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Sent: Thursday, December 12, 2013 2:21 PM
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Subject: selenium article

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Thursday, December 12, 2013

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Daily News

Coal Ash Study Highlights Advocates' Fears Over New Selenium Rules

Posted: December 12, 2013

Environmentalists in North Carolina are urging state and EPA officials to strengthen water quality limits for selenium due to high levels of the substance stemming from a coal ash storage pond, underscoring advocates' fears that EPA's recent decision to approve Kentucky's novel selenium standard will stymie the implementation of rules the agency is crafting for ash storage sites.

EPA's approval of Kentucky's selenium standard sets "a very dangerous precedent," says a source with Sierra Club, making it more difficult to measure facilities' compliance with any regulatory requirements and ensuring any rules would be "largely empty."

Southern Environmental Law Center (SELC) Dec. 5 [released a report](#) that called for state and federal regulators to strengthen their current water quality criteria for selenium from 5 micrograms per liter (ug/L) to 1.5-2 ug/L measured in the water column.

The report, "Biological Assessment to Determine Impacts of Selenium From Coal Ash Wastewater Discharges on Fish Populations in Lake Sutton, NC," found that average waterborne concentrations of selenium in Lake Sutton -- a receiving water for discharges from a Progress Energy coal ash storage site -- were measured at levels below the current criteria but that hundreds of thousands of fish in the lake were being killed and thousands more were suffering significant physical deformities and abnormalities due to selenium.

The report, conducted by Wake Forest University Professor Dennis Lemly, estimated replacement costs of more than \$4.5 million a year.

In particular, it found that Sutton Lake fish began to be adversely affected at levels of around 2.7 ug/L in the water column and that even at such seemingly low selenium levels, "markedly elevated selenium levels were found in fish tissues each year, far exceeding toxic thresholds."

"This study is yet another one that shows that pollutants from coal ash impact our natural resources in a direct, visible and material way," says an SELC source, which commissioned the study. "The hope is that this study and others preformed over the years will cause the EPA to recognize the significant impact of selenium and coal ash on our resources and impose limits on coal ash discharges."

Progress Energy officials rejected the study's findings, saying that their monitoring has shown high levels of healthy fish in the lake. "In more than three decades of sampling using well accepted scientific techniques and observing hundreds of thousands of fish in Sutton Lake, Duke Energy biologists have not observed the health effects described in . . . the report and find the report's claims highly suspect," a spokeswoman told local press.

The spokeswoman suggested the dispute may be moot as Duke is currently decommissioning the coal plant closing the ash basin so it can be replaced with a natural gas unit. "This provides the ultimate resolution to ash basin issues and will protect groundwater," the company said.

Report's Conclusions

But environmentalists say the Lake Sutton report's findings and recommendations underscore their concerns with EPA's recent decision to approve Kentucky's novel water quality criteria for selenium measured in fish tissue rather than in the water column, in part because ensuring compliance with fish tissue limits is so difficult.

EPA last month approved Kentucky's criteria for protecting aquatic life from chronic exposures to 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.

The agency's approval set a precedent that several other states, including Virginia, Tennessee and West Virginia, are already gearing up to adopt, according to the Sierra Club source.

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

EPA's current criteria for selenium, issued in 1987, is based on concentration of the substance in the water column. The criteria, 5 ug/L for chronic exposures and 20 ug/L for acute exposures, is extremely difficult to meet in discharge permits, but the agency had struggled for years to revise its standard.

The strict 1987 standard has aided a spate of citizen suits against operators of coal ash storage sites, including Progress Energy's site at Sutton Lake, though discovery in the case, *Cape Fear River Watch, et al v. Duke Energy Progress, Inc.*, is stayed as the court weighs a motion from the company to dismiss the suit on procedural grounds.

Such citizen suits have provided environmentalists with an important tool to target the facilities in the absence of new waste handling rules governing the sites that EPA is crafting under the Resource Conservation and Recovery Act (RCRA) and a related effluent limitation guideline (ELG) that EPA is developing under the CWA.

In 2004, the Bush EPA proposed a new approach, setting a chronic criteria for selenium based on fish-tissue levels of 7.91 micrograms per gram dry weight (ug/g/dw), though the agency never approved the proposal due to push-back from environmentalists who questioned the ability to enforce the measure. The agency tried a similar approach for mercury in 2001 but struggled to craft guidance for how to implement and enforce the fish-tissue criterion in permits, WQS and other regulatory limits.

Kentucky's chronic standard that EPA approved -- 8.6 ug/g/dw for whole body fish tissue or 19.3 ug/g for egg or ovary tissue -- is drawn partly from the controversial 2004 Bush EPA proposed criteria that sets the standard based on fish tissue concentration but is based on more recent studies to support chronic criteria based on fish exposure through dietary intake.

And the adoption of the Kentucky standard -- and others like it -- is now expected to ease industry's compliance with permits and other enforcement actions just as EPA is preparing to issue its new coal ash rules.

The agency is slated to issue a final ELG next May. The EPA has not yet set a formal deadline for the RCRA rule but the agency is due to tell a federal court later this month when it plans to complete the long-time rulemaking.

Environmentalists' Concerns

But Sierra Club and other groups are now concerned that measuring the criteria in fish tissue, as Kentucky and other states are planning, rather than the water column, will make it difficult to implement and enforce the waste rule for coal ash and new effluent limits.

"The study released [this week] underscores that water score tests are the critical way to test the problem," the Sierra Club source says. "We're pretty appalled about what the EPA did in Kentucky. They walked back a long standing protection and a way to determine whether there's a baseline problem. Essentially they are making the selenium standards unenforceable."

But Lemly, the scientist who conducted the Lake Sutton study for SELC, told Inside EPA it may be possible to better measure criterion based on fish tissue levels if it is implemented in combination with a water column screening.

However, he says that regulators should significantly strengthen both the fish tissue criterion -- lowering it to 4 ug/g/dw from 8.6 -- and the water screening value -- 2 ug/L instead of the current 5 ug/L limit -- to ensure they are adequately protective.

Lemly says he determined the guideline measurements through both his Lake Sutton study and previous studies he conducted over the last 20 years. He argues that states have a lot to learn from the Lake Sutton study, including Kentucky, "Selenium doesn't magically behave differently in Kentucky. It will bio-accumulate in Kentucky impoundments just the same as in Lake Sutton, North Carolina," he says.

He says the situation at Lake Sutton is an example of how unlined coal ash storage ponds create environmental hazards in fisheries, a finding he says shows the need for EPA to regulate coal ash as a hazardous waste under RCRA.

"The key action that needs to be taken is advocating [for] the new EPA rule to include a provision that all surface impoundment of coal ash would stop in its tracks," said Lemly. "That would eliminate the situation that we have at Lake Sutton, that would take care of the past industry's [coal ash disposal sites] and would prevent future damage." --
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