



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
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Sent Via Email

Bethany Sargent, Supervisor
Monitoring and Assessment Program
Vermont Department of Environmental Conservation
Watershed Management Division
Davis Building - 3rd Floor
1 National Life Drive
Montpelier, VT 05620-3522

RE: Draft Amendments to Vermont WQS

Dear Ms. Sargent:

Thank you for providing a copy of proposed changes to Vermont's water quality standards (WQS) that are being considered as part of the States triennial review process. EPA's comments are provided below.

§ 29A-105 Antidegradation

Could VTDEC provide EPA with further clarification about the intent of the draft revisions to § 29A-105(b)(6) introducing the term "highest and best use?" EPA is concerned that this language might create some confusion.

Aluminum:

VTDEC intends to adopt EPA's current 304(a) recommendation for aluminum in freshwater, which was finalized in December 2018. VTDEC proposes to incorporate by reference the lookup tables in Appendix K of the criteria document for various water chemistry conditions. The proposal also specifies that the Aluminum Criteria Calculator V2.0 can also be used to determine criteria.

EPA commends VTDEC for its intention to propose adoption of EPA's 2018 nationally recommended aluminum criteria, however we have several recommendations for implementation of the criteria. EPA's review under CWA section 303(c) focuses on the protectiveness and sound scientific basis of standards submitted to us. In the past, particularly for hardness-based metals criteria, including only the equation in the state's criteria table was sufficient to demonstrate protectiveness. In recent years, especially as we move toward more complex metals criteria models, we've realized that more specificity in a state's WQS is important. As we've learned more about the specific ways in which water chemistry affects the bioavailability of metals like aluminum – and how to quantify those effects better than in the past – the bioavailability models have begun to include more, and more variable, input parameters than the old hardness-based models. For example, the input parameters for the aluminum calculator (pH, DOC, and hardness) all behave in different ways, with variability exhibited over diverse timescales. Choosing

appropriately protective inputs can be difficult without clear information from the state, ideally in the water quality standards themselves.

EPA has found that it is most important for a state to focus on three main points: expectations for selecting model inputs, particularly when ambient data may be unavailable for one or more parameters; expectations for analyzing data over time and space, and; and the language that actually goes into the WQS.

1. When the Aluminum Criteria Calculator or the lookup tables are used, does VTDEC envision that the resultant criteria will be submitted to EPA as site-specific criteria (SSC) for 303(c) approval, or would a performance-based approach be used? From our call on February 18, it is EPA's understanding that VTDEC's intention is to propose to adopt the aluminum criteria as a performance-based approach. EPA recommends clarifying this in the regulation.
2. If VTDEC would like to pursue a performance-based approach, the WQS should specify:
 - a. How many samples will be required for each input parameter to determine both the acute and chronic criteria.
 - b. How criteria will be calculated when some input data are missing.
 - c. How temporal and spatial variability at a site will be accounted for. EPA recommends that VTDEC explain how it will ensure that the criteria are adequately protective of the most bioavailable conditions at a site spatially and temporally, accounting for both seasonal variability throughout the year and inter-year variability. EPA also recommends that states provide publicly available information concerning the spatial extent (i.e., waterbody segment) to which each criterion magnitude value applies.
3. The Aluminum Criteria Calculator and the look up tables will provide a single acute and chronic criterion value for each set of data inputs. How will these individual criteria values be used to calculate protective receiving water criteria? Depending on the quality of the dataset, it may make sense to pick a fairly low percentile to account for variability, or even the lowest output if there is a particularly small dataset. Careful consideration should be given to sites with threatened and endangered species
4. EPA recommends that VTDEC develop a sampling protocol for each of the input parameters which includes minimum number of samples to account for temporal and spatial variability, QA/QC requirements, how the final criteria will be calculated, and approval of the sampling plan by VTDEC.
5. EPA also recommends that when NPDES permits are issued, the input parameters for the Aluminum Criteria Calculator and the lookup tables should be included as monitoring requirements so that the criteria can most accurately be calculated. Additionally, a permitting authority may wish to describe in the permit factsheet or statement of basis how it used the numeric criteria values to determine reasonable potential and derive water quality-based effluent limits (WQBELs).
6. Likewise, for TMDL programs, states should describe how they derived the criteria values and used them to determine TMDL targets. Describing how they generated criteria magnitude values for the aluminum criteria used in assessment and listing methodologies and integrated reports for each assessed waterbody would also be helpful.

To address these concerns EPA recommends that VTDEC develop an implementation procedure within the WQS to implement the 2018 aluminum criteria. EPA is available to assist VTDEC with any implementation procedure items. Also, as a reminder, EPA-HQ will be hosting the Aquatic Life Criteria for Toxics Outreach Workshop from May 11 – 13 where, among other items, the copper and aluminum criteria including implementation challenges will be discussed.

Copper:

The proposed WQS maintain the hardness-based equations for copper, however for site-specific copper criteria footnote o states, “Site-specific freshwater copper criteria may also be calculated utilizing the Biotic Ligand Model (BLM) procedures identified in EPA’s Aquatic Life Ambient Freshwater Quality Criteria – Copper (2007), EPA-822-R-07-001, the more protective criterion will apply.”

As with aluminum, EPA recommends that VTDEC develop and implementation procedure within the WQS to implement copper criteria. Specifically, EPA has the following recommendations:

1. As with the Aluminum Criteria Calculator, does VTDEC envision that the resultant criteria will be submitted to EPA as site-specific criteria (SSC) for 303(c) approval, or would a performance-based approach be used where the model is adopted and EPA does not review individual criteria calculations? This should be clarified in the regulation.
2. As with the aluminum criteria, if VTDEC would like to pursue a performance-based approach, the WQS should specify:
 - a. How the BLM outputs will be used to calculate final acute and chronic criteria. Depending on the quality of the dataset, it may make sense to pick a fairly low percentile to account for variability, or even the lowest output if there is a particularly small dataset. Careful consideration should be given to sites with threatened and endangered species
 - b. How many samples will be required for each parameter to determine both the acute and chronic criteria. EPA recommends that VTDEC develop a sampling protocol for each of the input parameters which includes minimum number of samples to account for temporal and spatial variability. EPA also recommends that states provide publicly available information concerning the spatial extent (i.e., waterbody segment) to which each criterion magnitude value applies.
 - c. How missing data at a site will be accounted for.
3. The 2007 copper criteria document which utilizes the biotic ligand model (BLM) is currently EPA’s 304(a) recommendation. The BLM reflects the best available science on copper bioavailability and toxicity with which to develop protective copper criteria. The BLM explicitly and quantitatively accounts for the effect of individual water quality parameters that modify metal toxicity in fresh waters. Specifically, the BLM addresses the influence of both biotic and abiotic (organic and inorganic) ligands in the calculation of the bioavailability of metals to aquatic organisms over a broad range of conditions. EPA’s 2007 BLM Criteria Document also incorporated the latest scientific information, including updated toxicity information for six sensitive species (*Ceriodaplmia dubia*, *Lithoglyphus virens*, *Scaphoferberis* sp., *Actinonaias pectorosa*, *Hyalella azteca*, and *Juga plicifera*), which include a freshwater mussel.

Because the BLM reflects the best available science on copper bioavailability and toxicity as described above, EPA recommends that when data are available to use the BLM, it should be used in place of the hardness-based equations.

4. If VTDEC does not make revisions in accordance with the previous comment, since criteria can be more or less stringent but are either protective of aquatic life or not protective, EPA recommends replacing "...the more protective criterion will apply" with "...the more stringent criterion will apply" and clarifying that this means the most stringent result between the hardness-based equation and BLM.
5. If a discharger proposes to use the BLM as opposed to the hardness-based equations, EPA recommends that VTDEC develop a sampling protocol for each of the input parameters which includes minimum number of samples, QA/QC requirements, how the final criteria will be calculated and approval of the sampling plan by VTDEC.
6. EPA recommends that when NPDES permits are issued, the input parameters for the BLM should be a monitoring requirement of the permit, so that data can be used to develop criteria based upon the most up-to-date science.

Aquatic Life and Human Health Criteria:

In 2015 EPA made changes to Federal water quality standard regulations. 40 CFR §131.20(a) was amended. The amended regulation requires any state that chooses not to adopt a new or revised criteria for any parameters for which the EPA has published new or updated criteria recommendations under Clean Water Act (CWA) § 304(a) to explain its decision when reporting the results of its triennial review to EPA. The goal of this revised provision is to ensure public transparency about state WQS decisions. The EPA is including this item as a reminder to include this information, if applicable, in any triennial review submittal to EPA.

In reviewing WQS in Appendix C, aquatic life criteria 304(a) recommendations have not been adopted for the following pollutants:

- Selenium (updated criteria in 2016)
- Tributyltin (updated criteria in 2004)

For human health criteria, EPA notes that the following 304(a) recommendations have not been adopted:

- Nitrosodibutylamine (updated criteria in 2002)
- Nitrosodiethylamine (updated criteria in 2002)
- Nitrosopyrrolidine (updated criteria in 2002)
- Microcystins and Cylindrospermopsin (2019)

In its final triennial review submission, VTDEC will need to explain why the State is not updating its criteria for both aquatic life and human health for these pollutants.

Use of 30Q10:

Section 29A-303(7)(c)(i) states, "For chronic criteria that utilize 30-day average, 30Q10 flows shall apply." However, the criteria table in Appendix C does not specify which pollutants this applies to. A footnote should be added to specify for which pollutants the chronic criterion will be calculated using the 30Q10 flow. Additionally, EPA recommends that VTDEC provide a justification for the use of the 30Q10.

Wetlands:

VT's draft revisions to § 29A-104(e) Classification of Water Uses appear to incorporate by reference the functions and values described in Section 5 of the Vermont Wetland Rules.

If this language is adopted, EPA would need to review Section 5 of the Vermont Wetland Rules to evaluate whether any of this language is in fact new or revised WQS. If VTDEC proceeds with proposing this revision, EPA recommends that VTDEC make Section 5 of the Vermont Wetland Rules available to the public as part of the public review process for the WQS revisions and submit the same language to EPA as part of the final submission to EPA for 303(c) review.

EPA appreciates the opportunity to review the proposed changes to Vermont's WQS. We look forward to working with VTDEC as it progresses through its triennial review process. As a final reminder, to fulfill the requirements of the triennial review found at 40 CFR §131.20 VTDEC will need to solicit comment on the entirety of their WQS at some point in their triennial review process and hearing. We suggest adding a slide to the public hearing presentation and a sentence to the agenda soliciting comment on the entirety of Vermont's WQS.

Should you wish to discuss any of these comments please contact Dan Arsenault of my staff at (617) 918-1562.

Sincerely,

Andrea Traviglia, Acting Manager
Water Quality Standards Section