2954.

Cooper, Kathy

From: Tate, Michele [mtate@pa.gov]
Sent: Tuesday, July 17, 2012 1:10 PM
To: IRRC; Wilmarth, Fiona E.; Schalles, Scott R.; Michelle L. Elliott; apankake@pasen.gov; Lutz, Jonathan; Richard Fox (RFOX@pasenate.com); Serra, Jamie (JSerra@pahouse.net)
Cc: Allan, Patricia M (DEP); Brennan, Douglas
Subject: FW: Triennial Review of Water Quality Standards

Please find attached comments the Environmental Quality Board received on the proposed Triennial Review of Water Quality Standards rulemaking.

Please contact me if you have any questions concerning this e-mail or the attached comments.

Thank you.

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From: Riecks-Soucek, David John [mailto:soucek@illinois.edu]
Sent: Tuesday, July 17, 2012 12:31 PM
To: EP, RegComments
Subject: Triennial Review of Water Quality Standards

Regarding Pennsylvania DEP's proposal to adopt the Illinois sulfate standard for Pennsylvania, I would like to submit a few comments.

First, I applaud the effort to adopt a sulfate standard; I think this is a step in the right direction. However, I have a couple of concerns with simply adopting the Illinois sulfate standard. The first is that, for the Illinois standard, all of the experiments that were conducted to investigate the relationship between hardness and sulfate toxicity were performed using sodium sulfate. Therefore, even though we tested hardnesses up to 600 mg/L as CaCO3, sodium concentrations in the toxic solutions were always much higher than calcium or magnesium concentrations. For example, at a hardness of 500, the LC50 for C. dubia was 3,516 mg SO_4/L. The calcium and magnesium concentrations in the dilution water were on the order of 117 and 50 mg/L, respectively, but at the LC50 SO_4 concentration, the sodium concentration would be about 1,500 mg/L. It is my understanding that in many if not most Pennsylvania streams with elevated sulfate, calcium concentration is much greater than that of sodium. There have been a number of studies that have shown that the specific ionic composition of a high TDS solution determines its toxicity and I'm afraid there is not a lot of information in the published literature on toxicity of calcium and sulfate dominated solutions. Therefore, I fear that if the ionic composition used to develop the Illinois sulfate standard is not reflective of the ionic composition of Pennsylvania streams with high sulfate, the standard could be under protective (or overprotective for all we know).

My other concern is that a chronic standard is not proposed. Since the Illinois sulfate standard was developed, work has been done by myself and others (e.g. Chris Ingersoll's group at USGS, Columbia, MO) to show that chronic effects can be observed in a variety of species at much lower sulfate concentrations than those that cause lethal effects. I believe that development of a chronic standard in addition to an acute standard is warranted.

I understand that trying to regulate high TDS effluents is a major undertaking, and I thank you for considering these points. If you have any questions, or would like further elaboration, feel free to contact me.

Sincerely,

David J. Soucek, Ph.D.
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