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War on Coal: The Selenium Battle (/full-blog/2014/04/war-on-coal-selenium-battle.html)

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By: Elizabeth Combs, Staff Member

Selenium is a naturally occurring metalloid element that can conduct electricity[i] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn1). While small amounts of this element are essential to human and animal life, large amounts of selenium can cause deformities and disease in certain animals[ii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn2) and harm humans.[iii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn3) Although selenium is naturally occurring in certain places in our environment, such as within the selenium-rich coal seams and rock layers found in the mountains of Kentucky,[iv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn4) it can become dangerous once released into the air and water.[v] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn5) Throughout many Central Appalachian states, including Kentucky, selenium is often exposed as a result of mountaintop removal coal mining activities.[vi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn6) causing it to be discharged into streams and ground water.[vii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn7) Once released into water systems, selenium accumulates in the tissues of fish and other aquatic animals.[viii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn8) Harmful effects, such as abnormal spine curvature and bulging eyes[ix] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn9) [as seen in the photos above], can result if the amount of selenium contained in the tissue reaches toxic levels.[x] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn10)

Although the amount of selenium that can be released into water sources is monitored, criteria for selenium discharge does not normally appear on Clean Water Act (CWA) permit applications.[xi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn11) Instead, each state establishes its own water quality criteria. Before becoming an enforceable monitoring criteria, these standards, as well as any subsequent revisions, must first be approved by the Environmental Protection Agency (EPA).[xii] (<https://www.blogger.com/blogger.g?>)

blogID=8202935745006855383#_edn12) As of 2013, the standard in Kentucky for chronic selenium discharge was 5 parts per billion (ppb).[xiii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn13) However, based on cutting-edge scientific research into the long-term effects of selenium, Kentucky recently proposed a change to these standards.[xiv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn14) The new monitoring process would involve testing the tissue of fish within any water sample exceeding the 5 ppb selenium limit.[xv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn15) In order to trigger a water pollution violation, the concentration of selenium in the fish tissue would have to be greater than 8.6 ppb.[xvi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn16)

Since the original selenium discharge criteria would trigger a water pollution violation simply upon a measurement exceeding 5 ppb in the water source,[xvii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn17) many environmental groups interpreted the revised standard as effectively increasing the amount of selenium discharge allowed and thus weakening the standard for selenium exposure.[xviii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn18) Although the revision to Kentucky's standard was based on scientific information showing that selenium did not become toxic until it surpassed an accumulation of 8.6 ppb in fish tissue,[xix] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn19) other experts argued that toxic effects on aquatic life could be found at as low as 3 ppb in tissue.[xx] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn20) However, the EPA must first approve any revisions to a state's standards for water quality.

In Kentucky, where the "War on Coal" can be seen and felt by many citizens, coal companies and mining organizations are actively and regularly challenging the EPA and its seemingly ever-increasing regulatory authority over the coal mining industry. However, these same companies and organizations were surprised when the EPA chose to approve Kentucky's new standards on selenium in late 2013.[xxi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn21) This decision, which was highly anticipated by both environmental and coal mining organizations, was based on the fact that the new two-step process to measure chronic selenium discharge is grounded in the latest scientific research.[xxii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn22) According to the EPA, the newly approved criterion focuses on the long-term effects of selenium and is not only adequate for, but also protective of, aquatic life.[xxiii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn23)

At a time when environmental regulations continue to be strengthened and intensely enforced, it is quite unusual for the EPA and mining industry groups to be on the same side of an issue that involves coal, and yet the EPA's decision to approve Kentucky's revised selenium standard did just that. Interestingly, something just as unusual resulted from this decision—in response to the EPA's approval of Kentucky's revised standards, several environmental groups are taking action against the EPA.[xxiv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn24) These groups, including the Sierra Club, Kentuckians For The Commonwealth, Appalachian Voices, and the Kentucky Waterways Alliance, have filed suit in the U.S. District Court for the Western District of Kentucky arguing that the new selenium standards violates the Clean Water Act.[xxv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn25)

Likely due to the fact that the previous selenium criteria was a standard that these environmental groups relied on in past litigation regarding pollution by coal companies, these groups want the EPA to maintain the original standard for chronic selenium discharge—5 ppb as measured from water samples.[xxvi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn26) The outcome of this case is important not only for Kentucky, but because other coal-producing states are expected to follow our lead, this decision may affect revisions to selenium standards in other states.[xxvii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_edn27) However, regardless of what happens in this case or one's opinions regarding environmental regulation, I think we all can agree that the issue of selenium and its unusual line-up of characters have certainly proven to be a unique and unusual battle in the "War on Coal."

[i] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) The Periodic Table - Selenium, Minerals Education Coalition, www.mineralseducationcoalition.org/elements/selenium (<http://www.mineralseducationcoalition.org/elements/selenium>) (last visited April 1, 2014).

[ii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[iii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Toxic Selenium in Kentucky Streams, Appalachian Voices (Feb. 2013), http://appvoices.org/aww/KY_Selenium_Handout.pdf (http://appvoices.org/aww/KY_Selenium_Handout.pdf).

[iv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[v] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Laura Beams, Coal Mining Industry Influences EPA's Selenium Pollution Standards, EcoWatch (July 2013), <http://ecowatch.com/2013/07/26/coal-mining-influences-epas-selenium-standards/> (<http://ecowatch.com/2013/07/26/coal-mining-influences-epas-selenium-standards/>).

[vi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[vii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Appalachian Voices, *supra* note 3.

[viii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[ix] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Beams, *supra* note 5.

[x] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Appalachian Voices, *supra* note 3.

[xi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Beams, *supra* note 5.

[xii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Emily McKinney, EPA Approves Kentucky's New Science-Based Selenium Water Quality Standard, Frost Brown Todd, LLC (Nov. 25, 2013), <http://www.frostbrowntodd.com/resources-1626.html> (<http://www.frostbrowntodd.com/resources-1626.html>).

[xiii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xiv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xvi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xvii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xviii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Appalachian Voices, *supra* note 3.

[xix] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) McKinney, *supra* note 12.

[xx] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Appalachian Voices, *supra* note 3.

[xxi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) McKinney, *supra* note 12.

[xxii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xxiii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xxiv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Groups Challenge EPA's Dangerous Selenium Decision in Kentucky, Sierra Club (Dec. 13, 2013), <http://content.sierraclub.org/press-releases/2013/12/groups-challenge-epas-dangerous-selenium-decision-kentucky> (<http://content.sierraclub.org/press-releases/2013/12/groups-challenge-epas-dangerous-selenium-decision-kentucky>).

[xxv] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Id.

[xxvi] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) Daniel Siegal, Sierra Club Sues EPA To Block New Ky. Selenium Standard, Law360, Dec. 2013, available at <http://www.law360.com/articles/495770/sierra-club-sues-epa-to-block-new-ky-selenium-standard> (<http://www.law360.com/articles/495770/sierra-club-sues-epa-to-block-new-ky-selenium-standard>).

[xxvii] (https://www.blogger.com/blogger.g?blogID=8202935745006855383#_ednref) McKinney, *supra* note 12.

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