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DEPT. OF NATURAL RESOURCES

January 21, 2016

Mr. Mike Elias
Health and Ecological Criteria Division
US EPA- Office of Water
1200 Pennsylvania Avenue, NW
Washington DC 20460

Subject: EPA's draft Aquatic Life Ambient WQC update for Cadmium
Wisconsin comments on Docket No. EPA–HQ–OW–2015–0753

Dear Mr. Elias:

The Wisconsin Department of Natural Resources appreciates US EPA's effort in revising the Aquatic Life Criteria (ALC) for Cadmium. We have some comment and questions regarding the proposed criterion and offer the following comments:

General edits

- Please check the document for errors and typos. See Table 1 for specific examples.

Minimum Data Requirements (MDRs)

- While the Table 5 (pg. 24) summarizes the Phyla, Families, Genera, and Species used to derive the revised criterion, it is unclear which species were used to meet each of the MDRs.
- WDNR recommends including a table that that lists the eight requirements and the species that fulfill each of these requirements for all of the criteria included in this document.

Freshwater Hardness correction

- Aquatic Toxicity:
  - Please verify that the Spehar and Fiandt 1986 data for *Pimephales promelas* is appropriate to include in the hardness correction. WDNR analysis suggests that this data point may be an outlier (see Figure 1).
  - WDNR recommends expanding Table 6 to include the actual data was used in the hardness correction for each species
  - WDNR also recommends including a graph showing the linear regression to better illustrate the normalization process.
  - Please indicate how the R^2 value of 0.964 was obtained. Linear regression by WDNR resulted in a slope of 1.014 and R_2 of 0.698 (see the Figure 1).
- Chronic toxicity:
  - Please indicate how the R^2 value of 0.841 was obtained. Linear regression by WDNR resulted in a slope of 0.798 and an R^2 of 0.632 (see Figure 2).
  - There were several instances where it was not apparent if the MATC or EC_{20} value was used for the slope derivation. As such, WDNR recommends indicating which of the toxicity values were

used in Appendix C and expanding Table 8 to include the actual data was used in the hardness correction for each species

- WDNR also recommends including a graph showing the linear regression to better illustrate the normalization process.

Freshwater Final Acute Value calculation

- WDNR finds the language that describes the computation of the final acute value on pg. 32 insufficient. WDNR recommends including a reference to section 4.3.1 after the reference to Figure 2 on pg, 32.

Freshwater cadmium criteria

- It is unclear how the intercept of the freshwater acute and chronic criterion equations were derived. **This is a major issue.** WDNR recommends that additional language be included in the document to clearly relay how this value was derived.

Acceptable freshwater data

- Some of the values that are new/revised since the 2001 AWQC document are from studies that were published before 2001. While Table 22 has general information describing why GMAVs have changed between the 2001 and 2015 document, it does not provide details on why this "new" data was considered acceptable now. WDNR recommends including another table that describes why the studies that were excluded previously were now included.

***Hyallela* toxicity data**

- WDNR recommends that EPA finalize the toxicity test method for *Hyallela azteca* and use this method to develop additional chronic toxicity test results. The WDNR recommends using a round robin approach to obtain these results, which would ensure that the data are obtained using the appropriate test procedures and would provide additional information regarding the sensitivity of *Hyalella azteca* to cadmium.

Sincerely,

Susan L. Sylvester, Director
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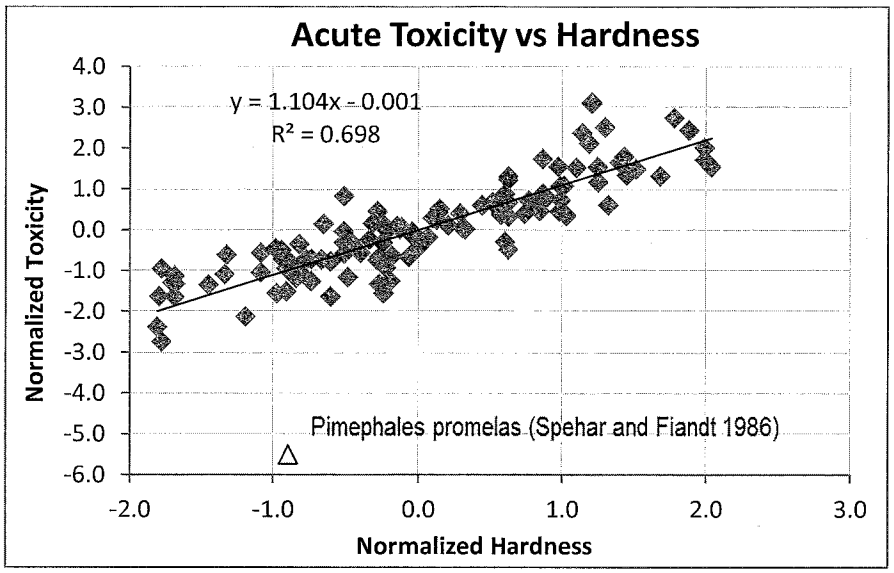

Figure 1. Cadmium acute freshwater toxicity vs. hardness relationship showing pooled acute slope of 1.104 and R^2 of 0.698

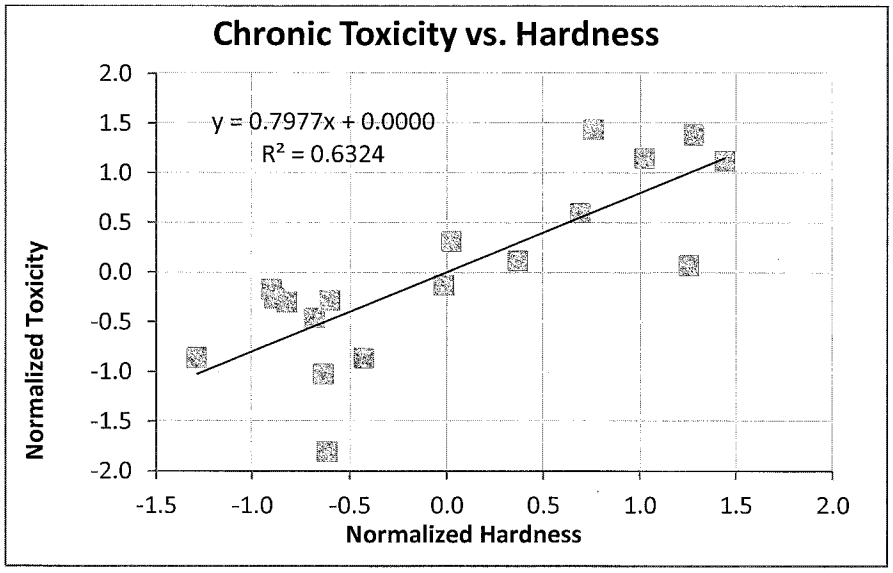

Figure 2. Cadmium chronic freshwater toxicity vs. hardness relationship showing pooled chronic slope of 0.7977 and R^2 of 0.6324

Pg. 27	which is intended to provide an acute criterion protective of nearly all individuals in the distribution (Stephan et al. **1985);the** FAV/2 approach was developed to estimate minimal effect levels,
Pg. 30	This outcome was based on the poor correlation between hardness and acute toxicity for *D. magna* and occurred only when tests with **less than** 24-hr old neonates were included in the database. Accordingly, only the five *D. magna* tests from Chapman et al. (1980) initiated with **less than** 24-hr old neonates were used for the analysis
Pg. 33	Two species of sculpin, *Cottus bairdii* and *Cottus confusus*, are used to derive the normalized GMAV of **4.962** µg Cd/L **Per Appendix A, this value should be 4.926**
Pg. 34	The hardness-normalized GMAV of **7.911** µg/L total cadmium for the genus *Oncorhynchus* is the fifth lowest in the acute dataset **Per Appendix A, this value should be 7.841**
Pg. 42	2. *Ceriodaphnia*, Cladoceran (GMCV=**1.293µg/L** total Cd)
Pg. 74	Acceptable chronic toxicity ***data*** are available for 27 freshwater species representing 20 different genera
Pg. C-8	[d] Not used to calculate **SMAV** because either a more definitive value available, value is considered an outlier, or preference was given to the more sensitive exposure scenario (LC versus ELS tests).

Table 1. Examples of errors and typos in the draft document