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Hg concentrations in fish from coastal waters of California and Western North America

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ABSTRACT

The State of California conducted an extensive and systematic survey of mercury (Hg) in fish from the California coast in 2009 and 2010. The California survey sampled 3483 fish representing 46 species at 68 locations, and demonstrated that methylHg in fish presents a widespread exposure risk to fish consumers. Most of the locations sampled (37 of 68) had a species with an average concentration above 0.3µg/g wet weight (ww), and 10 locations an average about 1.0µg/g ww. The recent and robust dataset from California provided a basis for a broader examination of spatial and temporal patterns in fish Hg in coastal waters of Western North America. There is a striking lack of data in publicly accessible databases on Hg and other contaminants in coastal fish. An assessment of the raw data from these databases suggested the presence of relatively high concentrations along the California coast and in Puget Sound, and relatively low concentrations along the coasts of Alaska and Oregon, and the outer coast of Washington. The dataset suggests that Hg concentrations of public health concern can be observed at any location on the coast of Western North America where long-lived predator species are sampled. Output from a linear mixed-effects model resembled the spatial pattern observed for the raw data and suggested, based on the limited dataset, a lack of trend in fish Hg over the nearly 30-year period covered by the dataset. Expanded and continued monitoring, accompanied by rigorous data management procedures, would be of great value in characterizing methylHg exposure, and tracking changes in contamination of coastal fish in response to possible increases in atmospheric Hg emissions in Asia, climate change, and terrestrial Hg control efforts in coastal watersheds.

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