

**PFAS in Fish Collected from Columbia Slough
United States Geological Survey-2019/2020**

In 2019, [Oregon Health Authority updated an existing fish consumption advisory](#) for resident fish in the Columbia Slough. The 2019 update provided revised meal recommendations for consumption of fillets and whole-body resident fish, including largescale sucker, due to high levels of polychlorinated biphenyls (PCBs) and mercury. [The Columbia Slough Fish Advisory Technical Report](#) provides details relevant to that advisory. This memo (PFAS in Fish Collected from Columbia Slough) is an appendix to that technical report.

In 2019 and 2020, the United States Geological Survey (USGS) collected largemouth bass, largescale sucker, goldfish/carp, and a single crayfish from the Columbia Slough. Dr. Jennifer Fields, Professor at Department of Environmental and Molecular Toxicology at Oregon State University (OSU), analyzed the fish tissue samples for levels of per- and polyfluoroalkyl substances (PFAS). The Fields laboratory analyzed fillet, blood, and liver separately for each fish. The Fields lab tested for dozens of PFAS species and found that perfluorooctane sulfonic acid (PFOS) was the only one with toxicity information detected at a high enough frequency to calculate meal recommendations. Other species were detected with high frequency, but they lacked enough toxicity information to use those data to inform meal recommendations.

When calculating meal recommendations, OHA followed current [standard operating guidance](#) and used the oral reference dose (RfD) for PFOS of 4.1×10^{-6} mg/kg-day that it recently derived. A separate technical document describing the derivation process for that RfD is available upon request.

The Fields lab analyzed the tissue of individual fish collected. Tissue samples from multiple fish in each species were not composited.

Analysis determined that the levels of PFOS in liver tissue and blood were 5-16 times higher than the levels found in the fillets.

Table 1: Data used for calculating meal recommendations.

Fish species	Number of fish analyzed	Mean PFOS concentration in fillet (mg/kg)	Mean PFOS concentration in liver (mg/kg)	Mean PFOS concentration in blood (mg/kg)
Largemouth Bass	7	0.04	0.24	Not measured
Largescale Sucker	27	0.018	0.14	0.29
Goldfish/carp	7	0.018	0.086	0.11

Table 2: Meal recommendations for PFOS-Fillet only

Fish Species	Meals/month based on PFOS in fillet
Largemouth Bass	1
Largescale Sucker	2
Goldfish/carp	2

Meal recommendations in the current fish advisory for the Columbia Slough were based on levels of polychlorinated biphenyls (PCBs) in fish tissue. The advisory recommends limiting consumption of largescale sucker to 2 eight-ounce meals per month if only the fillet is consumed and 1 eight-ounce meal per month if the whole body is consumed. The recommendation for all other resident fish species is 1 eight-ounce meal per month if only the fillet is consumed and no consumption of whole body.

Table 3: Modification of Columbia Slough fish consumption advisory meal recommendations

Fish species (meal type)	Existing advisory meal recommendations (PCBs)	Updated advisory meal recommendations (PCBs and PFOS)
Largescale sucker (fillet only)	2	2
Largescale sucker (whole body)	1	0
All other resident fish (fillet only)	1	1
All other resident fish (whole body)	0	0

Assuming different mechanisms of toxicity and target organs for PFOS and PCBs, the existing advisory should be protective against health risks from PFOS as well as PCBs. However, due to the much higher levels of PFOS in liver blood, OHA is modifying the existing Columbia Slough advisory to recommend that no one consume whole body/internal organs of any resident fish caught from the Columbia Slough.