



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY  
REGION 10**

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OFFICE OF  
WATER AND WATERSHEDS

May 18, 2017

Jason Pappani  
Idaho Department of Environmental Quality  
1410 N. Hilton  
Boise, Idaho 83706

RE: EPA's Comments on Idaho's Draft Implementation Guidance for the Idaho Copper Criteria for Aquatic Life Using the Biotic Ligand Model, Docket No. 58-0102-1502

Dear Jason:

The EPA appreciates the opportunity to provide comments to the Idaho Department of Environmental Quality (DEQ) on the revised draft implementation guidance for deriving copper criteria using the biotic ligand model (BLM). In addition, the information presented at the April 25th, 2017 negotiated rulemaking meeting was helpful in providing additional context for understanding the data DEQ has collected and how DEQ is suggesting the data might be utilized. The EPA continues to be supportive of DEQ's work on developing implementation guidance, particularly because appropriate specifications about how the BLM will be used site-specifically are important when using a statewide approach to adopting BLM derived copper criteria. Given our more recent experience reviewing state adoption of the BLM, the EPA recommends either of the following two options from states who want to update their copper criteria:

- Use of the BLM at specific sites to determine site-specific criteria (SSC) that are submitted to EPA for 303c action. The state of Colorado has adopted this approach.
- Use of the BLM as a performance-based approach where the EPA approves the approach but not the resulting SSC, as long as there are appropriate specifications around how it will be used site-specifically. The state of Oregon has adopted this approach.

The EPA has reviewed DEQ's revised draft implementation guidance and provides recommendations in the enclosure to this letter. In addition, the EPA notes that a number of previous comments provided to DEQ in the January 31, 2017 comment letter were not addressed, therefore the EPA is reiterating those in the enclosure.

As stated in the EPA's previous comment letters, implementation methods are critical for model-derived criteria because models rely on input parameters that can vary in concentration or level over time and spatially throughout a site. The methods should provide sufficient confidence that the criteria are protective of the aquatic life uses in Idaho's waters. Implementation methods should address key considerations for model inputs and outputs, such as site selection and characterization and how the most bioavailable conditions will be determined (including analyzing model outputs, identifying the estimated default input parameters) for Idaho waters. In addition, the methods should identify when default input values and/or criteria values are to be

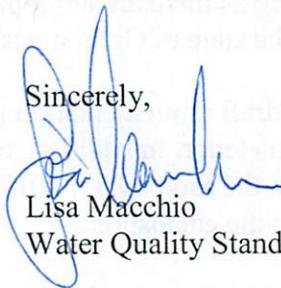
used in lieu of sufficient ambient data at a particular site, provide recommendations for sampling frequency and locations, and describe the methodology for data screening, data processing, and model output interpretation. The EPA views implementation procedures as important for applying the copper criteria in a consistent, repeatable, and protective manner.

As DEQ has acknowledged, few sites in Idaho will have all of the required parameters necessary for calculating instantaneous water quality criteria (IWQC) using the BLM in the near-term. To address that situation, DEQ has included in the draft implementation guidance approaches for estimating default input parameter values as well as options for estimating default criteria. The EPA appreciates DEQ's efforts to provide information on this important topic and strongly recommends additional detail and specific procedures be included in the implementation guidance.

The EPA is supportive of DEQ referencing a guidance document in rule. At the rulemaking meeting on April 25, 2017, DEQ stated it does not view the guidance as legally binding. Given DEQ's view, the EPA believes it is important to include additional clarification and defined procedures in rule. For example, including language in the rule which specifies capturing conditions when copper is most bioavailable is an important element in ensuring that stakeholders understand which criteria values apply at appropriate times, and providing regulatory certainty to dischargers, as well as permit and listing programs. Developing appropriate input values to derive copper criteria that are scientifically sound and protective of Idaho's designated uses is difficult without this level of specificity. Lacking such a clear requirement creates uncertainty as to whether copper criteria derived using the BLM will reflect conditions when copper is most bioavailable and therefore provide protection against toxicity to aquatic organisms in waters in Idaho.

The EPA appreciates DEQ's commitment to develop implementation guidance to accompany Idaho's rule updating the aquatic life copper criteria using the BLM. The EPA continues to be available to provide assistance to DEQ on further development of the rule language and implementation procedures. If you have any questions or would like to discuss these comments further, please contact me at (206) 553-1834 or Mark Jankowski at (206) 553-1476.

Sincerely,



Lisa Macchio  
Water Quality Standards Coordinator

## Enclosure

### **Comments on Idaho DEQ's Draft Implementation Guidance for the Idaho Copper Criteria for Aquatic Life (the version discussed at the April 25, 2017 meeting) and Draft Rule Language**

#### 1) Deriving Estimated Input Parameters

The EPA recommends that DEQ plan to allow for the use of estimated input parameter data where measured data are unavailable, DEQ include specific methods to derive input parameters for the application of the BLM for the following parameters: calcium, magnesium, sodium, potassium, alkalinity, chloride, sulfate, and dissolved organic carbon. EPA strongly recommends that pH and temperature data be collected at the site where the BLM is used to derive site specific numeric criteria. Estimation methods could be acceptable if more conservative factors or specific procedures are included, such as the use of a conservative percentile of the distribution of the pH data (if pH input data is sourced from measurements from a nearest neighbor best estimate location that includes the most bioavailable conditions or ways to identify representative conditions that are comparable to the site). The draft implementation guidance lacks a clear and definitive explanation on input values and only mentions use of statistical methods for estimating inputs. Furthermore, it is unclear which entity decides which approach will be used for estimating input parameters and the basis used to decide the approach for each situation, and how and where the input data will be measured.

#### 2) Deriving Estimated Default Criteria

Table 2 in Section 6 provides a summary of results from DEQ's recent monitoring for inputs to the BLM by site classification (Jessup 2011) and suggests this as an approach for estimating default criteria. The EPA is concerned that the site classification as a geographic approach to the BLM is not sufficiently detailed. The EPA understands that DEQ intends to update this with additional data which was collected in April 2017, however, given the information presented in the guidance at this time, the EPA has a number of concerns.

The site classification scheme was developed for the purposes of identifying the ecology of reference and stressed sites and not specifically for establishing the bioavailability of copper. Please explain how this approach is representative of the conditions under which copper would be most bioavailable at each site. Given the limited data collection, i.e., one sample from each site, are the results presented in Table 2 useful as potential defaults, are they scientifically defensible? EPA is not able to determine if the default criteria are representative of the most bioavailable conditions with the data provided and is therefore awaiting the data collected in April of 2017.

In order to be able to discern how protective the defaults are of Idaho waters, a Type II error (*false negative*) analysis is recommended. We are happy to follow up with you on the type of analysis this would require.

### 3) Rule Language

The EPA recommends DEQ indicate in rule that, regardless of which approach is used, the numeric values derived from the BLM must be protective during the most bioavailable time period given the available data. Although the draft implementation guidance makes mention of critical time period and bioavailability, the language is not prescriptive (Section 5.3.2.). Given the lack of detail with respect to the various options and approaches in the draft implementation guidance, the EPA strongly recommends DEQ include specificity in the rule language to provide clarity on this important issue. For example, with regard to conditions when copper is most bioavailable, the EPA recommends additional language be included in rule under 58.01.02.210.03.c.v. as follows:

#### *General Policy for the copper BLM*

- 1) *Criteria will be calculated using the BLM that protect designated uses of Idaho waterbodies at all times, including under the most bioavailable or toxic conditions.*
- 2) *Determination of where and when the most bioavailable conditions occur at a site is required.*
- 3) *Use of appropriate statistical methods to collect sufficiently representative data is required in order to ensure that the most bioavailable period is captured by the dataset.*
- 4) *When reconciling multiple instantaneous water quality criteria (IWQC) derived using the BLM, procedures will be used to ensure that the waterbody is protected at all times, including sensitive conditions i.e., most bioavailable.*

Section 210.01 of the current draft rule language has confusing statements in the table of numeric toxic criteria regarding copper. The following is the draft language applicable to copper:

*6b. The values and table footnotes in Columns B1 and B2 are effective on the date EPA issues written notification that the revisions adopted under adopted under Rule Docket No. 58-0102-1502 have been approved. See Subsection 210.01.d.ii.*

This statement indicates the values in the table are effective. However, footnote “r”, applicable to copper, states the following:

*r. Aquatic life criteria for copper are derived from the Biotic Ligand Model, Version 2.2.3 (June 2007) available at [www.deq.idaho.gov](http://www.deq.idaho.gov), For comparative purposes only, the example values displayed in this table correspond to the model output based on the following inputs: temperature = 15.2°C, pH = 7.9, dissolved organic carbon = 1.9 mg/L, humic acid fraction = 10%, Calcium = 68.9 mg/L, Magnesium = 44.2 mg/L, Sodium = 65.5 mg/L, Potassium = 1.9 mg/L, Sulfate = 72.6 mg/L, Chlorine = 54.5 mg/L, and alkalinity = 280 mg/L CaCO<sub>3</sub>.*

EPA continues to recommend DEQ not include values for copper in the table of numeric toxic criteria because inserting example values in the table, even with an explanatory footnote, leads to confusion as to whether the values are the applicable criteria for all waters. If DEQ finds it

necessary to retain the comparative values EPA strongly recommends revising the wording in “6b” so it is clear the values in columns B1 and B2 are not the effective/applicable criteria.

Section 210.03 of the current draft rule language describes the guidance as providing assistance in several areas that the draft guidance does not currently provide, i.e., assistance determining minimum data requirements, and guidance on developing permit limits and identifying impairments. The EPA continues to recommend that the implementation guidance include detailed methods for its Clean Water Act programs, including evaluating reasonable potential to exceed and water quality based effluent limits using the copper BLM criteria under NPDES permitting, and methods that will be used to identify impairments of copper for 303(d) listing, and TMDL development. The following is a portion of the current draft rule language:

c. *Application of aquatic life metals criteria.*

v. *Implementation Guidance for the Idaho Copper Criteria for Aquatic Life. The Implementation Guidance for the Idaho Copper Criteria for Aquatic Life describes in detail methods for implementing the aquatic life criteria for copper using the biotic ligand model. This guidance, or its updates, will provide assistance to the Department and the public for determining minimum data requirements, how to derive criteria estimates when data are incomplete, and guidance on developing permit limits and identifying impairments using the biotic ligand model. The “Implementation Guidance for the Idaho Copper Criteria for Aquatic Life” is available at the Department of Environmental Quality, 1410 N. Hilton, Boise, Idaho 83706, and on the DEQ website at [www.deq.idaho.gov](http://www.deq.idaho.gov).*

4) Previous and Specific Comments

An instantaneous water quality criterion (IWQC) is an instantaneous chemical concentration magnitude that is calculated to represent a pollutant concentration that could be present but still be protective of the aquatic life uses at that moment in time. An individual IWQC does not necessarily represent a level that is protective in general. DEQ should clarify how the IWQCs calculated for a site will protect a waterbody 99.91% of the time under the full range of conditions that could be expected for the waterbody. EPA recommends that the implementation guidance include the methodology or methodologies for deriving protective numeric values using the BLM, such as the following: (1) the selection of a low percentile (e.g., the 10th percentile) of multiple IWQCs or lowest IWQC, (2) the use of conservative default inputs when site specific measured input data do not capture the most bioavailable conditions at a site, or (3) the use of multiple input parameter datasets measured at the site that capture the range of variability over time including the most bioavailable conditions to calculate a suite of IWQCs that apply to a site.

**Section 5.2:** More detail or decision criteria for determining what is a "representative" location would be helpful for EPA to more fully understand DEQ's proposed procedures. For example, how will DEQ determine if a sampling location is representative of an assessment unit? DEQ is required to assess all readily available data to determine attainment. If data is not being used, DEQ will need to provide a rationale as to why that sampling location is not representative and

the data does not apply to the assessment unit. Therefore, DEQ should design their monitoring plan to focus on representative sampling locations to ensure the majority of collected data can be fully utilized for the assessment.

**Section 5.2.2:** In order to protect sensitive aquatic uses, when monitoring to determine criteria, a location that is representative of the most bioavailable conditions (baseline) of the receiving water at a site should be used. Whether the location is downstream or upstream of effluent is not as critical as monitoring a location that is known to represent the most bioavailable conditions at a site.

**Section 5.4:** Reconciling multiple IWQCs. DEQ's draft rule reads that the criterion is the BLM output, without mention of reconciling IWQCs. We recommend that for clarity Idaho includes a procedure in rule to indicate that multiple IWQCs will be reconciled such that the waterbody is protected at all times including sensitive (most bioavailable) conditions and to ensure that the duration and frequency of exceedance components of the criterion as well as the magnitude are met. DEQ states that with limited (not defined) data, it is recommended to use the lowest or minimum IWQC from a site as the default until more data are collected. In some cases, such an approach would be over-protective and in other cases it would be under-protective. Given this uncertainty, it is important to more completely explain data requirements for IWQC derivation and use at a site. EPA recommends this information be included in the rule language. For example, when is one sample enough? How will it be determined when one sample is adequately representative? And, when would there be there enough data to not use the minimum IWQC?

**Section 6.1, 1st Paragraph, 1st Sentence:** Who are the "Users" referred to in this sentence? IDEQ? Who will calculate the criteria for a site? For this statement, "Users seeking to estimate copper criteria when data are absent may use statistical methods to estimate major geochemical ions, but should not use estimates of either DOC or pH." (emphasis added), the EPA's Draft Missing Parameters Document (2016) provides default estimates for DOC. What will be used where DOC data are missing? Would DEQ require the use of the default criteria included in the guidance document if sufficient data for any parameter value is missing? In Oregon's copper rulemaking analyses comprising their Technical Support Document (2016), ODEQ found that DOC data were absent for many IWQC calculations, and therefore required conservative defaults. Likewise, in evaluating historical data for purposes of assessment or TMDL development, Oregon DEQ included methods for deriving pH data from neighboring sites. Please provide more specific methods or procedures on how default or estimates for inputs will be derived and used when data are absent. Please provide more details on which statistical methods may be used to estimate geochemical ions and why the selected methods are appropriate. Since the draft rule only speaks to using site specific measured input parameters, any substitution or estimation methods for input parameters should be in rule. Otherwise, it will be confusing as to why, when and how DEQ can use something else as a substitute. In addition, it will be difficult to assess up front how protective/repeatable the criteria calculations are.

**6.2 Critical conditions:** The heading of this section doesn't match the content of the section, which primarily focuses on identification of protective (e.g. critical condition) default criteria for conducting RPA analyses (e.g. Estimating Applicable Criteria). More information should be provided regarding situations where sufficient measured data are collected and site-specific

IWQCs are calculated on how to reconcile multiple IWQCs in order to be consistent with NPDES permitting regulations (see “IPDES”, below) and TMDL regulations. Where there is RTPe, effluent limits must ensure that the discharge will not cause or contribute to violations of the applicable standard outside the authorized mixing zone or at the point of discharge, if a mixing zone is not authorized by the permit. The duration and frequency components of the criteria are typically accounted for in permitting by critical effluent and ambient conditions, including conservative estimates for the criteria in the case of equation-based criteria.

Please explain why winter low-flows are not included as a factor that may affect DOC concentrations. It is recognized that winter is often a challenging time to sample but this issue is not the case not for all locations.

The guidance uses the term reasonable potential analysis (RPA), whereas, the IPDES program typically uses reasonable potential to exceed (RPTE). DEQ should be consistent with their use of terms across program documents.

**IPDES:** DEQ’s WQS program should closely coordinate with the IPDES program to develop or consider the need for more detailed guidance for evaluating both reasonable potential to exceed and water quality-based effluent limits using the copper BLM criteria. Guidance should cover unique considerations or circumstances for identifying copper as a pollutant of concern, determining the applicable criteria (considering spatial and temporal variation), evaluating RPTE both with or without data needed to establish the applicable criteria and calculating effluent limits based on the applicable criteria. If copper is identified as a pollutant of concern (i.e. present in the effluent) then reason potential must be evaluated using the applicable criteria, with or without monitored input data. If RPTE is found, then the permit must include a limit. The guidance should identify how to address this uncertainty in permitting.

**303(d) Listings:** It is quite prudent to be cautious with impairment listings and guard against false positives (listed when it was not warranted), but it is also prudent to be cautious of not listing a water when it should be. Please describe how false negative (not listing a water when it is warranted) determinations will be minimized. Note that because the State can and should be able to derive estimated or default inputs, such as using those provided in EPA's Draft Missing Parameters Document, the EPA expects Idaho to be able to calculate copper criteria using the BLM for any waterbody from the time that the criteria are in effect. Therefore, there should be no case where a waterbody is listed under Category 3 (insufficient information) for a lack of input parameter data; Category 3 should only be used where a site lacks copper data to compare with the calculated criterion. Please provide more clarity on the listing procedures that you will use vis-a-vis the availability of input data and defaults to be used when data are unavailable. These should include a listing methodology that details the order of operations for determining what parameter data are available, and when defaults or estimates will be used vs. when the model will be run. Please also describe how this information will be managed and tracked from listing cycle to listing cycle, and if there is a process by which a third party could provide new parameter data and request re-assessment using the model.