Mercury in the San Francisco Bay

SFEI San Francisco Bay Data Visualization Challenge 2018

Mercury in water and in fish tissues

This tool shows two data measurements in relation to one another: Mercury content of water samples, and average organic mercury content found in the tissues of four common fish species in the San Francisco Bay area. The data spans the years from 1994 to 2017.

Purple dots on the map of San Francisco represent individual water samples tested in a given year. The darker the dot, the higher the mercury content of the sample. You can click on any individual dot to view the exact measurement.

The chart inset in the lower left shows the range of organic mercury levels found in each fish species during that year, represented on top of a gradient of safety thresholds for consuming those fish.

Navigating the tool

Mercury in the San Francisco Bay (https://ka7eh.github.io/sfei_rmp_2018/)

To look at the data for a single year, the year of interest can be selected using control buttons in the left side panel. The “play” button will auto-play the annual data sequentially.

Interpretation and context

The four thresholds represented behind the fish data are set by the U.S. FDA, and represent danger levels for pregnant mothers who might eat fish. Measurements in the lowest (yellow) range indicate that the fish are safe to eat up to three times a week. The second range indicates that they are safe to eat up to two times per week. Fish in the third range should not be eaten more than once per week, and anything in the high (red) range is unsafe to eat in any quantity.

Humans are generally able to select alternative foods when certain options are unsafe. In fact, local governments issue advisories when they determine that residents should avoid locally-caught fish. Wildlife living on a fish diet in the San Francisco Bay area, however, do not have alternative food options. If their primary food source contains unsafe mercury levels, it can negatively affect entire generations of offspring, weakening the local ecological fabric.

In November 2007, the California State Water Resources Control Board and the U.S. EPA approved a mercury mitigation plan for the Bay Area watershed. The following year the State began large-scale efforts to remove mercury from contaminated sites and to impose limits on the release of mercury from industrial and municipal wastewater systems. Even with these initiatives, it will take at least 70 years before the Bay Area watershed returns to safe mercury levels.

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The code and processed data for this visualization is available at https://github.com/ka7eh/sfei_rmp_2018