



AQUATIC LIFE AMBIENT FRESHWATER QUALITY CRITERIA – COPPER 2007 REVISION

EPA is issuing revised national recommended freshwater aquatic life criteria for copper (*Aquatic Life Ambient Freshwater Quality Criteria – Copper 2007 Revision*). As a companion to the criteria document, EPA is also issuing a document to answer Frequently Asked Questions (FAQs) from states, tribes, permittees, and other interested stakeholders on implementing the revised nationally recommended criteria.

Background

Copper is an abundant naturally occurring trace element found in the earth's crust that is also found in surface waters. Copper is a micronutrient at low concentrations and is essential to virtually all plants and animals. At higher concentrations copper can become toxic to aquatic life. Mining, leather and leather products, fabricated metal products, and electric equipment are a few of the industries with copper-bearing discharges that contribute to manmade discharges of copper into surface waters. Municipal effluents may also contribute additional copper loadings to surface waters.

Since EPA published the hardness-based recommendation for copper criteria in 1984, new data have become available on copper toxicity and its effects on aquatic life. The Biotic Ligand Model (BLM) – a metal bioavailability model that uses receiving water body characteristics to develop site-specific water quality criteria – utilizes the best available science and serves as the basis for the new national recommended criteria.

The BLM requires ten input parameters to calculate a freshwater copper criterion (a saltwater BLM is not yet available): temperature, pH, dissolved organic carbon (DOC), calcium, magnesium, sodium, potassium, sulfate, chloride, and alkalinity. The BLM is used to derive the criteria rather than as a post-derivation adjustment as was the case with the hardness-based criteria. This allows the BLM-based criteria to be customized to the particular water under consideration.

BLM-based criteria can be more stringent than the current hardness-based copper criteria and in certain cases the current hardness-based copper criteria may be overly stringent for particular water bodies. We expect that application of this model will result in more appropriate criteria and eliminate the need for costly, time-consuming site-specific modifications using the water effect ratio.

The FAQs document answers common questions regarding data requirements for the BLM, options to facilitate implementation, monitoring, assessment, and permitting issues, and BLM training opportunities.

Further Information

For more information about the *Aquatic Life Ambient Freshwater Criteria – Copper 2007 Revision*, you may contact Luis Cruz at (202) 566-1095 or Charles Delos at (202) 566-1097, or via mail at the U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology, Health and Ecological Criteria Division, 1200 Pennsylvania Avenue, NW, Washington, D.C. 20460, or you may send an e-mail to cruz.luis@epa.gov or delos.charles@epa.gov.

For more information about the implementation FAQ document, you may contact Christina Jarvis at (202) 566-0537 or Lauren Wisniewski at (202) 566-0394, or via mail at the U.S. Environmental Protection Agency, Office of Water, Office of Science and Technology, Standards and Health Protection Division, 1200 Pennsylvania Avenue, NW, Washington, D.C. 20460, or you may send an e-mail to jarvis.christina@epa.gov or wisniewski.lauren@epa.gov.