

# Emergency Rule Justification

## Requirements Governing Water Quality Standards

### 47CSR2

The West Virginia Department of Environmental Protection (DEP), Division of Water and Waste Management (DWWM) is proposing an emergency rule to address the aquatic life category B dissolved aluminum criteria and aquatic life category B selenium criteria in the state water quality standards rule "Requirements Governing Water Quality Standards," 47CSR2. This proposed emergency rule is in accordance with the mandates of SB562 (2012) and SB357 (2015), which amended W. Va. Code §22-11-6, and is necessary to prevent substantial harm to the public's interest in economical and meaningful expenditure of resources in environmental regulation. The current water quality standards for these two criteria are in some circumstances overprotective while under protective in others. Due to this situation, the regulated community is subject to DEP permit limits that cause them to incur unnecessary treatment costs and subject some of the State's waters to inclusion on EPA's list of impaired waters when such waters are not actually degraded. Registering waters on the impaired waters list initiates a regulatory process for the DEP that results in the significant expenditure of agency resources in cases where it is unwarranted. This diverts resources from other programs where protection of water quality is, in fact, essential and vital. In addition, it has been found in low hardness environments, the current dissolved aluminum criteria have been found to be under protective in the safeguarding of the aquatic life uses.

Therefore, based on the scientific justification outlined below, DWWM proposes to amend the acute and chronic dissolved aluminum standards from their current limits of 750 µg/l in Category B1 waters (warm water aquatic life) and 750 µg/l acute or 87 µg/l chronic in Category B2 waters (trout streams) to limits based on calculations established by using the equations explained below. DWWM further proposes to amend the chronic selenium standard to include fish whole-body concentration of 8.3 µg/g and fish egg/ovary concentration of 20 µg/g, for both Category B1 (warm water aquatic life) and Category B2 (trout streams).<sup>1</sup>

#### *SCIENTIFIC JUSTIFICATION*

**Dissolved Aluminum.** Dissolved aluminum toxicity, like other metals, has a direct relationship to hardness, and numerous scientific studies have validated the impact of hardness as it relates to toxicity to the aquatic community. These studies were recently utilized to update and justify new hardness based approaches to dissolved aluminum criteria in Colorado and New Mexico, and subsequently these approaches have been approved by both the respective EPA regions and EPA headquarters. These same studies can be used to validate a relationship between the hardness concentration of West Virginia's waters and the toxicity of dissolved aluminum in waters within a pH range of greater-than or equal to 6.5 to less-than or equal to 9.0. This evidence provides an equation using stream hardness concentrations that calculates the dissolved aluminum criteria necessary to protect the designated uses of West Virginia's waters. The equation includes lower and upper boundaries for hardness levels (26 to 200 mg/L respectively) that will be applied in the calculation and derive from the hardness levels utilized in the scientific studies that resulted in the development of the equation.

<sup>1</sup> The proposed standards for aluminum and selenium can be found in Appendix E Table 1 of 47CSR2 Emergency Rule, on pages 37 and 47, respectively.

**Selenium.** Research has shown that organisms in aquatic environments exposed to selenium accumulate selenium primarily through diet, and that selenium toxicity occurs primarily through maternal-egg transfer. Because of this, it has been determined that an appropriate approach to selenium criteria is to use fish tissue and/or egg/ovary analyses to determine selenium toxicity in a particular water. With this revised standard, when the existing four-day average (chronic) water column limit of 5 µg/l is exceeded, fish tissue and/or egg/ovary tissue concentrations may be assessed to make a final determination of exceedance. This approach is consistent with methods recently drafted by EPA that are expected to be implemented as recommended nationwide criteria.

Based on the scientific research presented, DWWM proposes to amend dissolved aluminum criteria to standards that reflect the impact that hardness has on dissolved aluminum toxicity. Furthermore, DWWM proposes to amend the selenium criteria to standards that reflect a fish tissue and egg/ovary analysis approach to selenium toxicity in West Virginia's waters.

As presented in this justification, by amending both the dissolved aluminum and the selenium standards, West Virginia can avoid substantial harm to both the regulated community and the agency while maintaining the level of protection necessary for its aquatic life. These proposed amendments will also be included in the 2017 Triennial Review for both Legislative and EPA approval.

<sup>1</sup> The proposed standards for aluminum and selenium can be found in Appendix E Table 1 of 47CSR2 Emergency Rule, on pages 37 and 47, respectively.