

**Transport, Cycling, and Fate of Mercury and Monomethyl Mercury
in San Francisco Bay-Delta and Tributaries:
An Integrated Mass Balance Assessment Approach**

Lead Agency: San Jose State University Research Foundation
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About the Project:

As part of a larger, integrated research project, scientists investigated the sources and loads of mercury in the Bay-Delta watershed to develop a conceptual understanding of where the mercury in the watershed originates, where it travels, and how it transforms. The Bay-Delta watershed is contaminated with mercury. Mercury that was mined in the Coast Range and transported to the Sierra Nevadas for use in gold mining activities washes down from both sides of the Central Valley where it gets deposited into stream beds, settles out on the landscape, or makes its way to the Bay-Delta. In the environment, mercury can be methylated. The methylation process facilitates its uptake by aquatic organisms. Methylmercury bioaccumulates in organisms that take up more methylmercury than it eliminates. Once a part of the food web it biomagnifies – it increases in each successive level in the food chain. Consumption of contaminated, high-trophic level fish is the primary route of exposure to methylmercury. Mercury is a potent neurotoxicant and methylmercury is the most toxic form of this metal. An understanding of the sources and sinks of mercury and methylmercury is needed to develop appropriate control programs to reduce fish tissue levels and ensure the wetland restoration efforts do not exacerbate the mercury issues in the watershed.

Primary Project Goals and Accomplishments:

- ❖ Fill in data gaps in our current conceptual understanding of mercury and methylmercury sources, sinks, and cycling in the Bay-Delta and its watershed
- ❖ Verify and quantify seasonal variations of methylmercury in sediments and in the water column with respect to habitat type
- ❖ Accurately characterize the spatial distribution of total mercury and methylmercury in the Delta
- ❖ Estimate the loadings of methylmercury from wetlands and evaluate their importance relative to other sources
- ❖ Provide a foundation and framework for long term monitoring of mercury contamination issues in the Delta

Partners:

The Transport, Cycling, and Fate of Mercury and Monomethyl Mercury in San Francisco Bay-Delta and Tributaries: An Integrated Mass Balance Assessment Approach project partners included San Jose State University Research Foundation, Moss Landing Marine Laboratories, the Department of Fish and Game, the Central Valley Regional Water Quality Control Board, and Texas A&M University.