



Assessing Contaminants in Fish and Shellfish in San Diego Bay

Monitoring and Assessment
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Fishing is a key recreational and subsistence activity in San Diego Bay. Several contaminants exist in bay sediments that can become incorporated into fish and shellfish tissue, via bioaccumulation and biomagnification, potentially posing a threat to humans consuming the seafood. The [California Office of Environmental Health Hazard Assessment \(OEHHA\)](#) conducts scientific evaluations of risks to public health. In 2013, OEHHA released an [advisory](#) for San Diego Bay identifying the weekly number of servings of select fish species considered safe to eat, based on contaminant levels measured in fish tissue that could affect human health. The 2013 OEHHA advisory relies on contaminant-concentration data in fish tissue collected from 1999 through 2010. Since that time, additional data from several efforts have become available.

Data Available for Analysis since the 2013 OEHHA Advisory

- SCCWRP Bight Regional and Regional Harbor Monitoring Programs and City of San Diego Shallow Water Habitat Survey (Fish Tissue, 2013-2014) San Diego Water Board Surface Water Ambient Monitoring Program (Lobster Tissue, 2014-2015)
- NOAA Mussel Watch Program (Mussel Tissue, 2010-2015)
- CDPH Marine Biotxin Monitoring Program (Clam and Mussel Tissue, 2011-2016)
- San Diego County DEH Beach and Bay Monitoring Program (Water Quality, 2014-2016)

San Diego Bay: A Resource of Many Uses

San Diego Bay is an important water body in the San Diego region due to its ecological value and because it supports tourism; commercial, recreational, and subsistence fishing; and a variety of recreational, maritime, industrial, commercial, and military uses. For this reason, the San Diego Water Board endorsed a [“Strategy for a Healthy San Diego Bay”](#) via Resolution No. R9-2015-0086 in June 2015. The Strategy identified the key beneficial use categories of the Bay as: Recreation (water contact (“REC-1”) and non-water-contact (“REC-2”)); Human consumption of fish and shellfish; and Habitats and ecosystems.

A primary goal of the Strategy is to use monitoring data to assess attainment of these key beneficial uses, as well as changes in their status over time, and to communicate findings to the public. This “status sheet” presents analyses of more recent data collected by federal, state, and local agencies. Data analyzed included contaminant levels in fish, lobster, and mussel tissue, marine biotoxins in clam and mussel tissue, and levels of fecal indicator bacteria in water where bivalve shellfish may be harvested by the public. This information is not intended as a consumption advisory; rather, a goal to evaluate whether the key beneficial use category of “safe to eat” is being met. This information can be used to educate the public and to prioritize efforts for achieving healthy waters in San Diego Bay.

Contact: [Betty Fetscher](#), Ph.D., Senior Environmental Scientist

Project Partners:



Common Fish and Shellfish Analyzed



Chemical Contaminants Found Above Levels of Concern in Analyzed Fish and Shellfish Tissue

Species Analyzed	Key Contaminants of Concern
California Halibut	Mercury, PCBs
Pacific Chub Mackerel	Mercury, PCBs
Round Stingray	Mercury, PCBs
Spotted Sand Bass	Mercury, PCBs
Topsmelt	PCBs
California Spiny Lobster	Mercury
Mussel	PCBs, Pesticides (Dieldrin)

Levels of Other Contaminants in Bivalve Shellfish

Bivalve shellfish may also contain biotoxins which can cause illness in humans if consumed. Levels of marine biotoxins were not found to be above Food and Drug Administration action levels at the two locations sampled in San Diego Bay. As an extra pre-caution, there is a statewide annual mussel quarantine limiting consumption from May 1 to October 31, the time of year when marine biotoxins tend to be most prevalent. Levels of bacteria in the water can also indicate risk of human illness for shellfish consumption. Levels of total coliform indicator bacteria measured from water at six public beaches in San Diego Bay were analyzed and compared to the total coliform standards for shellfish harvesting in the [San Diego Basin Plan](#). Bacteria levels were elevated at all beaches analyzed, indicating that shellfish harvested from these areas may be unsafe to eat.



Photo: C. Loflen

PCBs and mercury are still present at levels of concern in fish from San Diego Bay. Contaminants in lobster and bivalve shellfish from San Diego Bay may also pose a risk.

Contaminants in Fish and Shellfish Tissue

Tissue from fish, lobsters, and mussels were analyzed for several contaminants (e.g. heavy metals, PAHs, PBDEs, PCBs, pesticides) that can pose a risk to human health if consumed in seafood. Contaminant levels measured in fish, lobster, and mussel tissue were compared to OEHHA advisory concentrations (Table 2). Tissue from all fish species analyzed contained levels of concern for PCBs. Most fish species analyzed also contained levels of concern for mercury. These findings support the OEHHA advisory for limiting the consumption of fish from San Diego Bay. Lobster tissue samples were found to contain levels of concern for mercury. Tissue analyzed from mussels contained levels of concern for PCBs and pesticides (specifically dieldrin). Consumption of lobster and mussels in large enough quantities may pose a risk to human health.

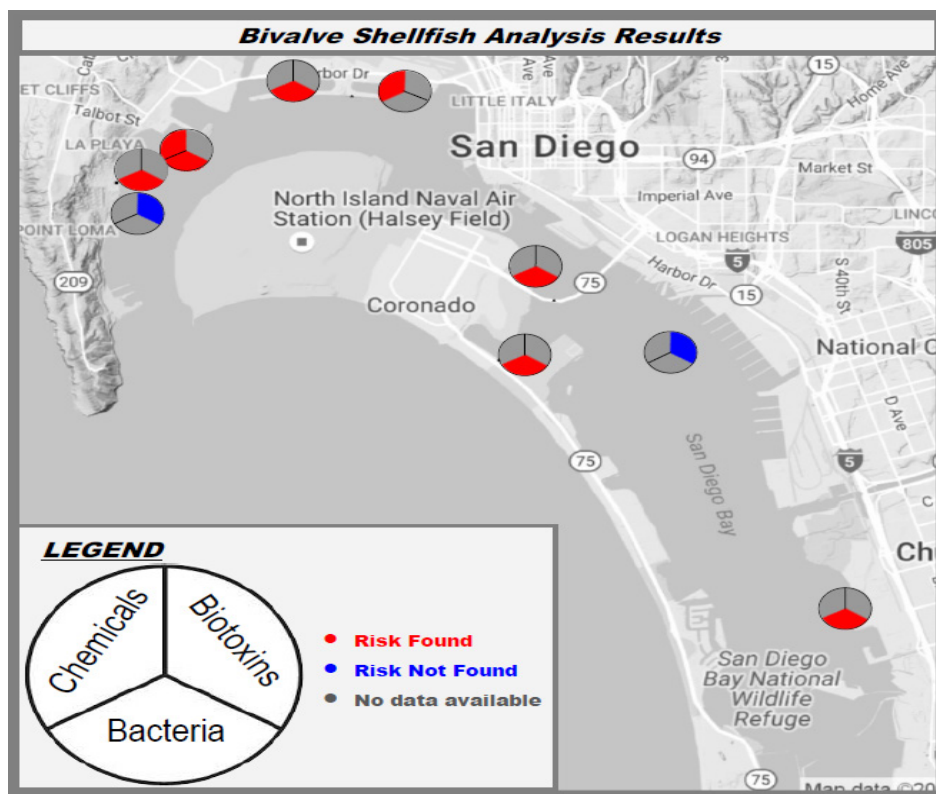


Figure 1. Sampling locations and analysis results for bivalve-shellfish tissue or water-column grabs. Depending upon the monitoring program, stations were sampled for either chemical constituents or marine biotoxins in tissue, or for total coliforms indicator bacteria in the water column. See legend for a key to what was measured at each station, and analysis results.

Stay Informed!

- Visit the [OEHHA website](#) for the latest consumption guidelines and advisories.
- Look for consumption guidelines and advisory signs posted at popular fishing piers throughout San Diego Bay.
- Visit the [San Diego Water Board website](#) for information about bioaccumulation studies and angler surveys conducted in San Diego Bay.

The [San Diego Water Board](#): Healthy waters realized through collaborative, outcome-focused efforts that support both human uses and sustainable ecosystems.