

Hope, B. "A Basin-Specific Aquatic Food Web Biomagnification Model for Estimation of Mercury Target Levels." *Environmental Toxicology and Chemistry*, 22(10): 2525-2537. October 2003.
(Reviewed by Tracy Maloney)

This article begins in stating that, within the Willamette River Basin, health advisories currently limit consumption of fish that have accumulated methylmercury (MeHg) to levels posing a potential health risk for humans. The paper explains how MeHg is known to biomagnify in aquatic food webs, and can do so all the way up to humans who consume contaminated fish tissues. The concept of total maximum daily load (TMDL) is given, as well as a description as to how this value is attained.

The article then presents an aquatic food web biomagnification model that follows the pathway of inorganic mercury and methylmercury accumulation within the fish, the species of interest being the resident ones that pose a concern to stakeholders. The model is structured around eight species of resident Willamette River fish. A main focus of the article is the prediction of tissue mercury concentrations over 20 years of water-quality monitoring. The estimated mean values from the research ranged from 1.12×10^{-6} to 7.66×10^{-6} .

Critique

This *Environmental Toxicology* journal article is packed with information regarding the bioaccumulation of mercury through the Willamette River Basin aquatic system. It provides thorough preliminary information about biomagnification and total maximum daily load. In addition, it gives a good description not only of current methylmercury levels, but also those that are predicted within the following 20 years. Given that the paper was published in 2003, the information is very current and viable for existing Willamette River conditions.

A downfall of this article is that it is most likely directed to a scientific audience. Some of the terminology is difficult to comprehend, making it a text that is informative to a smaller population. It also lacks a discussion about the specific harm that mercury poses to human health. It mentions that high concentrations of mercury are harmful, though it doesn't precisely explain why. Overall however, it is a very good text for understanding how mercury travels from distant sources to human bodies.

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