



Maricopa County

Air Quality Department

DRAFT POLICY

Date: April 1, 2010
To: Air Quality Department staff
From:
Subject: PM-10 Cumulative Modeling Policy

20. PM-10 CUMULATIVE MODELING POLICY

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20.1 EFFECTIVE DATE:

This policy is effective beginning April 1, 2010.

20.2 GENERAL PURPOSE:

This policy is intended to protect the National Ambient Air Quality Standard (NAAQS) for particulate matter of aerometric diameter 10 microns and less (PM_{10}) emitted from small to medium size sources. The introduction of this policy carries with it the understanding that the department must take measures to protect the NAAQS. The importance of this objective is highlighted by the fact that much of Maricopa County is designated serious nonattainment for PM_{10} .

This policy provides procedures and guidance pertaining to new and modified sources of PM_{10} , the emissions from which, either alone or in combination with nearby sources, could result in an exceedance of the NAAQS. Although this policy pertains specifically to PM_{10} , its concepts and much of its substance may be extended to other pollutants in the future. The bases for this policy are given by Title I of the federal Clean Air Act, 40 CFR §51.165, and Arizona Revised Statutes (ARS) §49-480 F. 5. The last of these allows permits to contain, "Any other conditions that are necessary to assure compliance with this article and the clean air act,..." This authority is further supported by ARS §49-476.01, which

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provides the control officer with authority to require any of a range of measures to identify and quantify air emissions and their impacts.

20.3 APPLICABILITY:

This policy applies to new sources and modifications to existing sources of PM₁₀. This applicability mirrors Maricopa County Air Quality Department (MCAQD) Rule 241 and Title I of the Clean Air Act. Two triggers apply for the procedures of this policy: 1) the first trigger (Phase 1) is the receipt of a permit application for a new or modified source and subsequent screening level modeling of the related PM₁₀ emissions (refined modeling is optional during Phase 1); 2) the second trigger (Phase 2) is an ambient pollutant concentration which is compared to the Phase 1 modeling results. If the Phase 1 modeling results reach the Phase 2 trigger, cumulative modeling is conducted and the results evaluated to identify whether a NAAQS exceedance is predicted.

20.4 PROCEDURES:

Phase 1

Phase 1 is initiated upon receipt of a permit application for a new or modified source of PM₁₀. Dispersion modeling will be performed at maximum allowable PM₁₀ emissions for the single source in question. Either a screening level or a refined level model can be used for this modeling phase depending on source conditions. The resultant Phase 1 modeled **maximum 24-hour PM₁₀** concentration is then compared with a Significant Impact Level (SIL) of 5 µg/m³ (this is the significance level cited at Title 40 CFR §51.165(b)(2)). If the modeling result is below the SIL, it would be reasonable to conclude that a violation of the NAAQS is not likely, therefore no further analysis would be required. Conversely, if the modeling analysis results in a concentration equal to or greater than the SIL, then the next modeling phase would be required.

It is fully expected that screening level modeling will most often be utilized for Phase 1 of the procedure. Additionally, it is expected that a number of sources that perform Phase 1 modeling will go no further in the procedure. For sources that are understood to have little emissions impact, the department may omit modeling altogether based on source type, proximity to other sources, background pollutant concentrations, or some combination of these or other factors that indicate little likelihood of an adverse impact on the NAAQS.

Phase 2

If Phase 1 results are equal to or greater than the SIL, model PM₁₀ emissions from both the source in question and any nearby off-site sources. Nearby off-site sources are defined as (1) sources with annual PM₁₀ emissions greater than 5.0 tons per year and (2)

sources located within the circular area defined as the Significant Impact Radius (SIR) plus 10 kilometers. The SIR is the distance from the source to the most distant point where the modeled concentration exceeds the SIL.

AERMOD should be used for cumulative air quality modeling (Phase 2) and all source emissions inputs should be maximum allowable levels. A representative background concentration (see below) which is not impacted by the modeled sources should be determined, and added to the maximum model predicted impact to demonstrate NAAQS compliance.

If the modeling results do not show a violation of the NAAQS for PM₁₀, no further analysis is required. If modeling results show a NAAQS violation, then additional measures to lower the ambient impact should be considered by the source.

Background Concentration

The establishment of a background concentration should follow the guidelines given in Title 40 CFR Part 51, Appendix W – *Guideline On Air Quality Models*, Section 8.2 *Background Concentrations*. Once established, the background concentration should be added to the above **Phase 2** modeling result. Establishment of background concentrations may require ambient monitoring data. Monitoring data can be found in reports at the Maricopa County Air Quality Department’s website at the first of the web links given below. Additional monitoring data for establishing background concentrations is available from the Arizona Department of Environmental Quality (ADEQ) and is available at the second web link given below. This data should be reviewed in accordance with the above-cited modeling guidelines to determine whether it is appropriate.

<http://www.maricopa.gov/aq/divisions/monitoring/network.aspx>

<http://www.azdeq.gov/function/forms/reports.html>.

20.5 ADDITIONAL SOURCE CONSIDERATIONS

If at any phase of the above analyses the results predict a violation of the NAAQS, then the source should consider measures to lower the impact. These considerations include further reductions in emissions, reductions in operating hours, increased stack heights and/or emissions offsets.

20.6 QUESTIONS

Questions concerning this policy are to be directed through the managers of Planning & Analysis and Engineering Divisions for forwarding to the Office of the Director.