STATE OF MISSOURI
Jeremiah W. (Jay) Nixon, Governor • Mark N. Templeton, Director
DEPARTMENT OF NATURAL RESOURCES
www.dnr.mo.gov

FEB 2 4 2010

EPA Docket Center (EPA/DC) Water Docket, MC 28221T
Mr. Peter Silva
U.S. Environmental Protection Agency
1200 Pennsylvania Avenue, NW.
Washington, DC 20460.

RE: Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia (EPA-HQ-OW-2009-0921)

Dear Mr. Silva:

The Missouri Department of Natural Resources (Department) reviewed the *Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia - Freshwater* and provides the following comments. The first comment identifies a possible calculation error which might be causing unintended results for the proposed numeric criteria. The remaining comments pertain to strategies to improve implementation of new ammonia criteria. The Department asks that the Environmental Protection Agency (EPA) provide support to states that need to explore an array of regulatory options to address the enormous costs and technological challenges that will likely come with implementing the proposed criteria.

Calculation Error

According to page 35, "This function increases steadily with decreasing temperature (T), until it reaches a maximum (0.826*12.09=9.99mg N/L at 16.6 °C), below which it remains constant." On page 43 of the policy in the Mussels Absent CMC table, the criteria from 0°C through 18°C is constant. This is in error based on the equation in Figure 1 below and by the policy's own admittance on page 35. Therefore, the criteria for each specific pH in the 18°C column is incorrect. These criteria were obtained from the following equation in Figure 1:

$$CMC = 0.826 * \{(0.0489 \div [1+10^{7.204-pH}]) + (6.95 \div [1+10^{pH-7.204}])\} * \{MIN(12.09, (6.018*10^{0.036*(25-T)}))\}$$

When using this equation in Figure 1, all pH and temperature combinations matched the EPA's except for all pH under 18°C. Table 1 (below) demonstrates the difference between EPA's proposed criteria and equation's results when calculating the criteria for 18°C.

Table 1. CMC Mussels Absent, mg N/L
Temperature 18°C

pH	EPA	Equa. Calc.
6.5	58.0	51.6
6.6	55.7	49.51
6.7	53.0	47.1
6.8	49.9	44.4
6.9	46.5	41.38
7.0	42.9	38.14
7.1	39.1	34.7
7.2	35.1	31.22
7.3	31.2	27.7
7.4	27.3	24.3
7.5	23.6	21.02
7.6	20.2	18.0
7.7	17.2	15.26
7.8	14.4	12.83
7.9	12.0	10.71
8.0	9.99	8.89
8.1	8.26	7.34
8.2	6.81	6.05
8.3	5.60	4.98
8.4	4.61	4.1
8.5	3.81	3.38
8.6	3.15	2.8
8.7	2.62	2.33
8.8	2.19	1.95
8.9	1.85	1.64
9.0	1.57	1.4

Implementation Strategies

For Missouri to adopt the draft ammonia criteria, almost every wastewater treatment plant will need an upgrade. Because of the widespread economic impact anticipated with the proposed criteria, the Department is interested in fully exploring regulatory options for its implementation. Options should include procedures for establishing appropriate compliance timelines, new approaches to establishing effluent limitations that consider in-stream mixing and other pollutant reactions, and expanded financial assistance to communities and businesses facing severe economic challenges. To ensure effective criteria and reduce the difficulties of implementation, we request EPA's assistance in implementing the following strategies as part of a compliance effort.

1. Extending Compliance Timelines

In the Municipal Nutrient Removal Technologies Reference Document and in Emerging Technologies for Wastewater Treatment and In-Plant Wet Weather, EPA evaluated newer technologies used around the country by municipalities. The emerging and nutrient removal technologies identified in these documents were limited in their ability to meet the predicted ammonia effluent limitations that may be as low as 0.3 mg N/L as a result of the proposed criteria. Those that are achieving such low effluent levels are multi-step processes that use a combination of nitrifying filters and a conventional process, such as activated sludge. Judging from the capital and operating costs, the majority of these systems were multi-million dollar projects with full-time operators. The large, multi-million gallon per day systems are vastly different from the type of treatment that will be identified for use by smaller facilities that have part-time operators and who do not have the resources to manage an advanced treatment system.

A significant amount of time will be required to identify, design and construct effective treatment methods at many of the smaller facilities affected by the proposed criteria. In many cases, we may find it difficult to identify a technology capable of meeting an effluent limitation as low as 0.3 mg N/L that is also suitable for smaller facilities.

Missouri's regulations current limit compliance schedules to 3 years from permit issuance. To allow sufficient time to achieve compliance at all of the smaller facilities, the Department may need to modify this rule. Rulemaking may require three years to complete. Permittees may need additional time beyond that to complete the design and construction of new systems. EPA should recognize and support these needed program modifications and allow states time to complete the modifications before requiring the adoption of new criteria.

2. Defining Mixing Zones

A mixing zone is an acceptable component to calculating most water quality based effluent limitations. EPA should continue its support for allowing mixing zones where these are shown to not affect the abundance and diversity of mussel populations. Mussels have life cycles, habitat needs and other physical attributes that set them apart from other aquatic animals. EPA should provide states with guidance on how to define mixing zones that consider their unique characteristics.

3. Understanding Other Conditions Affecting Ammonia Toxicity

To derive effective effluent limitations, more must be understood about how ammonia toxicity is affected by other pollutants and by the varying conditions in stream or lake environments. States should be provided sufficient information to recognize conditions justifying further study on ammonia toxicity. The use of species recalculation and/or water effects ratio should be supported when the science appears promising in identifying conditions affecting ammonia toxicity. For example, the testing used in developing the criteria had dissolved oxygen

concentrations above 7.0 mg/L and some testing was conducted at near saturation. Saturation is stream dependant; however it normally occurs at dissolved oxygen concentrations greater than 7.5 mg/L. Missouri 2008 303(d) list contains 65 streams that exhibit low dissolved oxygen because of suspected natural conditions. Missouri's water quality criterion for dissolved oxygen is a minimum of 5.0 mg/L, making it likely that Missouri's streams do not commonly have the dissolved oxygen levels considered prevalent by the test methods. EPA should provide additional scientific findings on how low dissolved oxygen or other conditions affect the toxicity of ammonia on mussels. EPA should provide guidance that expands the ability of states to conduct appropriate studies to define ammonia toxicity in varying aquatic conditions.

4. Assistance with Evaluating the Use of New Treatment Technologies

Upon receiving the 2009 Water Quality Criteria for Ammonia, the Department evaluated a number of treatment technologies currently in use. While this review did not encompass every facility or treatment technology in Missouri, it did look at ammonia data from activated sludge facilities, membrane bioreactor facilities, trickling filter, recirculating sand filter systems, and oxidation ditches. From our research, oxidation ditches being operated correctly consistently met the 2009 ammonia criteria. Membrane bioreactors and recirculating sand filters may meet winter criteria, but will be in non-compliance with summer standards.

Use of these complex systems will require educating the public, the Department, and the operators. This will slow the issuance of antidegradation reviews, construction permits and ultimately operating permits as the permit writers evaluate technologies and treatment processes not yet used in Missouri. More oversight by the Department, which will require more staff and more cost associated with electricity, operators, chemicals and forced upgrades. EPA should provide both financial and technological assistance to both the regulatory programs and communities as they search for ways to obtain the necessary chemicals, operators, and power sources to meet the new treatment demands.

5. Assistance with Financing Upgrades

Unemployment in Missouri was at 9.5% at the end of 2009. According to the US Census, the median household income in Missouri is $40,885. Of Missouri's 114 counties, 97 are considered rural. For many counties, the median household income is in the low thirty thousand dollar range ($30,000). Using EPA's 2% median of household income for municipalities to charge, many communities will not be able to afford the upgrades required to meet the proposed criteria. EPA should provide guidance on how to achieve upgrades to meet tighter ammonia limits (and potentially other limits) under these stressed economic conditions. The communities will need to evaluate and balance the infrastructure needs for their community. A number of these facilities are in debt currently or soon will be if immediately required to make multiple upgrades to add disinfection, eliminate wet weather flows, or upgrades to meet nutrient criteria. EPA should provide guidance on how the communities can finance expanded wastewater treatment without jeopardizing other essential community services.

The private sector may face significant challenges in finding a technology to meet the effluent limits suitable for retrofitting into an existing industrial plant. While the Department promotes regionalization and connecting to existing sewers, in many areas of Missouri the geography prevents that from being cost effective. Small subdivisions and developments do not have access to Clean Water Revolving Funds and have limited ability to raise homeowner's fees or other fees to cover the cost to meet the new proposed criteria. Again, EPA should provide guidance on how the private sector should balance the demands of their occupation with wastewater treatment demands.

In closing, the effectiveness of new ammonia criteria in protecting mussels relies not only on identifying a numeric threshold at which ammonia is toxic to aquatic life, but on designing strategies that allow for criteria implementation without jeopardizing other essential regulatory program efforts and interrupting the crucial services both communities and businesses provide to citizens. Implementing the criteria must be a joint effort by EPA, states and citizens. And under the current economic conditions, such an effort must involve strategies that ensure progress by considering and supporting all of the available regulatory options for setting compliance schedules, deriving permit limits or establishing alternative criteria when supported by science.

Thank you for the opportunity to comment on the proposed ammonia criteria. If you have any questions regarding the comments above, please contact Mr. Refaat Mefrakis, of my staff at they Missouri Department of Natural Resources, Water Protection Program, P.O. Box 176, Jefferson City, Missouri 65102-0176, by e-mail at refaat.mefrakis@dnr.mo.gov or by telephone at (573) 751-1300.

Sincerely,

WATER PROTECTION PROGRAM

Scott B. Totten
Acting Director

SBT:pss

the agenda, you should contact Edith Allison at the address or telephone number listed above. You must make your request for an oral statement at least five business days prior to the meeting, and reasonable provisions will be made to include the presentation on the agenda. Public comment will follow the 10 minute rule.

Minutes: The minutes of this meeting will be available for public review and copying within 60 days at the Freedom of Information Public Reading Room, Room 1G–033, Forrestal Building, 1000 Independence Avenue, SW., Washington, DC, between 9 a.m. and 4 p.m., Monday through Friday, except Federal holidays.

Issued at Washington, DC, on December 23, 2009.

Rachel Samuel,

Deputy Committee Management Officer.

[FR Doc. E9–30959 Filed 12–29–09; 8:45 am]

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ENVIRONMENTAL PROTECTION AGENCY

[FRL–9097–8; OW–2009–0921]

Draft 2009 Update Aquatic Life Ambient Water Quality Criteria for Ammonia—Freshwater

AGENCY: Environmental Protection Agency (EPA).

ACTION: Notice of availability of draft criteria and request for scientific views.

SUMMARY: Pursuant to section 304(a) of the Clean Water Act (CWA), the Environmental Protection Agency (EPA) is announcing the availability of draft national recommended water quality criteria for ammonia for the protection of aquatic life. The draft criteria are based on EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses (1985), (EPA/R–85–100).* EPA's recommended section 304(a) water quality criteria provide guidance to States and authorized tribes in adopting water quality standards for protecting aquatic life and human health and provide guidance to EPA for promulgating Federal regulations under CWA section 303(c), when such action is necessary.

DATES: Scientific views must be received on or before March 1, 2010. Comments postmarked after this date may not be considered.

ADDRESSES: Submit your scientific views, identified by Docket ID No. EPA–HQ–OW–2009- 0921, by one of the following methods:

- *http://www.regulations.gov:* Follow the on-line instructions for submitting comments.
- *E-mail: OW-Docket@epa.gov.*
- *Mail:* U.S. Environmental Protection Agency; EPA Docket Center (EPA/DC) Water Docket, MC 28221T; 1200 Pennsylvania Avenue, NW., Washington, DC 20460.
- *Hand Delivery:* EPA Docket Center, 1301 Constitution Ave, NW., EPA West, Room 3334, Washington DC. Such deliveries are only accepted during the Docket's normal hours of operation, and special arrangements should be made for deliveries of boxed information.

Instructions: Direct your comments to Docket ID No. EPA–HQ–OW–2009–0921. EPA's policy is that all comments received will be included in the public docket without change and may be made available online at *http://www.regulations.gov,* including any personal information provided, unless the comment includes information claimed to be Confidential Business Information (CBI) or other information whose disclosure is restricted by statute. Do not submit information that you consider to be CBI or otherwise protected through *http://www.regulations.gov* or e-mail. The *http://www.regulations.gov* Web site is an "anonymous access" system, which means EPA will not know your identity or contact information unless you provide it in the body of your comment. If you send an e-mail comment directly to EPA without going through *http://www.regulations.gov* your e-mail address will be automatically captured and included as part of the comment that is placed in the public docket and made available on the Internet. If you submit an electronic comment, EPA recommends that you include your name and other contact information in the body of your comment and with any disk or CD–ROM you submit. If EPA cannot read your comment due to technical difficulties and cannot contact you for clarification, EPA may not be able to consider your comment. Electronic files should avoid the use of special characters, any form of encryption, and be free of any defects or viruses. For additional information about EPA's public docket visit the EPA Docket Center homepage at *http://www.epa.gov/epahome/dockets.htm.*

Docket: All documents in the docket are listed in the *http://www.regulations.gov* index. Although listed in the index, some information is not publicly available, *e.g.,* CBI or other information whose disclosure is restricted by statute. Certain other material, such as copyrighted material, will be publicly available only in hard copy. Publicly available docket materials are available either electronically in *http://www.regulations.gov* or in hard copy at the Office of Water Docket/EPA/DC, 1301 Constitution Ave, NW., EPA West, Room 3334, Washington DC. This Docket Facility is open from 8:30 a.m. until 4:30 p.m., EST, Monday through Friday, excluding legal holidays. The telephone number for the Public Reading Room is (202) 566–1744, and the telephone number for the Office of Water Docket is (202) 566–2426.

FOR FURTHER INFORMATION CONTACT: Lisa Huff, Health and Ecological Criteria Division (4304T), U.S. EPA, 1200 Pennsylvania Ave., NW., Washington, DC 20460; (202) 566–0787; *huff.lisa@epa.gov.*

SUPPLEMENTARY INFORMATION:

I. What Are Water Quality Criteria?

Water quality criteria are either narrative descriptions of water quality or scientifically derived numeric values that protect aquatic life or human health from the deleterious effects of pollutants in ambient water.

Section 304(a)(1) of the Clean Water Act requires EPA to develop and publish and, from time to time, revise, criteria for water quality accurately reflecting the latest scientific knowledge. Water quality criteria developed under section 304(a) are based solely on data and scientific judgments on the relationship between pollutant concentrations and environmental and human health effects. Section 304(a) criteria do not reflect consideration of economic impacts or the technological feasibility of meeting pollutant concentrations in ambient water.

Section 304(a) criteria provide guidance to States and authorized tribes in adopting water quality standards that ultimately provide a basis for controlling discharges or releases of pollutants. The criteria also provide guidance to EPA when promulgating Federal regulations under section 303(c) when such action is necessary. Under the CWA and its implementing regulations, States and authorized tribes are to adopt water quality criteria to protect designated uses (*e.g.,* public water supply, aquatic life, recreational use, or industrial use). EPA's recommended water quality criteria do not substitute for the CWA or regulations, nor are they regulations themselves. Thus, EPA's recommended criteria do not impose legally binding requirements. States and authorized tribes have the discretion to adopt, where appropriate, other scientifically

defensible water quality criteria that differ from these recommendations.

II. What Are the Ammonia Criteria?

EPA is today publishing draft national recommended water quality criteria (NRWQC) for ammonia for protecting aquatic life. These draft criteria updates are based on EPA's *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (1985), (EPA/R–85–100). These Guidelines describe the Agency's current approach for deriving national recommended water quality criteria to protect aquatic life. Toxicity data and other information on the effects of ammonia were obtained from reliable sources and subjected to both internal and external scientific peer review. The NRWQC for ammonia saltwater are not being updated at this time.

Freshwater: Freshwater aquatic organisms and their uses should not be affected unacceptably if—

1. The one-hour average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CMC (acute criterion), which is dependent on the aquatic organisms present.

2A. The thirty-day average concentration of total ammonia nitrogen (in mg N/L) does not exceed, more than once every three years on the average, the CCC (chronic criterion), which is dependent on the aquatic organisms present.

2B. In addition, the highest four-day average within the 30-day period should not exceed 2.5 times the CCC.

The acute and chronic criteria concentrations are expressed as functions of temperature and pH, such that values differ across sites, and differ over time within a site. See draft criteria document (pp. 34–38) for actual equations describing this function. As temperature decreases, invertebrates, but not fish, become less sensitive to ammonia, and below a particular temperature threshold, fish become the most sensitive genera.

Acute Criteria: At pH=8, where freshwater mussels are present, the criterion concentration ranges from 1.90 mg N/L at 30° C to 9.81 mg N/L at 0° C. At pH=8, where freshwater mussels are absent the criterion concentration ranges from 3.29 mg N/L at 30° C to 9.99 mg N/L at 0° C.

Chronic Criteria: At pH=8, where freshwater mussels are present, irrespective of whether fish early life stages (ELS) are present or absent, the criterion ranges from 0.186 mg N/L at 30° C to 0.817 mg N/L at 0° C. When freshwater mussels are absent, the values range from 1.33 mg N/L at 30° C to 2.32 mg N/L at 0° C at times when fish ELS are present, and from 1.33 mg N/L at 30° C to 5.87 mg N/L at 0° C at times when fish ELS are absent.

	Draft 2009 ammonia criteria (at pH 8 and 25° C)	Current 1999 criteria (at pH 8 and 25° C)
Acute	2.9 mg N/L mussels present 5.0 mg N/L mussels absent.	5.6 mg N/L salmon present.
Chronic	0.26 mg N/L mussels present 1.8 mg N/L mussels absent.	1.2 mg N/L fish early life stages present.

Note: These criteria values are appropriate at the standard normalized pH and temperature; the criteria values are a function of the variability of pH and temperature.

The water quality criteria for ammonia saltwater are not being updated at this time.

III. What is the Relationship Between the Water Quality Criteria and State or Tribal Water Quality Standards?

As part of the water quality standards triennial review process defined in Section 303(c)(1) of the CWA, the States and authorized Tribes are responsible for maintaining and revising water quality standards. Water quality standards consist of three principal elements: designated uses, water quality criteria to protect those uses, and antidegradation requirements, providing for protection of existing water uses and limitations on degradation of high quality waters. Section 303(c)(1) requires States and authorized Tribes to review and modify, if appropriate, their water quality standards at least once every three years.

States and authorized Tribes must adopt water quality criteria that protect designated uses. States may develop their criteria based on EPA's recommended section 304(a) water quality criteria or other scientifically defensible methods. A State's criteria must contain sufficient parameters or constituents to protect the designated uses. Consistent with 40 CFR 131.21, new or revised water quality criteria adopted into law by States and authorized Tribes on or after May 30, 2000 are in effect for CWA purposes only after EPA approval.

IV. Where Can I Find More Information About Water Quality Criteria and Water Quality Standards?

For more information about water quality criteria and Water Quality Standards refer to the following: *Water Quality Standards Handbook* (EPA 823–B94–005a); *Advanced Notice of Proposed Rule Making (ANPRM),* (63FR36742); *Water Quality Criteria and Standards Plan—Priorities for the Future* (EPA 822–R–98–003); *Guidelines and Methodologies Used in the Preparation of Health Effects Assessment Chapters of the Consent Decree Water Criteria Documents* (45FR79347); *Methodology for Deriving Ambient Water Quality Criteria for the Protection of Human Health* (2000), EPA–822–B–00–004); *Guidelines for Deriving Numerical National Water Quality Criteria for the Protection of Aquatic Organisms and Their Uses* (EPA 822/R–85–100); *National Strategy for the Development of Regional Nutrient Criteria* (EPA 822–R–98–002); and *EPA Review and Approval of State and Tribal Water Quality Standards* (65FR24641).

You can find these publications through EPA's National Service Center for Environmental Publications (NSCEP, previously NCEPI) or on the Office of Science and Technology's Home-page (*http://www.epa.gov/waterscience*).

Dated: December 23, 2009.

Peter S. Silva,

Assistant Administrator for Water.

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