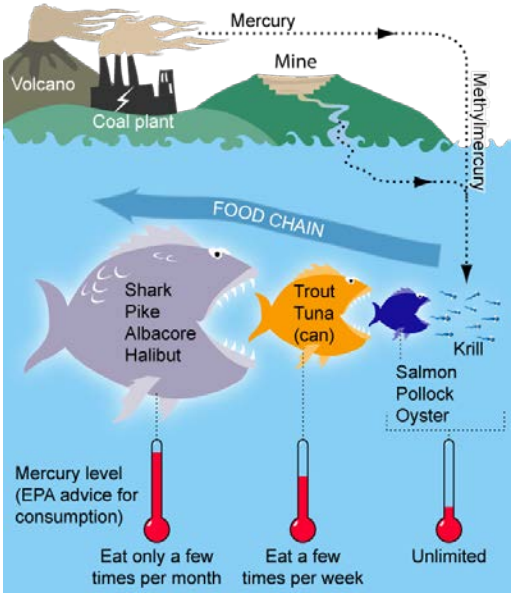
Frequently Asked Questions
(Fish Consumption)

Why do fish have mercury advisories?

Because mercury can have adverse health effects in humans, we must issue advisories to help citizens reduce risk and make informed decisions about eating fish from Kentucky waters. To accumulate in fish tissue, mercury first must go through a phase called methylation. In aquatic environments, microorganisms convert deposited (inorganic) mercury to toxic methylmercury that can accumulate in fish and animals. The figure below represents how mercury can travel through a food chain and bioaccumulate in higher concentrations in top predators and larger and older fish. Our advisory identifies these top predator fish in Kentucky.



U.S. Environmental Protection Agency (USEPA). 2009. The National Study of Chemical Residues in Lake Fish Tissue. EPA-823-R-09-006. U.S. Environmental Protection Agency, Office of Water, Washington, DC.

What are PCBs and where do they come from?

PCBs are man-made industrial chemicals made in the United States from about 1929 to 1979. They were used primarily in electrical transformers, plastics and lubricating oils. PCBs were banned for most uses because they do not break down easily and stay in the environment for a long time.

How did we determine our advisory levels?

We developed our advisory criteria from the USEPA document "Guidance for Assessing Chemical Contaminant Data for Use in Fish Tissue Advisories" which outlines risk based consumption limits for methylmercury. This document calculates consumption limits by using the variables fish meal size, consumer body weight, contaminant concentration in the fish tissue, the time-averaging period selected (monthly), the reference dose for noncarcinogenic health endpoints, and the cancer potency factor and the maximum acceptable risk level for carcinogenic health endpoints. Our advisory criteria were condensed from their recommendation to create a more conservative set of advisory levels.

Do you sample for other contaminants besides mercury and PCBs?
Along with PCBs and methylmercury, we also test for metals, pesticides and herbicides. These contaminants have not been found to be a cause for concern in fish in Kentucky waters.

Is there a way to make fish safer to eat?
Fish is a good dietary source of lean protein and omega-3 fatty acids and should be part of a healthy diet. These fish ingredients are important for adults and a child's proper development. To prevent the adverse effects of contaminants found within fish, the public can practice the following advice to help reduce risk:

- *The public can help reduce risk simply by following our consumption limit advice and to check for any site specific advisories. Because they are more at risk, Kentucky has created Sensitive population consumption limits to ensure extra protection for this group.*

- *Mercury and other contaminants accumulate the most in predator fish as well as older and larger fish. By reducing the amount of these particular fish you eat can reduce your risk of higher contamination.*

- *PCBs are stored mainly in fatty tissue. You can reduce the amount of PCBs by removing the skin and trimming off the fat from your fillets. Also, it is better not to use the fat, skin, organs, or juices in soups or stews.*

What is a Sensitive population and why are they more at risk?
Sensitive populations are women of childbearing age, children 6 years of age or younger, pregnant or nursing women and women who plan to become pregnant. Specifically, methylmercury can accumulate in your blood stream over time. Methylmercury is removed from the body naturally, but it may take over a year for the levels to drop significantly. Thus, it may be present in a woman even before she becomes pregnant as well as in breast milk.

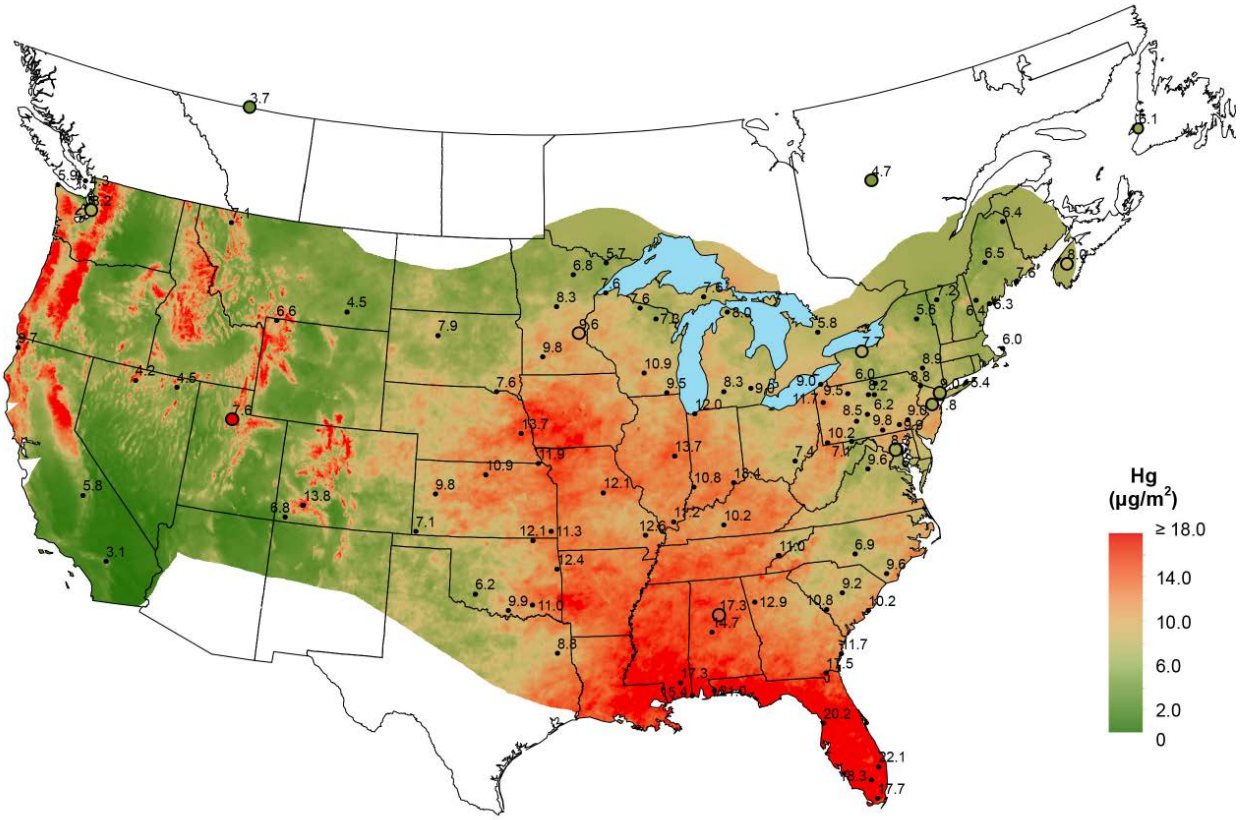
How does our advisory compare to surrounding states?
Many states have statewide advisories while others only have site specific advisories. Mercury concentrations are different for each state and each state carries the responsibility of identifying mercury contamination risk and notifying the public.

What is ORSANCO and why is there a specific advisory for the Ohio River?
The Ohio River Valley Sanitation Commission (ORSANCO) is an interstate commission established to control and abate pollution in the Ohio River Basin and is comprised of eight states and the federal government. They are tasked with monitoring mercury in the Ohio River and Kentucky has agreed to adopt their recommendations for fish consumption.

Are fish from Kentucky waters less safe to eat than fish I buy from the store or from a restaurant?
Kentucky fish advisories use criteria that are more stringent than the U.S. Food and Drug Administrations (FDA) action level of 1 part per million methyl mercury in the edible portion of fish (fresh, frozen or processed). Less than 1% of the fish sampled in Kentucky exceed the FDAs levels for commercial fish sold in grocery stores or restaurants. One reason that Kentucky's advisory is more stringent is that it is particularly targeted toward sustenance fishermen, or individuals who routinely consume fish from KY waters.

Where is the mercury coming from?

Mercury is widely distributed throughout the environment from both natural and human induced processes. In the United States, primary sources of mercury emissions include coal-burning powerplants, hazardous waste incineration, chlorine production, and mercury product breakage and spillage. In Kentucky, mercury reaches surface water primarily through atmospheric deposition. The figure below shows the predicted amount of mercury deposition in the United States for 2014.



National Atmospheric Deposition Program (NRSP-3). 2015. NADP Program Office, Illinois State Water Survey, University of Illinois, Champaign, IL 61820.

Are Kentucky's waters getting worse?

Many initiatives have transpired to reduce the amount of mercury emissions through the Clean Air Act and Mercury and Air Toxics Standards in the United States. Statewide trend analysis for fish tissue began in 2009 and was resampled again in 2013. No significant change in concentrations was identified within this short period of time. The Kentucky Division of Water will continue to monitor these statewide trends to identify the status of fish tissue in Kentucky waters.