

Proposed Rule: Mercury Water Quality Criterion to Protect Aquatic Life in Idaho

April 2024

The U.S. Environmental Protection Agency is proposing a revised water quality criterion to protect aquatic life (aquatic life criterion) from the harmful effects of mercury in Idaho water bodies.

Background

In December 2008, EPA disapproved Idaho's removal of numeric aquatic life criteria for mercury from the state's water quality standards, leaving the previously EPA-approved numeric values in place for Clean Water Act purposes. In September 2013, Northwest Environmental Advocates and the Idaho Conservation League filed a complaint alleging that EPA had failed to act under section 303(c)(4) of the Clean Water Act to promulgate revised mercury aquatic life criteria for Idaho after the 2008 disapproval. In July 2021, the Court concluded that EPA was subject to a mandatory duty to promulgate. In October 2022, the parties agreed that EPA would propose mercury aquatic life criteria for Idaho by April 4, 2024.

What are aquatic life criteria?

A primary goal of the Clean Water Act is for the nation's waters to support healthy populations of fish, shellfish, and wildlife. Aquatic life criteria are scientifically established thresholds that specify the water quality needed to attain this goal and ultimately provide a basis for controlling discharges of pollutants. Generally, aquatic life criteria consist of three components: magnitude, duration, and exceedance frequency. The magnitude component indicates the maximum level of the pollutant in the water that will not present a significant risk to aquatic organisms. The duration component specifies the time period over which pollutant levels are averaged before comparison with the magnitude. The exceedance frequency component specifies how often the magnitude can be exceeded while still ensuring that aquatic life is protected. To develop aquatic life criteria, EPA searches for data on a wide variety of aquatic species – including fish, amphibians, and invertebrates – to ensure that the criteria will protect the whole aquatic ecosystem.

Sources of mercury and effects on aquatic life

Mercury is a naturally occurring metal that can be enriched in some mineral deposits and is often present as an impurity in coal. Mercury can get into water bodies through the deposition of mercury that was released to the air, through leaching from mercury-containing rocks, or through wastewater discharges. Human-caused sources of mercury include coal burning, industrial processes, and mining, while natural sources include volcanoes and hot springs. Mercury can cause neurological damage in aquatic organisms and has been associated with reduced growth and reproduction. Aquatic organisms take up mercury more rapidly than they eliminate it, causing mercury to accumulate in their tissues. Mercury concentrations in tissues tend to be higher in organisms that are higher on the food chain.

Because mercury tends to preferentially accumulate in muscle tissues, fish muscle tissue (fillet) samples are often used to determine whether levels of mercury in aquatic organisms are high enough to harm them. However, only whole-body tissue samples may be available for some fish or other aquatic organisms for which separating out muscle tissue is challenging (e.g., because they are small).

Establishing a mercury criterion to protect aquatic life in Idaho

To derive the proposed mercury criterion for Idaho, EPA followed its [national guidance for deriving aquatic life criteria](#) and used Idaho-specific data where relevant. The proposed criterion includes multiple elements – each with their own magnitude, duration, and exceedance frequency – due to mercury’s particular mode of toxicity. Specifically, the proposed criterion includes two fish tissue elements (muscle tissue and whole-body tissue, so that either type of sample can be compared to each respective element) as well as a water column element. Since mercury moves from the water column into fish tissues where it has harmful effects, the criterion’s fish tissue elements provide the most direct measure of mercury toxicity to aquatic life. Because mercury concentrations in organism tissues tend to be higher in organisms that are higher on the food chain, the criterion includes adjustment factors to ensure that fish that are higher on the food chain are protected if the only data available for evaluation are from fish that are lower on the food chain.

Fish tissue data can sometimes be challenging or expensive to obtain. In such situations, water column data can instead be collected to provide a valid measure of whether water quality is meeting the criterion. Some pollutants have two types of water column criteria, representing thresholds for shorter-term (acute) and longer-term (chronic) exposures. However, for pollutants like mercury where toxicity to aquatic life is primarily driven by diet (i.e., consumption of contaminated prey), only a longer-term measurement is needed. EPA’s proposed water column criterion element is therefore a 30-day average value (duration). If both fish tissue data and water column data are available for the same water body, EPA is proposing that the fish tissue result takes precedence because it is the more direct measure of toxicity.

Where can I find more information?

Contact Kelly Gravuer at (202) 566-2946, gravuer.kelly@epa.gov or Erica Fleisig at (202) 566-1057, fleisig.eric@epa.gov. To access the proposed rule, Federal Register notice, supporting documents, and ways to provide your comments on the proposal, visit EPA’s [Water Quality Standards website](#).