

SC DHEC Bureau of Air Quality Response to
“STANDARD NO. 2 MODELING ISSUES - Feb. 20, 1998”

NOTE: *Text from Chamber of Commerce Environmental Technical Committee Position paper noted by italic text. DHEC responses are noted by normal text.*

Issue: *DHEC is currently requiring Modeling under Standard No. 2 for permit issuance and modifications, including construction permits.*

DHEC Response: DHEC does not specifically “require” modeling for permitting activities. DHEC does require proper demonstration that activities do not interfere with attainment or maintenance of state and federal standards. Modeling is an acceptable method of demonstration.

Position: *There is no legal basis for DHEC to require modeling to show compliance with Standard No. 2, a portion of the analysis required under the PSD program of Title I, and this modeling places an unreasonable burden on industry.*

DHEC Response: A demonstration of compliance with Standard 2 for new construction in SC is a preventative measure consistent with SC Regulation 61-62.1, Section II, C. The method of demonstration that has been used is modeling although alternative scenarios are acceptable. Other reasons for modeling are: (1) The PSD regulations require major new construction to demonstrate that they will not cause a NAAQS violation. This is accomplished by means of modeling their emissions along with emissions from other facilities within a 50 km radius. In the past, there have been many cases involving PSD applications where emissions from other facilities showed modeled NAAQS violations which had to be resolved before a PSD permit could be issued. DHEC’s approach to modeling identifies and corrects these problems and thus minimizes delays during the PSD permitting process. (2) 40 CFR Section 51.110(k)(2) requires individual states to determine at least every 5 years if their State Implementation Plan (including regulations) is adequate to meet the NAAQS in all areas of the state. This reassessment must take into account future growth and be demonstrated via the use of modeling. Currently DHEC has used the approach of modeling compliance of individual facilities to meet this requirement. If DHEC decides to depart from this approach, then DHEC would be obligated to model the entire state using current models to demonstrate the adequacy of the current emissions limits in the air regulations to meet the NAAQS throughout the state. This large scale modeling approach would result in regulations requiring lower allowable emission limits for many source categories. This would negate flexibility currently provided to individual facilities and would be much more burdensome on industry than the current modeling approach. Subsequent to the receipt of this position paper, DHEC informally surveyed other southern states concerning NAAQS modeling and found the approach used by SC to be similar to approaches used by other states.

Rationale: *Under South Carolina Regulation 61-62.5, Standard No. 2, the ambient air quality standards for the State of South Carolina are listed. The following air pollutants are included in this list: sulfur dioxide, total suspended particulates, PM10, carbon monoxide, ozone, gaseous fluorides, nitrogen dioxide, and lead. In addition, this standard makes reference to "analytical methods to be used" in the lone paragraph of this*

standard.

DHEC Response: DHEC concurs. However, it should be noted that SC Regulation 62.1 defines ambient air quality standards as “that standard for the quality of ambient air at or beyond a property line on which a source of pollution is emitting.”

When the Clean Air Act was originally developed, certain air pollutants were identified and ambient air quality standards were established for these criteria pollutants. The States were required to develop State Implementation Plans (SIPs) that set forth strategies for maintenance and/or attainment of these National Ambient Air Quality Standards ("NAAQS"). The SIP consists of regulations that must be uniformly satisfied by sources throughout the state. It is through these SIP requirements, which apply to all sources in South Carolina, that DHEC has an enforceable mechanism to maintain compliance with the NAAQS. It is only through enforceable SIP requirements that DHEC can enforce measures to maintain the NAAQS.

Applying ambient air standards on a source-by-source basis is not the approved method by EPA for demonstrating compliance with Standard No. 2. The ambient air quality standards are not source specific standards. There are many different sources of air pollution which contribute to the ambient air concentrations, including industrial sources, mobile sources (vehicles), biogenics (trees), and area sources (small commercial and residential operations). All of these sources should be taken into account when determining compliance with the ambient air quality standards. Direct measurement of air quality by a properly situated monitor within a network of monitors is the proper method used by most states. The requirements for monitoring ambient air quality are found at 40 CFR part 58, Subpart C. South Carolina has located monitoring stations throughout the state to determine the concentrations of the various pollutants in ambient air.

DHEC Response: DHEC’s responsibility to ensure compliance with the NAAQS is currently demonstrated through the monitoring network (showing attainment statewide). Applying source by source measurement via modeling demonstration is a means to ensure state compliance with ambient standards and to comply with EPA’s requirement to reevaluate the SIP periodically. DHEC recognizes that sources other than industry contribute to pollutants listed in Standard No.2 and that some pollutants are formed only after complex chemical reactions. Modeling at a particular facility for compliance is directed at the pollutants that are directly measurable (sulphur dioxide, total suspended particulate, PM₁₀, nitrogen dioxide, carbon monoxide, lead, and gaseous fluorides as hydrogen fluoride). A facility seeking a permit may provide another acceptable demonstration such as monitors, wind tunnel studies, and other site specific approaches.

In addition, South Carolina has identified Standard No. 2 as a federally enforceable condition in recently distributed draft Part 70 air quality permits. This appears to indicate that the air dispersion modeling performed by industrial facilities, as improperly required by SC DHEC, outside of a PSD analysis, can be enforced by the U.S. EPA. However, no regulation has been developed to explain the details of air dispersion modeling related to this Standard; only guidance documents have been developed. When SC DHEC is questioned on this issue, the only response is a reference to SC Regulation 61-62.1, Section II, A. Construction Permit, 2. - Permit Application, g. - "Other

information as may be necessary for proper evaluation of the proposed source as determined by the Department." This may be valid when necessary to evaluate a sources compliance with a SIP requirement, such as during a PSD analysis. However, our review indicates that NAAQS modeling, outside of PSD analysis, is not required by the SIP.

DHEC Response: DHEC will remove the reference to Standard No. 2 in Table 4.1 used in Title V and Conditional Major permits. However, it will contain a statement to reflect the measure that industry used to show compliance with Standard No. 2. In addition to the required modeling for PSD permits, DHEC still has an obligation under SC Regulation 62.1, Section II(A)(3) to ensure no emissions interfere with attainment or maintenance of any state or federal standard. Site specific modeling has been and remains a preferred method to demonstrate that this requirement is met. The emission rates in the demonstration become a part of the permit, although higher rates can be incorporated administratively into Attachment A of the permit, provided a valid demonstration does not interfere with the attainment and maintenance of any state or federal standard. DHEC recognizes that modeling may be a conservative approach for compliance demonstrations. For that reason, DHEC does allow revised demonstrations to be incorporated administratively. DHEC also does not consider variations from input parameters used in the modeling demonstration to constitute a violation unless modeling or another acceptable method predicts that the ambient standards were exceeded offsite.

Modeling to show compliance with ambient standards is required for construction permit applications. Section 48-1-100 of the Pollution Control Act states that "The Department may, if sufficient ... environmental information is not available for it to make a determination of the effect of such a discharge, require the person proposing to make such discharge to conduct studies that will enable the Department to determine that its quality standards will not be violated." Furthermore, Section 8 (New Source Review and Source Permit System) of the State Implementation Plan requires DHEC to make certain that the proposed new emissions would not cause or contribute to a violation of any NAAQS before issuing a permit to construct. Also, SC Regulation 61-62.1, Section II, A (3) states that "No permit to construct or modify a source will be issued if emissions interfere with attainment or maintenance of any state or federal standard.", and SC Regulation 61-62.1, Section II A(2)(g) requires applicants to submit "Other information as may be necessary for proper evaluation of the proposed source as determined by the Department." Air dispersion modeling, or an acceptable alternative, is the only means that DHEC has to determine if all state and federal ambient standards can be met before a permit to construct is issued. Without the use of modeling (or some other acceptable demonstration) to evaluate impacts of new construction, DHEC would have no way of determining if the proposed new construction will meet all applicable standards. DHEC would have to issue permits blindly without knowing the impact of emissions from the facility on the public and the environment.

Finally, the guidance for modeling requires a facility to add a background concentration to the modeled concentration. This background data is from the State's ambient air monitoring network and sometimes "double counts" the facility's contribution to the ambient air concentration. Because of the manner in which the dispersion modeling is performed when following the DHEC guidelines, modeled concentrations almost always over estimate actual fence line concentrations. In at least one case, an ambient air monitoring station was installed to contradict a modeled concentration and the actual

concentration was significantly lower.

DHEC Response: DHEC agrees that the method used provides conservative and protective numbers. In fact, that very theme is a positive point made numerous times over the years to concerned citizens to reflect the safeguards of the permit process. Further, DHEC contends that the process has been a contributing factor to the attainment status in SC and provides protection while allowing flexibility for industrial growth. Background values are added to account for the contribution from other industries and mobile sources, as well as those from other sources such as biogenics, land clearing activities, emissions from homes and buildings, etc. There are approaches documented in the US EPA's Guideline on Air Quality Models (Revised) (EPA-450/2-78-027R-C) that address the "double counting" issue. These approaches have been submitted by companies in support of permit applications, and DHEC has approved their use.

In conclusion, the SC Chamber of Commerce's Environmental Technical Committee believes that there is no legal basis for requiring source-specific air dispersion modeling to demonstrate compliance with SC Regulation 61-62.5, Standard No. 2, except pursuant to PSD analysis. We request that SC DHEC discontinue the requirement to perform air dispersion modeling to show "compliance" with this Standard.

DHEC Response: DHEC will:

- a. -remove the reference to Standard No. 2 in Table 4.1 of the Title V & Conditional Major permits.
- b. -reflect in attachment A, as a state enforceable limit, any emissions rate established when demonstrating that the source will not interfere with the attainment and maintenance of any state or federal standard.
- c. -continue to allow higher emission rates to be incorporated administratively into Attachment A, provided a demonstration using these higher emission rates will not interfere with the attainment or maintenance of any state or federal standard or with any other applicable requirements.
- d. -provide a statement in the permit (construction and/or operating) to reflect the method (modeling or site specific approach) that the facility used to show the activity will not interfere with the attainment and maintenance of any state or federal standard.
- e. -deem state permitting applications incomplete without an adequate demonstration that the activity will not interfere with the attainment or maintenance of any state or federal standard, including Standard No. 2.