CLEAN WATER ACTION
CLEAN WATER FUND

Putting Drinking Water First:

Time to Curb Power Plants' Toxic Pollution

Clean Water Action's analysis of supporting documents for the Environmental Protection Agency's (EPA) ***Proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category***[1] confirms that power plant discharges to surface water often include contaminants that experts consider to be "contaminants of concern" when found in drinking water. For example, arsenic, lead, selenium and mercury are all commonly found in power plant discharges to water, and all are contaminants of long-standing concern in drinking water. Other common power plant discharge contaminants, such as vanadium and bromides, are emerging more recently as drinking water challenges. All of these contaminants pose public health risks and present challenges for Public Water Systems. This situation highlights the importance of controlling pollution such as these power plant discharge contaminants whose presence in source water can lead to increased drinking water treatment costs and higher water bills for consumers. **EPA has the opportunity to protect drinking water sources when the *Proposed Rule, Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Category* is finalized.**

Steam Electric Power Plants are responsible for more than half of the toxic pollutants discharged directly into waters of the United States, more than the other nine top polluting industries *combined*.[2] Despite the scope of this pollution problem, existing standards have not been updated since 1982 and fail to set discharge limits on dangerous pollutants. According to EPA's ***Proposed Rule***, this failure is a factor in more than 160 water bodies not meeting state water quality standards, 185 waters with fish consumption advisories and the degradation of 399 water bodies across the country that serve as drinking water supplies.[3] The Clean Water Act requires states to set strong discharge standards for polluters in the absence of federal standards.[4] Unfortunately, most state permitting agencies have failed to set discharge permit limits for individual plants to require the best available treatment technology and protect water quality. Affordable technology exists to eliminate the toxic discharges from the seven waste streams addressed by the Proposed Rule, and many coal plants are using these technologies.[5] EPA has an obligation under the Clean Water Act to address this pollution. **A strong final rule will reduce public health risk from drinking water and save Public Water Systems and their consumers money.**

Four contaminants illustrate the threats power plants pose for drinking water. There is an important opportunity to protect drinking water sources from these contaminants up front, rather than relying on our nation's Public Water Systems to clean-up power plant pollution after the fact:

Arsenic: Arsenic is a contaminant of long-standing concern in drinking water. Arsenic has been linked to several types of cancer including of the bladder and lungs and to non-cancer effects including of the circulatory system.[6] Recent science suggests that arsenic has endocrine disrupting characteristics that may be related to diabetes, obesity and other diseases.[7] When EPA updated the federal drinking water standard or Maximum Contaminant Level (MCL) for arsenic in 2002, it estimated that more than 4,000 Public Water Systems would need to install treatment to comply with the MCL.[8] This treatment has been costly for many communities. Much of the arsenic found in drinking water sources is naturally occurring, and pinpointing the relative contribution of power plants or other human activity sources on a nationwide scale is difficult. However, the arsenic discharges to surface water from power plants estimated by EPA (79,200 pounds annually) are significant.[9] A 2007 EPA assessment of coal combustion waste damage cases found several instances where arsenic levels exceeded drinking water standards in ground water near combustion residuals surface impoundments, one of the waste streams at issue in the ***Proposed Rule***.[10] **Available information suggests that arsenic discharges from power plants have increased public health risks from drinking water and have most likely led to increased drinking water treatment costs for some communities.**

Nutrients: According to EPA, power plants discharge 30 million pounds of nitrogen and 682,000 pounds of phosphorous annually into surface waters.[11] Nutrient pollution is related to drinking water challenges in several ways. Nitrogen discharges from industrial sources contribute to the development of nitrates in drinking water sources. Children under six months of age are particularly susceptible to the effects of nitrates in drinking water, which include respiratory problems and methemoglobinemia or "blue baby syndrome."[12] Additional drinking water treatment for nitrates has led to significant increased costs for PWS and consumers. Nitrogen in drinking water sources can increase formation of disinfection byproducts in water treatment plants, resulting in treatment complications and increased costs to prevent byproduct development in order to meet SDWA regulations and protect public health.

Nutrient pollution also increases growth of cyanobacteria (blue–green algae), which release cyanotoxins. Exposure to cyanotoxins can cause a variety of symptoms and can affect the nervous system and the liver.[13] The presence of cyanotoxins in rivers and lakes can result in bans on recreational use and has been known to harm wildlife and livestock. Presence of cyanotoxins in source water can result in community-wide "do not drink" advisories. Three cyanotoxins (Anatoxin-a, Microcystin–LR and Cylindrospermopsin) are on the third version of EPA's Contaminant Candidate List (CCL3).[14] The Safe Drinking Water Act (SDWA) requires EPA to periodically develop a list of contaminants that may require future regulation. A contaminant's presence on the CCL list is significant because it indicates that the contaminant has undergone a screening process which determined that there is enough information about occurrence and health effects to merit further research. The third version of the CCL, finalized in 2009, includes 104 chemicals or chemical groups and 12 microbiological contaminants which are known or anticipated to occur in public water and which have the potential to present health risks through drinking water exposure.

Nutrient pollution's wider ecological impacts have implications for drinking water sources and treatment and for the operations of Publicly Owned Treatments Works (POTW's/sewage treatment plants.) Nutrient pollution leads to dead zones, algal blooms and other ecological threats. Nutrients pollution has caused disastrous consequences in the Chesapeake Bay. According to EPA, power plant discharges to water are responsible for 30% of the nitrogen loadings and 5% of the phosphorous loadings to the Chesapeake Bay watershed from permitted direct sources.[15] Sewage treatment plants are required to meet significant reductions in nutrient discharges. **Addressing power plant nutrient discharges into the Chesapeake Bay and other surface waters is a common-sense way to protect precious resources and ensure that all contributing sources are cleaning up their pollution.**

Vanadium: Vanadium is a metal widely present in the earth's crust and in most coal and petroleum crude oils. EPA estimates that power plants discharge 158,000 pounds of vanadium annually.[16] Inclusion of vanadium on the CCL3 list indicates that there is enough information about its occurrence and health effects to merit further research to determine if regulation is warranted.[17] Consequently, Public Water Systems are now monitoring for vanadium under the third version of the SDWA Unregulated Contaminant Monitoring Rule (UCMR3) finalized in 2012. Every five years, SDWA requires EPA to develop a list of no more than 30 contaminants for monitoring by Public Water Systems under the UCMR. This monitoring is an important part of the information needed for any future regulatory actions.[18] The presence of vanadium on both CCL3 and UCMR3, two key aspects of the SDWA regulatory process, indicates that it is a concern in drinking water. Upstream sources of vanadium should be addressed as aggressively as possible rather than relying on drinking water treatment to address this contamination. As is the case with arsenic, much of the vanadium found in water is naturally occurring, but with vanadium, a federal drinking water standard (MCL) is not currently in place. **Identifying and eliminating industrial sources of vanadium contamination wherever possible will not only reduce public health risks from drinking water, but could potentially help communities avoid water treatment costs should a federal standard be set in the future.**

Bromides: Bromide is a halogenated element found in the coal burned in power plants. Bromides can also be introduced during power plant operation. There is evidence that power plants discharge large quantities of bromides.[19] Bromides are of increasing concern to drinking water experts because of chemical reactions that can occur during the water treatment process to form "disinfection byproducts" known to cause cancer. Recent scientific research suggests that some of these byproducts merit increased attention.[20] Other research is increasing the understanding of bromides sources and their impact on water treatment, including increased costs incurred by Public Water Systems to control byproduct formation.[21] **Given the emerging science on bromides, reducing discharges that can lead to drinking water source contamination is of the utmost importance in order to reduce public health risks and relieve potential burdens on Public Water Systems and their consumers.**

EPA's ***Proposed Rule*** and supporting documents confirm that power plant pollution is directly responsible for toxic discharges which cause contamination in drinking water supplies. In the ***Benefits and Costs Analysis*** document for the ***Proposed Rule***, EPA did not monetize benefits of improved surface water quality in terms of drinking water consumption because Public Water Systems are required to meet federal standards and thus are eliminating most of the health risks posed by any SDWA-regulated contaminant present in power plant discharges.[22] This is a

powerful fact. It indicates that in terms of regulated contaminants, PWS and their consumers are essentially footing the bill to reduce the public health risks from power plant water discharges. While this benefits public health and is a testament to modern drinking water treatment, it is not an efficient way to control industrial pollution. Eliminating contaminants at their source is vastly more appropriate than relying on our nation's Public Water Systems to clean up the toxic waste stream from a polluting sector of the economy.

The strongest possible final Effluent Guidelines and Standards for the Steam Electric Power Generating Point Source Category is justified and will reduce drinking water public health risks from, prevent drinking water challenges and save communities, Public Water Systems and their consumers money.

NOTES

1 78 Fed.Reg at 34,432 – 34,543
2 EPA, *Environmental Assessment for the Proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category* 3-14 (April 2013)
3 http://water.epa.gov/scitech/wastetech/guide/steam-electric/proposed.cfm
4 33 U.S.C. § 1314 (b); 40 C.F.R. § 122.44(a)(1), 123.25, 125.3
5 Environmental Integrity Project, Sierra Club, Clean Water Action, Earthjustice and Waterkeeper Alliance, *Closing the Floodgates: How the Coal Industry is Poisoning Our Water and How We Can Stop It* (2013), available at http://cleanwater.org/files/publications/closing-floodgates.pdf
6 http://water.epa.gov/lawsregs/rulesregs/sdwa/arsenic/index.cfm
7 http://www.dartmouth.edu/~toxmetal/research-projects/arsenic-endocrine-disruptor.html
8 EPA, *Arsenic and Clarifications to Compliance and New Source Monitoring Rule: A Quick Reference Guide*, EPA 816-F-01-004 (January 2001)
9 http://water.epa.gov/scitech/wastetech/guide/steam-electric/proposed.cfm
10 EPA, *Coal Combustion Waste Damage Case Assessments*, July 9, 2007
11 http://water.epa.gov/scitech/wastetech/guide/steam-electric/proposed.cfm
12 http://water.epa.gov/drink/contaminants/basicinformation/nitrate.cfm
13 EPA, *Cyanobacteria and Cyanotoxins: Information for Drinking Water Systems*, EPA 810F-11001, July 2012
14 http://water.epa.gov/scitech/drinkingwater/dws/ccl/ccl3.cfm
15 EPA, *Environmental Assessment for the Proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 3-30 (April 2013)
16 http://water.epa.gov/scitech/wastetech/guide/steam-electric/proposed.cfm
17 http://water.epa.gov/scitech/drinkingwater/dws/ccl/ccl3.cfm
18 http://water.epa.gov/lawsregs/rulesregs/sdwa/ucmr/ucmr3/
19 Fed. Reg at 34,505
20 *Environmental Health Perspectives, Disinfection By-products: A Question of Balance*, Rita Schoeny, November 2011
21 *Journal – American Water Works Association, Marcellus Shale drilling and brominated THMs in Pittsburgh, PA*, drinking water, Stanley States et al, 2013
22 EPA, *Benefit and Cost Analysis for the Proposed Effluent Limitations Guidelines and Standards for the Steam Electric Power Generating Point Source Category*, 2-4, (April 2013)

September 2013

CLEAN WATER ACTION | CLEAN WATER FUND

1444 Eye Street NW, #400, Washington DC 20005-6538 | 202.895.0420 | **www.cleanwater.org**