Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs: U.S. Environmental Protection Agency Public Notices Available Document

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The United States Environmental Protection Agency ("EPA") published in the August 13th Federal Register a Notice of Availability of the following document:

Ambient Water Quality Criteria to Address Nutrient Pollution in Lakes and Reservoirs ("Document")

EPA describes these recommended criteria as:

. . . models for total nitrogen and total phosphorus concentrations in lakes and reservoirs to protect three different designated uses— aquatic life, recreation, and drinking water source protection—from the adverse effects of nutrient pollution.

The phrase "nutrients" refers to nitrogen and phosphorus.

Water quality criteria ("WQC") are ambient water quality conditions deemed protective for the use established for a waterbody. States are required to adopt WQC to protect designated uses pursuant to Section 303 of the Clean Water Act.

The WQC must specify maximum concentrations of pollutants that may be present in the water without impairing its suitability for certain uses. However, they can assume three forms. These may include:

1. Numerical terms reflecting maximum concentration of a particular pollutant in the receiving water;
2. Bioassay or biomonitoring results which reflect mortality rates of certain waterborne organisms relative to the concentrations of particular pollutants; or
3. Terms narrative in nature.

The scientific basis or rationale for a particular WQC is obviously important. The WQC represents a judgment as to what levels, concentrations, or conditions can support a desired use for a water body. An indication of the importance of the WQC is the Clean Water Act's requirement that the EPA periodically issue new or revised WQC.

States can develop their own WQC if justified by technical data. However, EPA also undertakes this task pursuant to Section 304(d) of the Clean Water Act. As a result, EPA WQC are frequently used by the states in establishing or revising their water quality standards.

EPA has for a number of years been considering strategies to develop nutrient WQC for lakes and reservoirs. The federal agency issued guidance in 2013 referencing a combined criterion approach. This approach was not limited to numeric phosphorus and nitrogen limits.

Excessive nitrogen and phosphorus can stimulate excess growth of algae. This can impair the recreational use of lakes or reservoirs and also increase organic matter which (when decomposed) can depress dissolved oxygen concentrations harming aquatic life. Further, excessive nutrients can stimulate nuisance algae which can produce cyanotoxins.

In discussing its development of this Document, EPA identifies analyses of new data. Also provided are models used to derive numeric nutrient criteria for lakes and reservoirs that replace the recommended numeric nutrient criteria of 2000 and 2001.

EPA further states that its recommended ambient WQC for lakes or reservoirs are based on the available data from the federal agency's National Lakes Assessment survey. These are stated to have been designed using random sampling of lakes and reservoirs across the United States. Therefore, the agency contends that the collected data represent the characteristic of the full population of the United States lakes and reservoirs.

As to the stressor response models used in generating the ambient WQC, EPA states that these are based on previously published technical guidance identified as:

Using Stressor-Response Relationships to Derive Numeric Nutrient Criteria, Office of Water, U.S. Environmental Protection Agency, Washington, D.C., EPA-820-S-10-001

Also utilized were scientific peer-reviewed statistical and modeling techniques.

A copy of the Federal Register Notice can be downloaded here.