

ENVIRONMENTAL INDICATOR

FISHABLE

WATERBODY

TYPE: LAKES

MEASURE: CONTAMINATION IN SPORT FISH

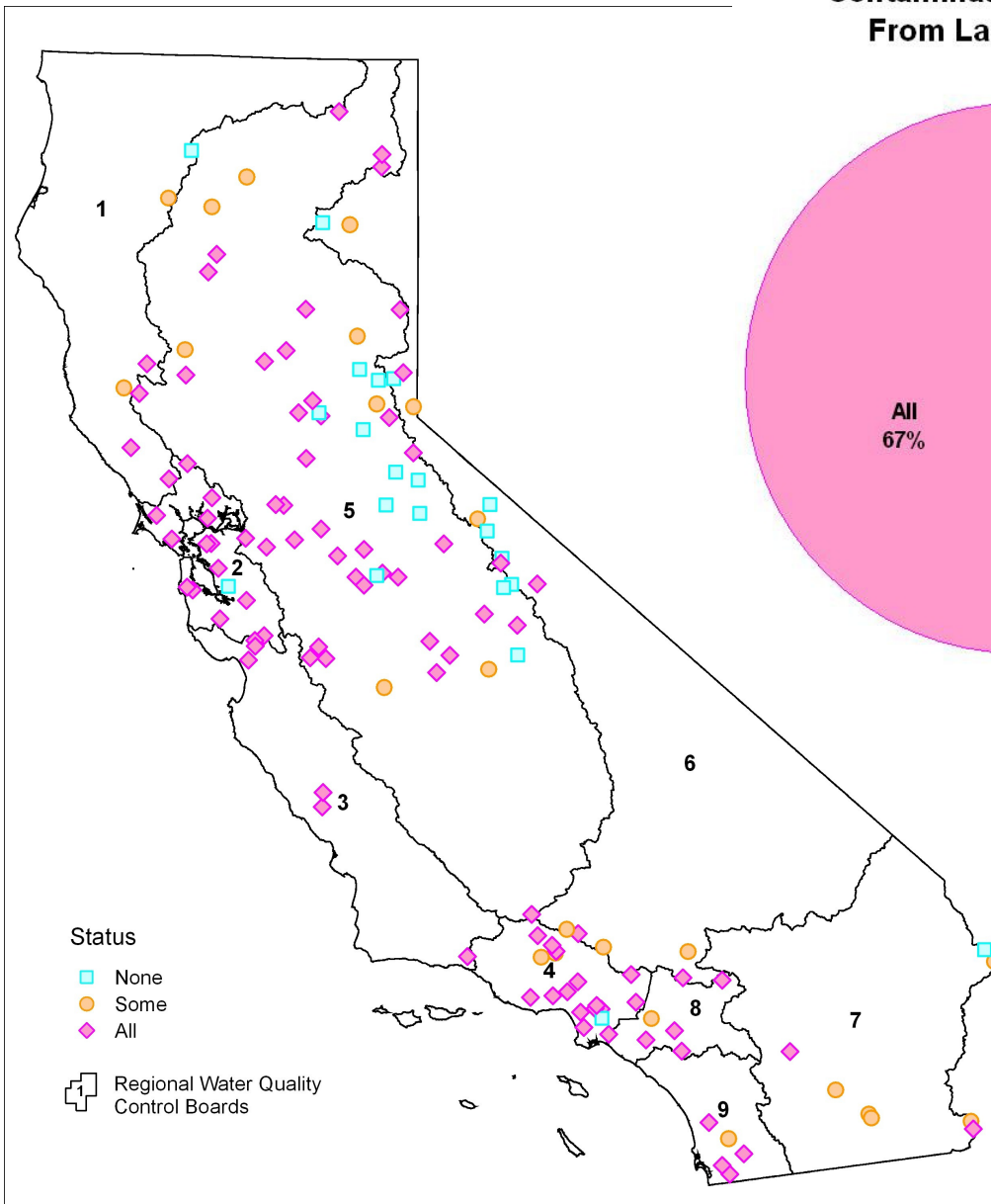
MESSAGE: 82% of California's lakes have fish that are contaminated.

KEY STATISTICS

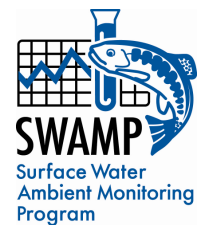
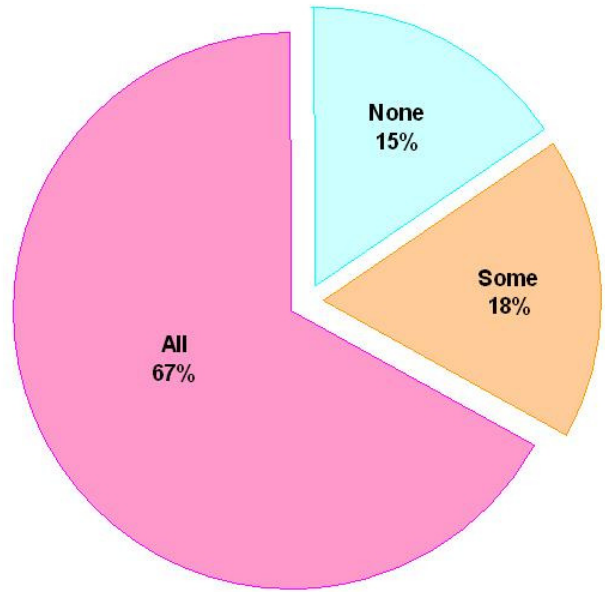
NUMBER OF CALIFORNIA LAKES STATEWIDE: ~ 9,000

NUMBER OF LAKES SAMPLED: 202

MEASUREMENTS:



Contamination in Sport Fish From Lakes Statewide



WHAT IS THE MEASURE SHOWING?

This measure shows the percent of California lakes in which sport fish are contaminated with mercury or other chemicals. Fish in 15% percent of California lakes did not have contamination above any of the known human health thresholds (None category). In 18% percent of California lakes one or more fish caught exceeded a known human health thresholds (Some category), while in 67% percent of the lakes all of the fish caught exceeded known human health thresholds (All category).

WHY IS THIS MEASURE IMPORTANT?

Knowing the contamination levels of fish is important because humans eat fish. Contaminants like mercury and PCBs can reach levels that directly affect human health. Mercury poisoning can cause brain damage and other neurological problems, particularly in fetuses and small children. PCBs can cause cancer over a lifetime of exposure. This information can be used to prioritize which lakes need follow-up studies and to inform the public of potential high contaminant levels in certain sport fish.

WHAT FACTORS INFLUENCE THE MEASURE?

Mercury is the number one contaminant found in sport fish, reaching concentrations that pose potential health risks to consumers of fish caught from California lakes. Mercury tends to accumulate in popular sport fish like bass. California's historic mining legacy is considered the main reason for the distribution of mercury found in certain fish. Other potential sources of mercury include atmospheric deposition, landfills, wastewater discharges, incinerators, gas pipelines and electrical equipment.

PCBs were second to mercury in reaching concentrations posing potential health risks to consumers of fish caught from California lakes. PCBs are organic chemicals once used in electrical equipment and other industrial products and tend to accumulate in popular sport fish like carp, channel catfish, and brown bullhead. PCBs tend to occur in areas of historic use or maintenance of electrical equipment such as largely populated areas with high amounts of industrial activity, areas where electrical equipment or other PCB-containing equipment was used, and hydroelectric facilities.

TECHNICAL CONSIDERATIONS:

- Data source: Statewide SWAMP study of contaminants in fish from California Lakes and Reservoirs; Period 2007
- Unit of Measure: Concentrations of mercury and PCBs in fish tissue.
- Not all fish species found in the lakes were sampled. Scientists targeted top predator species like bass to evaluate food web bioaccumulation of mercury up the food chain. Fatty bottom-feeding fish, like carp, channel catfish, and brown bullhead, were sampled because they bioaccumulate organic compounds like PCBs.

- Fact sheet is available at:
http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/lakes_study/lfsfs_print_r2.pdf
- Public report is available at:
http://www.waterboards.ca.gov/water_issues/programs/swamp/docs/lakes_study/lakes_report_complete.pdf
- For fish consumption advise (Safe Eating Guidelines) please visit the Office of Environmental Health Hazard Assessment (OEHHA):
http://www.oehha.ca.gov/fish/so_cal/index.html
- USGS – Toxic Effects of Mercury: <http://www.usgs.gov/themes/factsheet/146-00/>
- CDC – Toxic FAQs for PCBs: <http://www.atsdr.cdc.gov/tfacts17.html#bookmark05>

GLOSSARY:**Polychlorinated biphenyls (PCBs)**

A class of organic compounds manufactured for use as cooling and insulating fluids in electrical wiring and components. Use of these chemicals was banned in the 1970s but, due to their persistence, they can still be found in the environment.

Atmospheric deposition

Air pollution deposited directly into water or onto land and then washed into water.

Bioaccumulate

The accumulation of substances, such as pesticides, or other organic chemicals in an organism either through absorption from surrounding water or through ingestion of other contaminated organisms.