DEPARTMENT OF TRANSPORTATION AND ENVIRONMENTAL SERVICES
Division of Environmental Quality
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October 20, 2008

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State Air Pollution Control Board
Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

David K. Paylor, Director
Michael Dowd, Director, Air Quality Division
Virginia Department of Environmental Quality
629 East Main Street
Richmond, Virginia 23219

Re: Virginia's Opacity Standards - Amendment of Chapter 40, Sections 80 and 940, and Chapter 50, Section 80

Honorable Board Members, Director Paylor and Mr. Dowd:

The Virginia Department of Environmental Quality ("VDEQ") regulations at 9 VAC 5-40-80 and 9 VAC 5-40-940 specify opacity standards for existing stationary sources, while regulations at 9 VAC 5-50-80 specify opacity standards for new and modified stationary sources. The Metropolitan Washington Air Quality Committee ("MWAQC") has petitioned the Virginia State Air Pollution Control Board ("SAPCB") to revise these opacity standards to a lower value and make them consistent with the corresponding regulations currently in effect in Maryland and District of Columbia ("DC"). The City of Alexandria ("Alexandria") appreciates the opportunity to provide comments on this matter.

VDEQ's current regulations cited above contain an opacity limit of 20% for existing as well as new and modified stationary sources. Opacity is an indicator of particulate matter

("PM") emissions, especially fine PM emissions from stationary sources. Among other factors that influence opacity, the mass of PM emissions directly contributes to increases in opacity. A reduction in the opacity standard to 10% or lower will contribute towards reducing PM emissions.

Current Opacity Standard is Archaic

VDEQ's current opacity standard was derived from regulations in effect in 1985. By today's guidelines, this is an archaic standard. The U.S. Environmental Protection Agency ("EPA") has revised the National Ambient Air Quality Standards ("NAAQS") for particulate matter ("PM") on three separate occasions in the last two decades. With each revision, the EPA lowered the NAAQS to better reflect the growing evidence of a strong correlation between particulate matter concentrations and the associated adverse health consequences. Again, reducing the opacity standard will have a direct contribution towards mitigating the adverse health effects of PM emissions and promote the attainment and maintenance of NAAQS.

Opacity Standards in Maryland and DC

The current PM NAAQS are based on $PM_{2.5}$, i.e., PM less than 2.5 microns in diameter. Northern Virginia, which is a part of the metropolitan Washington region, is designated as a $PM_{2.5}$ nonattainment area, i.e., the region does not currently meet the $PM_{2.5}$ NAAQS. Residents of the metropolitan Washington region, including those of Alexandria, are directly affected by the adverse health effects of high PM concentrations. Maryland has recognized this fact and has reduced the opacity standard for the Baltimore/Washington metropolitan region to zero percent (0%), with exceedance defined as an occurrence of 10% opacity or greater for two or more six-minute blocks in an hour. Similarly, DC has also revised its regulations to allow no visible emissions (0% opacity) for all sources, except for fuel-burning equipment constructed prior to 1977 for which up to 10% opacity is allowed. Furthermore, DC regulations do not allow averaging of opacity over six-minute blocks, and instead, exceedance is defined as any visible emissions for more than two minutes in a 60-minute period or 12 minutes in a 24-hour period.

Opacity is Related to PM Emissions

Figure 1 below shows a curve fit between observed emission rates and opacity from testing of a pulverized coal boiler, obtained by Electric Power Research Institute, and reported by EPA.[1] These data show that opacity positively correlates with PM emissions. Of particular concern to Alexandria is the fact that opacity is closely related to fine particulate matter in the size range of about 1 μm. Therefore, any decrease in opacity is likely to reduce $PM_{2.5}$ emissions.

[1] "Current Knowledge of Particulate Matter (PM) Continuous Emission Monitoring," US EPA-454/R-00-039, September, 2000

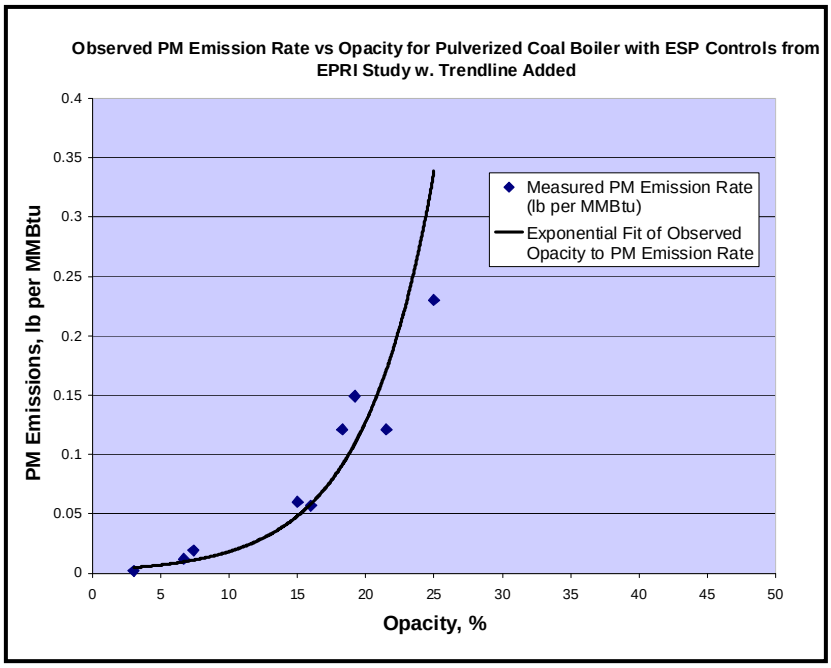

Figure 1

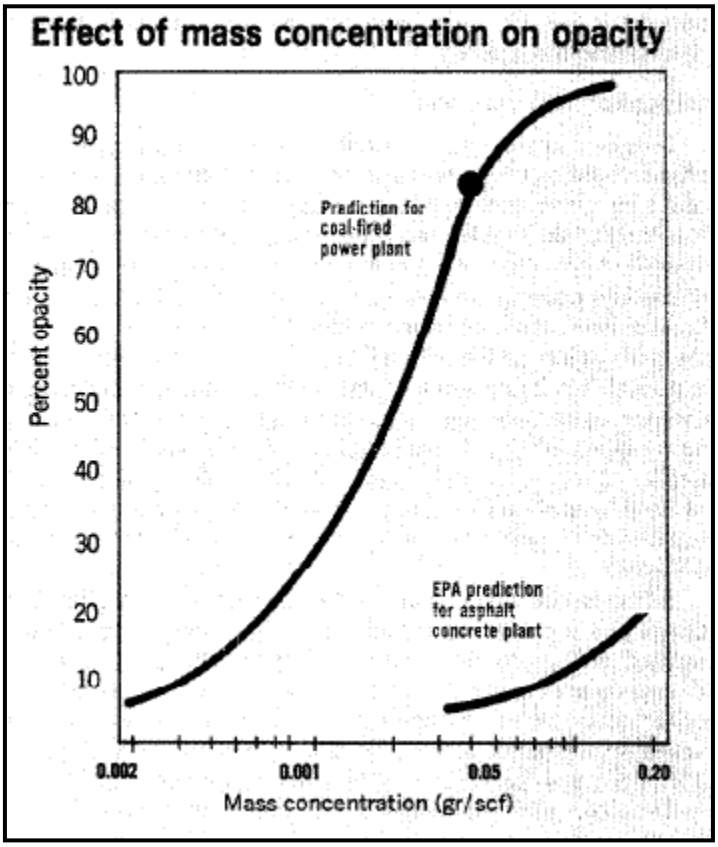

Figure 2

Similarly, Figure 2 above taken from a study conducted in 1976[2] also shows a direct correlation between PM emissions and opacity. While this study showed that there are several other factors that affect opacity, high PM emissions were shown to cause high opacity. The study also shows that the particle size distribution plays a critical role in causing visible emissions and that particles in the size range of 0.2 to 2.0 µm, i.e., particles in the $PM_{2.5}$ size range, are the most effective at light scattering, causing greater opacity. Therefore, a reduction in the opacity standard will have a direct bearing on reducing $PM_{2.5}$ emissions.

Alexandria strongly supports the MWAQC petition to reduce Virginia's opacity standard from 20% to a value of 10% or lower. Once again, Alexandria appreciates the opportunity to provide these comments to the SAPCB and VDEQ on this important matter. Should you have any questions, please do not hesitate to contact William Skrabak at (703) 519-3400, ext. 163.

Sincerely,

William J. Skrabak

William Skrabak
Director, Office of Environmental Quality
Department of Transportation & Environmental Services

cc: The Honorable Mayor and Members of City Council, City of Alexandria
James K. Hartmann, City Manager, City of Alexandria
Richard Baier, Director of T&ES, City of Alexandria
Ignacio B. Pessoa, City Attorney, City of Alexandria
David Snyder, Chair, MWAQC
John B. Britton, SHSL

[2] "Factors Influencing Plume Opacity," Environmental Science and Technology, 10(6), pp. 539-544, June 1976