

PCBs and Mercury Contamination in SF Bay

Visualization: <https://ningning621.github.io/sfei-fish/>

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Through the visualization that I built, I attempted to guide the reader through two questions:

1. Where is the contamination most acute and how are fish and nearby sediment contamination linked?
2. Is there evidence of improvement over time in sediment and fish tissue in relations to contamination?

To collect data, I read through the Pulse of the Bay pamphlets and fish advisories before delving into the CD3 tool. The CD3 tool already provided a lot of useful insights on contaminants with the graphing and mapping feature, so I wanted to focus my visualization on highlighting the different segments in the SF Bay. I focused my attention on data points that were from the “SF Bay Segments - Basic Plan” area filter since that category seemed the most relevant, and I made sure to normalize all the units (ugk/g vs. mg/kg vs. ng/g).

As I was looking through the data, I noticed that there were large outliers for contaminants concentrations, especially data taken from 2003-2004, and there were also large gaps in missing data for some of the fish species. To make the graphs a little less misleading, I normalized that data by plotting the average of the concentrations instead of the raw total since plotting totals would bias the insights towards fish species and contaminants that were outliers. All of the processing work was done through Javascript and code.

Through this process, I found that the peak periods of contamination for PCBs and Mercury in SF Bay was in 2004 and 2016 (though less major), but ever since the 2004s, contamination has been on the decline, meaning that the efforts that we’re making to reduce these contaminants are paying off. Furthermore, the majority of the contaminants were found in fish tissues as opposed to sediments. PCB concentrations are on average relatively low, minus Central SF Bay being a slight concern with 294.86 ng/g of PCBs in fish tissues. Mercury, on the other hand, is fairly prevalent across almost all seven segments of the SF Bay, with the most detected in South SF Bay. As the graphs in the visualizations show, there is a correlation between fish tissue contamination and sediments contamination. Finally, I attempted to end the visualization on a happier note with advice on how to safely consume fish and which fishes are historically known to be low in contaminants. I believe that it was important to highlight the major trends and warning signs in the contaminants data while still provide actionable advice to readers about how they should consume fish from SF Bay.