

**From:** Kevin Lee [klee@edf.org]  
**Sent:** Friday, February 12, 2010 9:39 AM  
**To:** EP, RegComments  
**Cc:** Jim Tripp; Scott Anderson; Mary Barber; Elena Craft  
**Subject:** Comments on Chapter 95 Proposed Rulemaking  
**Attachments:** PADEPshalegascomments021110a[1].doc



To the Environmental Quality Board, Commonwealth of Pennsylvania:

Attached please find comments to the proposed amendments to 25 Pa. Code Chap. 95 prepared by James T.B. Tripp, General Counsel, and Kevin Lee on behalf of the Environmental Defense Fund. The return address is: Environmental Defense Fund, 257 Park Avenue South, New York, NY 10010.

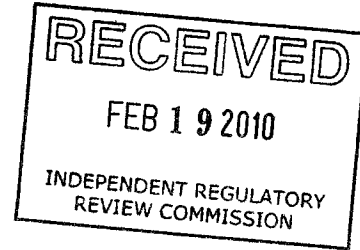
Please confirm receipt of the comments via reply to this email. Thank you.

Sincerely,  
Kevin Lee

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Environmental Quality Board  
Commonwealth of Pennsylvania  
P.O. Box 8477  
Harrisburg, PA 17105-8477

February 11, 2010

Re: Comments on Proposed Amendments to 25 Pa. Code Chapter 95

Ladies and Gentlemen:

We are writing to you on behalf of the Environmental Defense Fund (EDF) with our comments on the proposed amendments to 25 Pa. Code Chapter 95 (relating to Wastewater Treatment Requirements). EDF is an environmental advocacy organization with over 700,000 members nationwide. Since our founding in 1967, EDF has linked science, economics and law to create innovative, equitable and cost-effective solutions to society's most urgent and difficult environmental problems.

We commend the Pennsylvania Department of Environmental Protection (DEP) for its efforts to update the regulatory framework for the treatment of wastewater high in Total Dissolved Solids (TDS), particularly in light of the increased gas exploration and production in the Marcellus shale play and the attendant waste produced from such natural gas extraction operations. We strongly support this initiative to limit high TDS discharges in Pennsylvania's waters. However, we also stress that DEP should couple the effort to mitigate the effects of TDS on Pennsylvania's waterways through effluent standards with limits on other specific salts, such as bromides, and frac chemicals that are injected in these shale operations and are often found in flow back waters. At a minimum, the Commonwealth should set best available control technology (BACT) effluent standards for these chemicals even if its knowledge of the toxicity of specific chemicals is inadequate. Dilution through mixing with other kinds of wastes should not be an allowable treatment strategy for such chemicals. It should also consider setting a surface water discharge standard of zero for certain chemicals that are known to be highly toxic.

Appropriately stringent BACT effluent standards for produced water chemicals would not only protect the Commonwealth's waters but provide incentives for shale gas operators in the Commonwealth to pursue the development of deep disposal well infrastructure, to reuse produced water and to test out and use "green" frac chemicals that are in development. Through these and other strategies, the Commonwealth should emphasize the development of deep disposal well infrastructure with a goal of phasing out surface discharges of frac return flows so long as the industry uses any chemicals that may be toxic. So long as the Commonwealth allows

frac flowback water to be conveyed to a municipal treatment plant (POTW), it should set BACT-based industrial pretreatment standards for all frac chemicals that operators are injecting and may therefore appear in produced waters. The Commonwealth should not leave it up to individual POTWs to set such requirements in accordance with 40 CFR 403.8. Such individual POTWs operators could be under pressure to accept frac wastewaters; they should not be expected to have detailed knowledge of the toxicity of frac chemicals in return flows; it should not be assumed that any POTW will be able to treat effectively frac chemicals and dilution should not be an acceptable treatment strategy. It may also be appropriate for the Commonwealth to set a state-wide industrial pretreatment standard for TDSs.

Standards of measurement:

The rule is designed to protect Pennsylvania surface and groundwaters that are or could potentially be used as a water supply source from high TDS wastewaters. A high TDS wastewater should be one that has a concentration of TDS above 500 mg/L, not 2,000 mg/L. It is not evident why 2,000 mg/L should be the threshold. If the goal is to limit TDS discharges to concentrations below 500 mg/L, why is the threshold concentration to trigger compliance with the requirements of §95.10(b) set at 2,000 mg/L?

Furthermore, the proposed changes to the effluent standard and concentration threshold are devised as monthly averages. Such a standard could allow for large daily variances in discharge levels, possibly threatening the health of the Commonwealth's waterways. We believe that thresholds set as daily maxima should be established as well.

Existing sources of high TDS wastewaters:

We find it curious that the proposed amendments regulate the discharge of only *new* high TDS wastewaters. If the goal is to prohibit high TDS wastewaters from Pennsylvania's waters, it would be prudent to ban discharges of high TDS wastewaters by *any* sources regardless of whether they received a permit prior to April 1, 2009 although some additional transition period beyond January 1, 2011 might be appropriate. We believe it is preferable to prohibit discharges of high TDS wastewaters by all sources, especially those drilling in the Marcellus Formation, within one year and at most two years of the January 1, 2011 deadline set for prohibition of any new discharges of high TDS wastewater. Allowing existing sources to continue to discharge high TDS wastewaters as long as they do not expand the amount of discharge above their April 2009 level is counter to the Commonwealth's goal of protecting its waters from high TDS discharges.

Regulation of other contaminants:

Regulation of TDS, chlorides, sulfates, barium and strontium is a good start, but simply that—a start. Even with improvements, the scope of this rule is much too narrow to solve all the pertinent issues. For instance, in terms of salts it is important to adopt a standard for bromides. In addition, since many of the frac chemicals that are injected into the shale to facilitate release of shale gas may be toxic, the Commonwealth should establish effluent standards for them as well.

To assist the Commonwealth in its assessment of the toxicity of and thus appropriateness of industrial pretreatment or discharge standards for these chemicals, we have attached as part of

our comments a spreadsheet titled, "EDF Review of Toxicity of Compounds Found in Frac and Flowback Fluids." The spreadsheet presents the known health effects and other characteristics for these compounds as they have been portrayed in a number of lists and databases (i.e., the TEDX database maintained by the Endocrine Disruption Exchange and 30 other lists and databases monitored by EDF).

The proposed rule at 95.10(c)(5) and (6)(i) and (ii) makes reference to federal new source performance standards (NSPS) at 40 CFR 474.34 and pretreatment standards at 40 CFR 437.36. However, those EPA regulations provide no best practicable or best available control technology based standards for almost all of the frac chemicals identified in the attached spreadsheet. Given the novelty of many of these chemicals and lack of experience that POTW operators would have with the treatment of these chemicals, we deem it unrealistic for the Commonwealth to look to individual POTW operators to develop and implement a federal pretreatment program meeting applicable standards found in 40 CFR 403.8 relating to frac chemicals that could affect plant conditions and the quality of receiving waters without Commonwealth guidance and assistance. Nor do we consider practical for permit writers at DEP to set limits on individual toxic chemicals. A comprehensive approach is advantageous.

The toxicity status of these chemicals needs to be characterized by the U.S. Environmental Protection Agency (EPA) or the Commonwealth to allow for proper assessment of the potential impact of the use of these chemicals on surface and ground waters, as well as effective storage, treatment and disposal methods. Concerning industrial development of Marcellus shale natural gas, the DEP should coordinate with the EPA and neighboring states such as New York to create a comprehensive program of characterizing and setting standards for injection fluid and flowback water chemicals.

The EPA has already established standards for approximately ninety (90) potentially harmful contaminants found in drinking water. Of these 90 contaminants, at least seventeen are listed on our spreadsheet of compounds commonly found in frac and flowback fluids. Four out of these seventeen frac fluid contaminants are known carcinogens or reproductive toxicants and are of immediate concern: arsenic, benzene, cadmium and lead. In addition, five other compounds identified in the columns of the spreadsheet marked as IARC Group 1, NTP known Carc, Prop65 TOX Male and Prop65 TOX Female are of obvious immediate concern. We would urge the Commonwealth to adopt a rule that would prohibit the discharge of these chemicals to surface waters at any concentration. Others may fall into this kind of category as well.

The Pennsylvania DEP program should be designed to provide regulatory incentives to industry to move away from utilizing the most toxic compounds such as those in the specific categories identified above to using compounds that minimize health threats. Given that so little data is available on the concentrations of compounds found in frac fluid or on the resultant synergistic effect from the interaction of these compounds, the sensible course of action is to encourage less toxic alternatives until we fully understand the composition of these fluids. Industrial operators should also be required to provide DEP with all information that they have about the health and environmental toxicity status of all frac chemical compounds that they intend to use. Absence of data should not be equated with a demonstration of no harm. We also stress that operators should be required to disclose to the Commonwealth all hydraulic fracturing fluid constituents actually

used at particular sites. This information should then be made available to the public except to the extent that release would constitute disclosure of a trade secret.

Monitoring of Wastewater:

Currently, no system is in place to establish and monitor a chain of responsibility for wastewaters produced at drilling sites. The enforcement of “cradle-to-grave” monitoring is essential to ensure proper treatment and disposal of high TDS wastewater. Moreover, there exists little oversight of the reuse of Marcellus wastewater and whether this reuse constitutes disposal. Monitoring of the reuse of wastewater is crucial.

Disposal:

Some drilling operators in Pennsylvania are transporting their waste out of state to facilities in places such as Baltimore (where it is “treated” then discharged into the Chesapeake Bay). Pennsylvania should not relegate its environmental responsibility to other states where ultimate discharge to the environment may occur. Perhaps the DEP could facilitate multi-state cooperation or an agreement amongst various states regarding the treatment and disposal of high TDS wastewater.

Designation of areas off-limits for any shale gas development:

Concern about the release of frac chemicals and high TDS wastewaters underscores the need to preclude all shale gas development where determinations are made that surface and groundwater watersheds are especially critical, airsheds are especially vulnerable or ecosystems are especially sensitive. A process is needed for designating additional watersheds and sensitive areas where development is not in the public interest and should be prohibited. Adjustments can be made when experience demonstrates and the record of the industry establishes that these kinds of industrial operations may occur in highly sensitive watersheds in a manner that precludes any release of toxic wastes or TDS-enriched wastewaters to such critical surface or ground waters.

Once again, EDF appreciates the initial steps taken by the PA-DEP to limit the introduction of high TDS discharges into Pennsylvania’s waters. These proposed amendments signal a significant step in the right direction, but further action to protect the Commonwealth’s waters from health and ecological impacts of frac chemical compounds shale gas development is warranted.

Yours very truly,

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