



August 14th, 2014

Neil C. Kamman
Program Manager
VT DEC Watershed Management Division
1 National Life Dr., Main 2
Montpelier, VT 05620-3522

Geotechnical
Environmental
Water Resources
Ecological

Re: Public Comment on Water Quality Standards

Dear Mr. Kamman,

We would like to submit these comments to the Vermont Department of Environmental Conservation, Watershed Management Division (WSMD) as part of the proposed surface water quality standards amendments on behalf of our client, the Copper Development Association (CDA). CDA played a significant role in sponsoring scientific research used in development of the freshwater Biotic Ligand Model (BLM) for copper, which was adopted by the United States Environmental Protection Agency (EPA) in its latest national ambient water quality criteria (EPA 2007). CDA is now interested in encouraging efforts by states and tribes to incorporate these latest recommended EPA national criteria for copper into their water quality standards programs.

The WSMD is conducting a review of water quality standards and is currently accepting stakeholder comments until August 15th, 2014. We understand that the WSMD is updating water quality criteria to be reflective of EPA's Nationally Recommended Water Quality Criteria (Appendix C of the proposed water quality standards). For copper, however, the updated criteria appear to be hardness-dependent, while EPA recommends the BLM for deriving aquatic life criteria (as seen in the EPA table cited by WSMD in the General Notes of Appendix C). Thus, the purpose of this letter is to support the WSMD in its consideration of using the EPA's Nationally Recommended Water Quality Criteria to update their standards and to recommend that the BLM be incorporated in the standards as an option for calculating aquatic life criteria for copper.

With respect to the amendments to water quality standards, we suggest the following addition:

- Add a new footnote to the acute and chronic copper aquatic life criteria entries in Appendix C: Water Quality Criteria for the Protection of Human Health and the Aquatic Biota that would state: "Freshwater copper criteria may be calculated utilizing the procedures identified in EPA's Aquatic Life Ambient Freshwater Quality Criteria – Copper (2007), EPA-822-R-07-001."

Vermont's current aquatic life criteria used to derive copper standards, like most states' criteria, only take into account hardness as a factor that modifies toxicity.

Using only hardness as a modifying factor for metals criteria is an outdated approach that excludes a substantial body of peer-reviewed scientific literature demonstrating that additional modifying factors can and should be incorporated into regulatory benchmarks or standards, while providing the same levels of aquatic life protection required under the Clean Water Act (EPA 1985, 1994, 2001, 2007). Like most metals, copper toxicity is a function of its bioavailability, which in addition to being controlled by hardness, is also strongly related to other important factors such as dissolved organic carbon (DOC), alkalinity, pH, and temperature. The key strength of the BLM is that it accounts for multiple factors—in addition to hardness—that mitigate or exacerbate copper's toxic effect on aquatic life.

Similar to copper, BLMs have been developed and validated and are available for regulatory use for several other metals, including zinc, lead, nickel, and cadmium. While EPA has yet to develop formal recommended national ambient water quality criteria using BLMs for these other metals, the models are widely available and are being applied in regulatory programs in several European countries and Canada. CDA fully supports and shares their desire to move towards bioavailability models such as the BLM as being the current state of both scientific and regulatory practice.

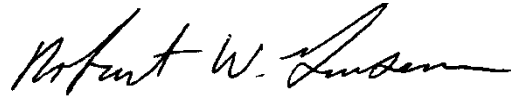
There also are practical advantages for using the BLM; it is a cost-effective regulatory tool compared to other site-specific toxicity test procedures (e.g., water-effect ratios), and the BLM software is publicly available, sanctioned by EPA, and requires only brief training to generate rapid and useable output. While the model is widely considered to be useful for derivation of site-specific water quality criteria, we suggest its best application is on a state-wide basis for any discharger with sufficient water quality data to run the BLM. This would enable individual permit writers and permittees to collaborate directly to use the BLM to derive permit limits, thereby minimizing or eliminating the need to go through a lengthy and expensive rulemaking process. BLM-based criteria provide a practical means of deriving demonstrably more accurate levels of aquatic life protection across a broad range of water quality conditions, and with sufficient flexibility to support most any regulatory application framework.

Please let us know how we can assist the WSMD in its consideration of the BLM during this review. GEI or CDA could help in a variety of ways, including preparation of written or oral testimony supporting the technical basis of the BLM, or providing guidance on application of the BLM to water quality criteria and what type of implementation approach would best fit your available datasets. GEI would also be glad to review datasets, if provided by the WSMD, to evaluate potential BLM-based criteria for Vermont waters. CDA has also sponsored BLM training sessions over the past several years, and they have been well-attended by both regulators and the regulated community. If desired, it may be possible to provide this course or related education materials if you would find that helpful as a means of helping inform the public and stakeholders as to the basis and application of the BLM.

We appreciate the opportunity to provide you with this prospective proposal. Please let us know if you have any questions. We look forward to discussing this with you further.

Sincerely,

GEI CONSULTANTS, INC.

A handwritten signature in black ink, appearing to read "Robert W. Gensemer". The signature is fluid and cursive, with a long horizontal stroke at the end.

Robert W. Gensemer, Ph.D.
Senior Ecotoxicologist
RWG

cc: Joe Gorsuch, CDA
Steven Canton, GEI
John Gondek, GEI
David DeForest, Windward Environmental
Eric Van Genderen, International Zinc Association

References

- U.S. Environmental Protection Agency (EPA). 1985. Guidelines for deriving numerical national water quality criteria for the protection of the aquatic organisms and their uses. PB85-227049, U.S. Environmental Protection Agency, Washington, DC.
- U.S. Environmental Protection Agency (EPA). 1994. Interim guidance on determination and use of water-effect ratios for metals. EPA-823-B-94-001, U.S. Environmental Protection Agency, Washington, D.C.
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