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September 8, 2004

Mr. J. I. Palmer, Jr.
Regional Administrator
United States Environmental Protection Agency Region 4
Atlanta Federal Center
61 Forsyth Street
Atlanta, Georgia 30303-8960

Dear Mr. Palmer:

This letter and attachment is provided to reaffirm and support our recommendation of attainment for the Particulate Matter 2.5 (PM2.5) National Ambient Air Quality Standard (NAAQS) for the entire State of South Carolina. We believe the additional data and information contained herein address any concerns that the United States Environmental Protection Agency (EPA) might have with regards to the ambient monitoring data collected in the Greenville-Spartanburg Monitoring Planning Area (MPA) and its application for comparison to the NAAQS.

On February 13, 2004, on behalf of the Governor of South Carolina, the South Carolina Department of Health and Environmental Control (DHEC) submitted a recommendation of attainment for the entire state of South Carolina for the PM2.5 standard. This recommendation was based on complete and quality assured data for the years 2001, 2002, and 2003 as requested by EPA and as identified in the April 1, 2003 *Designations for the Fine Particle National Ambient Air Quality Standards* memorandum. This memorandum stated that EPA's designations would be based on the most recent three (3) consecutive calendar years of air quality data (i.e., 2001 – 2003) from Federal reference or equivalent method monitors.

On June 29, 2004, EPA notified South Carolina of its intent to make modifications to the State's recommendations. EPA stated that while the Greenville EQC, Greenville County, monitor (AIRS #045-045-0008) had not been in operation for three calendar years, it had the potential to violate the PM2.5 standard; therefore, EPA was recommending that the Greenville-Spartanburg area be designated as unclassifiable until the monitor had operated for three full calendar years.

The Greenville EQC sampler was placed into operation in August 2001 and collects samples every third day. This sampler is in addition to the two 'core' samplers required for the MSA by title 40 chapter I, part 58 Appendix D of the Code of Federal Regulations (CFR) – *Network Design for State and Local Monitoring Stations (SLAMS), National Monitoring Air Network*

Stations (NAMS), and Photochemical Assessment Monitoring Stations (PAM). It is located near downtown Greenville at a site that was originally established to monitor carbon monoxide. The Greenville EQC Federal Reference Method sampler (FRM) is located midway, and on a straight line, between the Taylors, Greenville County, PM2.5 FRM sampler (045-045-0009) and the Powdersville, Anderson County, continuous PM2.5 monitor (045-0007-003). The Greenville EQC monitor is 6 miles southwest of Taylors and 6 miles northeast of Powdersville. The other PM2.5 FRM sampler in the area is West View, Spartanburg County (045-083-0010), located approximately 23 miles to the northeast of the Greenville EQC sampler. These monitors demonstrate attainment of the annual and 24-hour PM2.5 NAAQS.

Review of 40 CFR Part 58, Ambient Air Quality Surveillance, indicates spatial averaging to be the most appropriate approach for determining community-oriented area-wide PM exposure levels. The epidemiological studies used as the basis for the PM2.5 NAAQS, used spatial averaging in the review of the health effects data to more appropriately reflect average community-oriented area-wide PM exposure levels. In the discussion accompanying the Final Rule, it was affirmed that the greatest risk was associated with the low to mid-range concentrations, as opposed to the few peak 24-hour concentrations. The rule had been revised to clarify that the implementing agencies have the flexibility to use spatial averaging where appropriate. Under separate cover, DHEC will submit a revision to the South Carolina Fine Particulate Monitoring Plan to utilize spatial averaging for both the Greenville-Spartanburg and Columbia areas. All areas of the state have been reviewed, and it has been determined that spatial averaging is appropriate for these two Monitoring Planning Areas.

A review of the data from the core and supplemental samplers, supporting information describing population density, transportation, land, and heating fuel use, and impacts from the emissions from the regional point and mobile sources in the area all show that a spatial averaging approach in the Community Monitoring Zone (CMZ) defined by the MPA is the appropriate method for comparison with the PM2.5 standard. The requirements for this averaging approach are that the sites being included 1) have relatively similar annual air quality (i.e., the average concentrations at individual sites shall not exceed the spatial average by more than 20 percent); 2) exhibit similar day to day variability (i.e., the monitoring sites should not have low day-to-day correlations; and, 3) the entire averaging area should principally be affected by the same major emission sources of PM2.5. Information supporting each of these three requirements and the data handling conventions and computations related to spatial averaging is contained in the Monitoring Plan, excerpted in the Attachment to this letter.

Apart from the process for attainment determination, DHEC is concerned about the atypical impacts on air quality indicated by the Greenville EQC sampling. We have taken immediate steps to evaluate the available data at the Greenville EQC and surrounding monitoring sites, investigate potential sources and unusual activity in the immediate area, and have begun implementation of additional focused monitoring to identify the possible sources and nature of the atypical cold season samples.

Available particulate and meteorological data have been reviewed to identify any patterns or correlations in the data. The particulate data indicates fine particulate concentrations at the

Greenville EQC site are typically consistent with concentrations measured at other monitoring sites in the Greenville-Spartanburg MPA and throughout the region encompassing northwestern South Carolina and adjacent areas in North Carolina. However, there are a few days each winter where concentrations measured at the Greenville EQC site deviate from typical relationship seen across the area. The nature and distribution of these unusual samples indicate impact at the monitoring site from a local particulate source(s).

Samples for Total Suspended Particulate (TSP) are also collected at the Greenville EQC site. TSP filters collected on the atypical days have been examined using Polarized Light Microscopy. The filters collected on these days are all dark gray to black in color and have a smell characteristic of combustion. The proportion of fine mass to TSP mass does not change significantly on the atypical days, indicating the local source(s) contribute to the total particulate load, not just fine, and is close enough to preclude the settling out of the larger particulate. The microscopic examination shows that in all cases examined, the TSP filters collected on the atypical days have fine carbonaceous material deeply embedded in the filter media and have larger combustion products (including wood, wood ash, petroleum, etc.) collected on the filter. Samples collected on days surrounding the atypical days have significantly less evidence of combustion products and more significantly, the fine embedded material is primarily crustal (soil). Collocated continuous nitrogen oxide and carbon monoxide data collected on the atypical days has also been examined and no unusual or characteristic concentrations or patterns are apparent on the atypical vs. typical days.

Review of event and location data obtained from the Greenville Fire Department have raised the possibility that several of the atypical samples may be due to the impacts of nearby structure fires. Also identified in close proximity of the monitor are residences that heat with wood, fuel oil, and coal. DHEC has requested assistance from EPA experts concerning residential wood burning, knowledge and experiences gained from other areas in the country, and potential financial assistance. Efforts are underway to involve the community early in the process of determining the best approach for outreach and education concerning air quality. DHEC's community liaison and the county health department will provide assistance with community involvement. Once a final outreach and education plan has been developed, it will be shared with EPA.

Additional data collection and analysis is also planned for the Greenville EQC site to gain better understanding of the nature of the atypical conditions during the winter quarters. Wind speed and wind direction equipment have already been installed and replacement of the building to accommodate the extra equipment is underway. Installation of a continuous PM2.5 monitor and an aethalometer for continuous analysis of light absorbing Carbon (LAC) is planned for October 2004. The monitoring plan developed to further investigate the nature of the impacts seen at the Greenville EQC sampler will be shared with EPA Region 4.

Since we know EPA shares DHEC's concerns about the efforts related to the Greenville EQC monitor and the surrounding area, DHEC will provide periodic updates concerning work done and data collected. DHEC intends to work closely with EPA for advice and assistance as we work with the community on this effort.

Thank you for your consideration of this information concerning the Greenville-Spartanburg area. While we are submitting this information at this time at EPA's request, we would expect that any additional information submitted within the 120-day consultation period would receive appropriate review and consideration. As stated at the beginning of this letter and based on the information submitted, EPA should designate this area and the rest of South Carolina as attainment with both the 24-hour and annual PM2.5 standards. Should you have questions or need additional information, please do not hesitate to contact me at (803) 896-8940 or Myra Reece, Chief of the Bureau of Air Quality at (803) 898-4123.

Sincerely,

James A. Joyce for

Robert W. King, Jr., P. E.
Deputy Commissioner
Environmental Quality Control

Attachment

Cc: Myra Reece, BAQ
Beverly Banister, EPA