

WILLAMETTE RIVER MERCURY CHARACTERIZATION

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ABSTRACT

The accumulation of mercury in fish is a well-recognized environmental problem throughout much of the United States. In Oregon, during the 1990s, the Department of Human Services (DHS) issued fish consumption advisories for all resident fish species in the Mainstem Willamette River, the Coast Fork Willamette River and the Cottage Grove and Dorena Reservoirs. The federal Clean Water Act requires the establishment of a Total Maximum Daily Load (TMDL) when water quality standards are not met. The TMDL determines how much mercury can be added to the river without exceeding water quality standards. In this case, the beneficial use of fishing or fish consumption was not being met. Since the DHS criterion being exceeded is not based on water column concentration, a surrogate approach was needed to correlate fish tissue mercury levels to water column concentrations. With the aid of the United State Environmental Protection Agency (USEPA), the Oregon Department of Environmental Quality (ODEQ) collected water column, sediment and fish tissue samples in 2002 and 2003. These data were used to develop a food web model and translator method to correlate the water column concentration to the fish tissue levels.

In September 2006, the first phase of the Willamette Basin TMDL used the model to establish an interim water column mercury target of 0.92 ng/L and a loading capacity for total mercury of 94.6 kg/yr. The TMDL established a basin wide interim Waste Load Allocation (WLA) of 3.7 kg/yr for all of the point source contributions. The ODEQ determined that a second phase of the TMDL was needed to refine estimates of water column guidance values and develop sector-specific WLAs by 2011. Following the establishment of sector-specific WLAs, individual permitted sources will have Reasonable Potential Analysis (RPA) calculated to ensure the downstream mercury concentration meets the interim water column guidance value.

Additional point source and ambient water quality data collection is being performed to fill data gaps in the Phase 1 Willamette Basin Mercury TMDL and provide necessary data to complete the mercury RPAs.

KEYWORDS

Mercury, Methylmercury, Ambient, TMDL