

Stein, Mark

From: Stein, Mark
Sent: Tuesday, August 27, 2013 2:19 PM
To: DeMeo, Sharon M.; Houlihan, Damien; Webster, David; Nelson, Eric; Papadopoulos, George; Nagle, John
Subject: FYI - re selenium

FYI –

Daily News

Kentucky's Pending Selenium Criteria Poses Test For Delayed EPA Policy

Posted: August 27, 2013

Kentucky is seeking to become the first state to win EPA approval for a new water quality standard (WQS) for selenium, which is based partially on a novel fish tissue-based approach the Bush EPA proposed in 2004 but never finalized, posing a test for the agency as it struggles to revise its decades-old criteria for the toxic mineral.

How EPA responds to [Kentucky's proposal](#) will also set a precedent for many other states that are closely following the issue. "Regardless of what EPA is doing, a number of states will follow a similar path" to Kentucky, which is serving as a test case to a state-crafted tissue-based standard now but has received multiple inquiries from other states interested in revising their WQS for selenium, a Kentucky official says.

Many states and industry groups, especially coal mining operations in Appalachia, are hoping the agency quickly decides on a new approach as the delay in crafting a new standard has opened the door to scores of citizen suits against the mines. The suits, dozens of which are pending in federal courts in Virginia, West Virginia and Kentucky, have been aided by EPA's strict water quality criteria for the substance from the 1980s, before large-scale surface mining operations began in the region.

The citizen suit litigation seeks to enforce state standards based on the agency's strict 1987 criteria of 5 micrograms per liter (ug/L) for chronic exposures and 20 ug/L for acute exposures -- which are extremely difficult to meet in discharge permits. And the suits are providing environmentalists with one of the few means of targeting the mines as federal courts have stymied several EPA policy measures aimed at addressing water quality impacts of the operations.

Officials in Idaho are also pushing for adoption of a new EPA standard as they believe it will aid their effort to develop a site-specific selenium criterion that it hopes to apply at a J.R. Simplot phosphate mine -- where trout have been found with birth and other developmental deformities -- in place of the 1987 EPA criteria.

The Kentucky official says the state's new standards, which were developed in coordination with EPA and have already won informal support from officials, have not yet won formal approval from Region IV, though the agency Aug. 22 missed the informal 90-day deadline the agency usually seeks to meet when reviewing such standards.

A Region IV spokeswoman says EPA is still reviewing Kentucky's revised WQS for selenium, and as of press time, the agency has not acted on the state's request.

Under the Clean Water Act (CWA), EPA adopts risk-based water quality criteria that set a safe level of concentration for contaminants in water to ensure it will not harm fish and other aquatic life. States then craft their own WQS based on the criteria and establish National Pollutant Discharge Elimination System (NPDES) permit limits based on the recommended levels in the criteria.

EPA's 1987 criteria for selenium, a naturally occurring non-metal stemming from releases from a variety of industries and linked to mortality, growth impediments and other adverse effects in aquatic species, was based on concentration of the substance in the water column.

Chronic Criteria

But in 2004, the agency proposed a new approach, setting a chronic criteria based on fish-tissue levels of 7.91 micrograms per gram dry weight (ug/g/dw). The agency had tried a similar approach for mercury in 2001 but had struggled to craft guidance for how to implement and enforce the fish-tissue criterion in permits, WQS and other regulatory limits.

Industry groups have long supported the fish-tissue approach because it would allow regulators to take site-specific factors into account when writing permits.

But environmentalists roundly criticized the draft criteria, saying the recommended fish-tissue limits could impede enforcement efforts and the proposed concentration is weaker than the 1987 water quality-based levels.

In 2012, Obama EPA officials said they were working to craft a new national criteria for selenium, but the agency missed a January 2013 deadline for issuing new draft criteria.

One wastewater official tracking the issue has previously said the new standard will be based on fish ingestion rates rather than fish tissue or concentration in water, but agency officials have never commented on the claim.

The Kentucky source says EPA appears to be internally "grappling" with where to set acute and chronic limits for selenium as it struggles to revise its own 26-year-old national criteria for selenium.

The agency's "thought process has morphed several times," particularly on how to set a value for acute exposures of selenium, the state source says, adding that the agency may even be weighing whether a separate acute criteria is needed at all. "We've talked to them a number of times . . . I think they're trying to figure out what they're going to do," the official says.

The Kentucky Department of Environmental Protection (DEP) standard, which was approved by the legislature earlier this year, partially adopted the 2004 EPA approach but incorporated studies cited in the draft agency criteria and additional data published after 2004 to support chronic criteria based on fish exposure to the substance through dietary intake.

"The cabinet is proposing tissue-based acute criteria for selenium adopting the option to assess whole-body fish tissue or, alternatively, of fish egg/ovary tissue," resulting in a value of 8.6 ug/g for whole body fish tissue or 19.3 ug/g for egg or ovary tissue, the DEP letter says.

The chronic values are based on EPA's 2004 formula using the bluegill species, but also 2008 data for additional species native to Kentucky, which the state says will increase the data available and aid in implementation of a tissue-based criterion given the challenges associated with collecting fish tissue in the field.

For the acute standard, DEP crafted a numeric value based on the 2004 draft national criteria, setting the proposed standard at 258 ug/L, but with the addition of a modified calculation for accounting for the presence of sulfate in the water, which can attenuate the effects of selenium.

KDEP had initially sought to drop its 1990 acute WQS for selenium, noting that it was no longer scientifically defensible, citing the 1996 U.S. Court of Appeals for the District of Columbia Circuit ruling in *American Iron and Steel Institute v. EPA* which vacated the agency's 1987 acute criteria.

Acute Standard

EPA Region IV, however, raised concerns that eliminating the acute standard would hinder permit writers' ability to set effluent limits in NPDES permits, and instead urged Kentucky to either leave its 20 ug/L value in place until the agency issued its revised national criteria or craft its own standard.

KDEP's Sandy Gruzewsky noted in [an April 3 letter](#) to the state's administrative regulatory review committee that EPA withdrew its most recent attempt in 2004 to revise the criteria. "U.S. EPA has not indicated a clear path forward or a timeframe for updating the national recommended criteria for selenium," the letter says.

DEP ultimately opted to craft its own values, saying in the document, "Update to Kentucky Water Quality Standards for Protection of Aquatic Life: Acute Selenium Criterion and Tissue-Based Selenium Chronic Criteria," that "Given there have been considerable published data regarding selenium toxicity, and much of it meeting the Guidelines required to develop chronic or acute criteria, it is appropriate and in the best interest of all stakeholders for Kentucky to develop criteria based on the latest science."

In developing the values, Kentucky consulted with EPA Region IV and Headquarters and with U.S. Fish & Wildlife Service (FWS). In comments on the proposed changes, FWS raised concerns about water birds and other wildlife that may be exposed to harmful selenium levels at fish tissue concentrations near the chronic criterion. However, in [a response to comments](#) filed April 2, DEP says it has discussed the concern with FWS and that the service "reports that they have no Kentucky-specific data, observed or empirical, that raises" those concerns.

In the April 2 response, DEP notes that EPA submitted comments reflecting concerns that waters affected by intermittent discharges may not be adequately protected and that for those waters the criterion may be difficult to implement in NPDES permits. In response, DEP says that if analysis of a proposed discharge in a permit application indicates that an exceedance might occur, the state will include the 5 ug/L chronic threshold as a backup measure which, if exceeded, fish tissue would be sampled at a compliance point identified in the permit.

Environmentalists' Concerns

Environmental groups, however, are strongly opposing the Kentucky WQS, arguing that the state's approach is flawed and the acute criterion in particular will result in significant selenium bioaccumulation in waterbodies.

Moreover, the proposed egg or ovary criterion is too high and will not adequately protect fish species, Appalachian Mountain Advocates says in [a Feb. 11 letter](#) submitted to the state legislature committee considering the WQS. "At even very low concentrations, selenium has severe impacts on aquatic life and other wildlife that depend on healthy streams," the letter says. "Remarkably, Kentucky has never placed selenium limits on a coal mining NPDES permit despite its knowledge that selenium is a significant problem for the health of its waters."

The group, along with Sierra Club, Appalachian Citizens Law Center and others also sent [a recent letter to EPA](#) urging it to reject the Kentucky WQS for failing to comply with public notice and comment requirements.

One environmentalist notes that Kentucky's decision to revise its 1990 standards, which were based on EPA's 1987 criteria, could "put pressure" on the agency to quickly issue new draft criteria to replace the 26-year-old values.

But the Kentucky official says that while it is certainly possible that issuance of Kentucky WQS could spur EPA to move forward on its own criteria, another possible scenario could be that EPA "will let Kentucky wrestle this beast and let them take the hits" to see how the new standards play out in implementation before making a decision on new national criteria. -- [Bridget DiCosmo](#) (bdicosmo@wvnews.com)

Mark A. Stein
Senior Assistant Regional Counsel
U.S. EPA - Region 1
5 Post Office Square, Suite 100
Mail Code ORA-18-1
Boston, MA 02109-3912

Tel. (617) 918-1077
E-Fax: (617) 918-0077
email: stein.mark@epa.gov