always been pathogens carried in sewage. The immediate result of a rapidly expanding population and need for greater sewer capacity was a steady stream of raw, untreated sewage flowing directly into the Willamette and surrounding streams. This sewage could and did carry pathogens including gastroenteritis, dysentery, typhoid fever, and cholera.

Modern sources of Bacteria

Improvements in sewage infrastructure have vastly reduced the amount of sewage entering the river; no longer can it be called an “open sewer” as it was in the first half of the 20th century. However, the improved system is still under construction and until the City of Portland’s “Big Pipe” project goes online, the Willamette will continue to experience combined sewage overflows (CSOs) during wet weather (the project, once complete, is expected to reduce CSOs to the Willamette by 94%). For the time being, the City of Portland advises swimmers to avoid the Willamette for 48-hours after a rain. Bacteria also enters the Willamette and its tributaries from non-point sources, including leaking septic tanks, agricultural facilities, and pet and wildlife waste (the last is a particular problem at beaches like the one at Sellwood Park).

Recent E. coli data from the Willamette in the Portland Area

_E. coli_ is a rod-shaped bacteria that lives in the lower intestines of warm-blooded mammals, and whose presence correlates well with that of many waterborne microorganisms and pathogens which can cause illness. Large amounts of _E. coli_ in surface water indicate fecal contamination from warm-blooded animals, and while some _E. coli_ is to be expected in natural waters, too much can indicate a health hazard for swimmers. In order to encourage safe use of the river in Portland, Willamette Riverkeeper tests _E. coli_ levels at six Willamette River sites twice a month between April and September (see result table below). The City of Portland also tests for _E. coli_ once each month at three sites, and reports levels well below those that would impact recreation. It is always a good idea for swimmers in lakes and rivers, as one early 20th century Oregonian reporter put it, to “cultivate the gentle art of keeping their mouths closed while in the water.”

When we say the Willamette is “safe” for swimming, provided a recent rain has not caused an overflow of the sewage system, we mean that levels of _E. coli_ bacteria in the main channel generally test below standards set by the EPA for safe swimming. Despite the generally low bacteria levels in the Willamette itself, high bacteria levels...
are often found in its tributaries, and occasionally on the shores of beaches where wildlife and pet waste is common.

Water samples collected from the Willamette in the Portland, between April and September:

<table>
<thead>
<tr>
<th>Year</th>
<th>Percent of samples exceeding the EPA E. coli standard for swimming</th>
<th>Total number of samples collected (twice/month between April and Sept)</th>
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<tbody>
<tr>
<td>2006-2009</td>
<td>8.3%</td>
<td>120</td>
</tr>
<tr>
<td>2010</td>
<td>2.8% (^1)</td>
<td>72</td>
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<tr>
<td>2011 (April 12 through July 8)</td>
<td>8.3 (^2)</td>
<td>48</td>
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\(^1\) Two exceedences; one occurred during rainy weather, and the other was a sample taken from the shoreline at Sellwood Park during dry weather.

\(^2\) Three of four of these exceedences were slight and occurred in the Gladstone/Lake Oswego area; the fourth was taken from Sellwood Park during a period of heavy flooding.

Toxic Chemicals

A second source of pollution that may give swimmers pause as they consider jumping into the Willamette is its toxic chemical content. Years of heavy industrial pollution in Portland Harbor has led to a superfund designation and fish consumption advisories. However, the Oregon Department of Human Services (DHS) concluded in their 2010 Public Health Assessment of Portland Harbor that full-body contact with the water and some contact with beach sediment (including some accidental ingestion of water and sediments) are “not expected to harm the health of people who recreate” there, provided they heed City advisories regarding sewage overflows and State advisories about how much and what types of fish to consume. It is recommended by the OR DHS that people who recreate in the Portland Harbor area wash any body parts that have come into contact with the water (particularly before eating).

There is no doubt that pesticides and fertilizers from homes and farms, legacy pollutants like PCBs and dioxins from industrial days gone by, and oils, detergents, metals, and other toxic contaminants found in stormwater are all making their way into the Willamette River. Even sewage treatment plants cannot always remove all of the trace contaminants found in our domestic wastewater – including prescription medicines, heavy metals, and even caffeine. All of these forms of pollution taken together can harm water quality for aquatic wildlife and present challenges for the treatment of drinking water. But despite our ongoing battles with non-point source pollution and Portland Harbor’s toxic legacy, we strongly encourage the safe use of the Willamette for recreation, including swimming. During a dry Portland summer, the available data does not indicate a significant danger to swimmers in terms of bacterial pathogens.