

Proposed changes to Order of Rulemaking  
November 6, 2013  
Sulfate and chloride criteria  
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GENERAL WRITTEN COMMENT #11 – Sulfate and Chloride Criteria [10 CSR 20-7.031(5)(L)]: Barr Engineering et al (Comment 9); REGFORM (Comment 2); and Newman, Comley & Ruth P.C. (Comment 15) all provided comments suggesting that proposed clarifications to the Sulfate and Chloride Limit for Protection of Aquatic Life at 10 CSR 20-7.031(5)(L) be either modified or eliminated. While the specific comments varied, they all raised issues with the proposed means to calculate values for hardness, sulfate and chloride to be used in the sulfate and chloride criteria equations in Table A.

All three commenters disagreed with the department's proposal to use the lower quartile (25<sup>th</sup> percentile) of hardness data to calculate a hardness value, and to use the upper quartile (75<sup>th</sup> percentile) of sulfate and chloride data to calculate values for these parameters. Furthermore, two of the three commenters felt that the department should go beyond merely describing a means to calculate these values, but rather, should calculate and publish the actual regional default values for hardness, sulfate and chloride using existing data. The third commenter felt that in the absence of EPA action on the previous rule, the proposed language in the current draft rule was presumptuous and unnecessary, and should be eliminated altogether.

RESPONSE AND EXPLANATION OF CHANGES: The intent of the proposed language had been to address implementation of the sulfate and chloride criteria that had been adopted with Missouri's previous water quality standards rule, published May 31, 2012. To date, EPA has neither approved, disapproved, nor formally commented on these criteria. However, it had been suggested during conversations with EPA staff and other stakeholders that incorporating a mechanism to implement these criteria would strengthen this part of the rule, and may improve the likelihood that EPA would ultimately approve the criteria.

The department agrees that it would not be appropriate to use the lower quartile (25<sup>th</sup> percentile) of hardness data and the upper quartile (75<sup>th</sup> percentile) of sulfate data to calculate criteria for chloride and sulfate. Sulfate and hardness are positively correlated. Therefore, the use of the 25<sup>th</sup> percentile hardness and 75<sup>th</sup> percentile sulfate values would result in overly protective criteria. In light of the significant and substantial changes proposed by commenters to this part of the rule, as well as a general lack of agreement among commenters on how the department should proceed. Consequently, the department recommends that the proposed language for Sulfate and Chloride Limit for Protection of Aquatic Life at 10 CSR 20-7.031(5)(L) be removed at this time. As EPA has pointed out, Missouri's rule does not include default values like the Iowa sulfate and chloride rules that were approved by EPA. To rectify this omission, the department recommends incorporating default value for hardness and sulfate of 162 and 63 mg/L respectively. This hardness value corresponds with the default the department uses in metal calculations. The sulfate number is the same number adopted by Iowa. These changes should put EPA in a position to provide conditional approval of the sulfate and chloride criteria. The department still recognizes the need for clarification on how to implement these criteria, and will continue to work with stakeholders to develop such procedures in a future rulemaking. Any action taken by EPA on this part of the previous rule will be taken into consideration at that time.

# Proposed Revision to Missouri's Chloride Criteria

– Use of 162 mg/L hardness and 63 mg/L sulfate for acute and chronic default criteria (standard Missouri default values):

**Table A**

Pollutant (mg/L)	AQL	DWS
Chloride chronic—	<u>372</u> (+)	250
acute—	<u>602</u> (+)	
Sulfate	(+)	250

+ See Non-Metals (Hardness Dependent), below, for calculation of criteria based on site-specific values. In the absence of representative hardness and sulfate data from a given watershed or nearby watersheds, default chloride criteria presented above are based on default values of hardness and sulfate of 162 mg/L and 63 mg/L, respectively.

Non-Metals (Hardness Dependent)

Chloride (mg/L) Acute:  $287.8 * (\text{Hardness})^{0.205797} * (\text{Sulfate})^{-0.07452}$   
 Chronic:  $177.87 * (\text{Hardness})^{0.205797} * (\text{Sulfate})^{-0.07452}$