MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Mary Ann Dolehanty, AQD – Permit Section Supervisor

FROM: Amber Brown, AQD - Permit Section
Julie Brunner, AQD - Permit Section
Jeff Rathbun, AQD - Permit Section
Annette Switzer, AQD - Permit Section

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SUBJECT: Response to MMA's Analysis on Proposed AQD Policy and Procedure AQD-022, Dispersion Modeling Guidance for Criteria Pollutants

INTRODUCTION

The last guidance on determining when the emissions from a new source or modification should be modeled was written in 1998. AQD Policy and Procedure AQD-022 is meant to replace all previous guidance and is intended to provide consistency, as well as flexibility, to permit reviewers and supervisors in determining whether the impacts of the emissions requested in a permit to install application should be modeled as a part of the permit review. This draft policy also rescinds the 80% increment consumption demonstration.

In a letter dated February 14, 2014, MMA listed a number of concerns with Draft AQD Policy and Procedure AQD-022, Dispersion Modeling Guidance for Criteria Pollutants.

ANALYSIS

The specific concerns listed in MMA's letter are addressed below:

1. *The proposed document as drafted may put some current and proposed NSR exemptions in jeopardy.*

The modeling guidance is intended for equipment that is subject to Rule 201. The exemptions are intended for small sources. Modeling the ambient impact from a project is done on a case-by-case basis and the parameters modeled are specific to the source. During the review for a new exemption, air dispersion modeling, or an equivalent evaluation, is conducted for a number of scenarios for the standards applicable at the time of the review.

Please note that there could be a situation where a permit application was submitted because Rule 278 excludes the use of one of the exemptions. In this case, a piece of exempt equipment that may on its own be exempt but that is part of a larger project will become part of the permit application and therefore part of the project being modeled. Modeling an exempt piece of equipment as part of a larger project does not put into jeopardy the exemptions.

2. *Other states within EPA Region 5 and elsewhere have current rules and procedures which limit the need for dispersion modeling for minor source permits.*

Based on the survey results from numerous states, as discussed below, including all Region 5 states, states have the flexibility built into their rules and procedures to require modeling for minor sources.

For example, Indiana does not typically model minor sources but does evaluate them on a case-by-case basis (i.e., areas with sensitive populations, dispersion characteristics, emission changes) and performs

modeling when considered necessary. In Vermont, any change above 10 tpy for NOx, PM10, PM2.5, or SO_2 will generally require dispersion modeling. This 10 tpy threshold is not used for CO because the NAAQS is so much higher for CO. Wisconsin does not require an applicant to model minor sources, instead the agency performs the analysis to meet statutory requirements.

All the survey responses received had a common theme that ranged from the requirement that minor sources may be modeled on a case-by-case basis, to all projects at minor sources had to be modeled regardless of the change in emissions (even when net decreases occurred). Minor sources can be and are modeled in many states across the country, not just in Michigan.

3. *We are requesting that MDEQ review the detailed procedure as proposed by the states of Ohio (October of 2013), Indiana, Iowa and others to clarify when dispersion modeling is or may be required for minor sources and minor source modifications.*

Ohio – The Ohio EPA has available Engineering Guide #69 (2003) and Engineering Guide #69 (draft October 2013) for air dispersion modeling guidance. Dispersion modeling is required for construction permit applications that are not subject to PSD permitting requirements if the total source emissions trigger Ohio significant emission rates (SER). This is a state-only modeling requirement. According to Engineering Guide #69, SERs are as follows: 25 tpy of SO_2, 25 tpy of NOx, 10 tpy of PM2.5, 15 tpy of PM10, 100 tpy of CO and 0.6 tpy of Lead. In the revised Engineering Guide #69 (draft October 2013), the SER of SO_2 and NOx will be the same as the PSD SER. Modeling is required if there is any change in the emissions, even if there is a decrease in the emissions of the pollutants as long as source emissions of any criteria pollutant is at or above Ohio's SER.

Ohio requires air dispersion modeling for applications that are minor modifications under PSD. If there are changes in emissions as a result of modifications, the project requires modeling to evaluate the impact on the ambient air quality (e.g., net change in the emissions due to modification in stack parameters or operation processes).

Indiana – Indiana's regulations follow very closely the federal PSD requirements. The state regulations separate minor and major sources. Indiana only models PSD major sources unless the permit section makes a special request to model a minor source to determine a possible air quality problem.

Iowa – By state rule, Iowa must make an assessment to assure that the modification and construction of any source will not prevent the attainment and maintenance of any NAAQS. The Iowa DNR has available "Air Dispersion Modeling Guidelines for Non-PSD, Pre-Construction Permit Applications", Version 12-30-2013. This guidance contains an Air Dispersion Modeling Determination Flow Chart to determine if source emissions associated with non-PSD construction permit projects will require an air dispersion modeling analysis, and if so, the type of analysis required.

There are basically two tracks to the Iowa Air Dispersion Modeling Determination Flow Chart. If facility-wide modeling has never been conducted and the project will result in a net increase in potential emissions less than the hourly equivalent of the PSD SER, then modeling is not required. This excludes any emissions from units exempt from permitting. If facility-wide modeling has been conducted and the most recent modeled impacts are within one SIL of the NAAQS, then significant impact modeling for the affected pollutants needs to be conducted. If the most recent modeled impacts are not within one SIL of the NAAQS, and the project will result in a net increase in potential emissions less than the hourly equivalent of the PSD SER, then modeling is not required.

Recommendations for modeling reviews that fall outside of the flow chart are reviewed by Iowa DNR management. For example, if an existing source has a permit limit set due to modeling and an application is received to change the parameters for that source, it is possible that it might be modeled due to that change, especially if the previous analysis was close to the NAAQS.

Other – The federal minor new source review program in Indian Country requires modeling of proposed emissions if there is reason to believe that any new minor source or modification would cause or contribute to a NAAQS or PSD increment violation. Procedures for determining whether a modeling

analysis needs to be performed are identified in the "Application for New Construction". EPA requests that those proposed activities that meet the following criteria perform a modeling analysis:

1. The proposed activity has air emissions that the reviewing authority determines has the potential to cause adverse air quality effects for which an air quality impact analysis is necessary for an accurate assessment of the environmental impact of the activities proposed.
2. Modeling of proposed emissions is usually warranted, even though the proposed activity does not meet the modeling requirements, above, if it is reasonable to believe the new activity may cause or contribute to a violation of applicable ambient air quality standards or increments in circumstances such as:
   (a) A substantial portion of the new or modified emissions have poor dispersion characteristics (e.g., rain caps, horizontal stacks, fugitive releases, or building downwash) in close proximity to ambient air at the site boundary;
   (b) The new or modified emissions are located in complex terrain (e.g., terrain above stack height in close proximity to the source); or
   (c) The new or modified emissions are located in areas with existing air quality concerns.
   (d) If there are questions about whether modeling may be necessary contact the reviewing authority.

4. *The goal here is not to implement a policy that guarantees beyond all doubt that all federal air quality standards can never be exceeded. If that was the case, then real-time ambient monitoring would be required instead of theoretical dispersion modeling analyses. Furthermore, accuracy limitations within dispersion modeling support that it is not exact science and should be used simply as a tool to demonstrate compliance with the NAAQS.*

As required by the State Implementation Plan, sources in Michigan must meet and maintain air quality standards. This is achieved by utilizing the best tools available. Modeling is currently the best tool available for making air quality predictions without requiring site specific ambient air monitoring. Modeling results have been shown to correlate with real-world monitoring.

Models were developed as a conservative tool to predict the impacts from a specific project. EPA requires specific models be used for demonstrating that air quality standards not be exceeded in the absence of real-time ambient site specific air monitoring. Models are continuously being improved in order to achieve more accurate results. Monitoring is a more costly approach.

If the AQD did not accept modeling because of possible accuracy limitations, the costly monitors would be the only alternative for demonstrating compliance with air quality standards.

5. *The notion that modeling for minor sources is consistent with the requirements of Rule 207 is not supported by the fact that all other states have this same federal regulatory constraint, yet they do not require dispersion modeling for minor sources.*

There is no federal regulatory constraint that limits dispersion modeling at minor sources or minor modifications at major sources. The AQD requested the USEPA Region 5 to respond to this very question. The response from Region 5 is as follows:

> "EPA doesn't require minor source modeling and doesn't have modeling guidance specific to minor sources. Whether a source should be modeled or not is left to the state's discretion. When deciding if modeling is needed, it seems reasonable to consider whether the area has already been triggered for a particular pollutant, the amount of emissions, whether numerous other minor sources are in the same area, is the source controversial, existing monitored concentrations, is it an environmental justice area, potential impact on new NAAQS, etc."

Based on the response received from Region 5 and the states surveyed, it is clear that the requirement to perform dispersion modeling for minor sources is at the state's discretion. Many states require dispersion

modeling for minor sources and minor modifications at major sources based on their own regulations and procedures that require compliance with the federal standards (i.e., NAAQS and PSD increment).

6. *As a general policy, modeling for minor sources that remain under the PSD significance should not be necessary.*

AQD disagrees with this statement. Per EPA, the requirement to model minor sources should be left to the state's discretion based on their own regulations and procedures that require compliance with the federal standards (i.e., NAAQS and PSD increment). Additionally, all sources, including minor sources, consume increment and contribute to the emissions of criteria pollutants. Because of this, in some situations, modeling of minor sources should be required to demonstrate that the proposed emissions meet the applicable standards. AQD has never required that all minor sources perform air dispersion modeling, but has used discretion in determining when these situations are necessary.

7. *Modeling should not be required unless the source is proposing a significant net increase in emissions or exceeds federal modeling threshold levels. The prerequisite of modeling direct emissions from only the project is counter to decisions and guidance from EPA and any other state in Region 5. As we pointed out in our Memorandum on this topic sent to the department on May 7, 2013, we think these modeling standards go beyond federal guidelines.*

The Clean Air Act (CAA) requires states to develop a general plan to attain and maintain the NAAQS, and a specific plan to attain the standards for each area designated nonattainment for a NAAQS. This means there will be varying methods used from state to state. When monitoring to determine if an area is compliant with a NAAQS, the monitors do not exclude emissions from the sources which are considered minor or only had an insignificant increase in emissions under the PSD program. For this reason, many states including Idaho, Iowa, Massachusetts, Minnesota, New Hampshire, Ohio, Vermont, Virginia, Washington, and Wisconsin will model sources that are not major under PSD if there are concerns that a NAAQS may be exceeded.

The threshold for triggering modeling due to an emission increase also varies from state to state. New Hampshire requires modeling for any increase over existing allowable emissions except for a small increase in CO. Vermont requires modeling for emission increases greater than 10 tpy of PM, NOx, or SO_2. Iowa requires modeling based upon specific short-term emission rate increases which are calculated from the PSD significant thresholds. Ohio may require modeling if there is any change in emissions, even if it is a decrease. Illinois, Idaho, Arizona, Virginia, Tennessee, Minnesota, Massachusetts, and Maine consider dispersion characteristics in addition to emissions when deciding if modeling is necessary.

The modeling program varies between states because each state develops its own plan for demonstrating and maintaining compliance with the NAAQS. EPA guidelines are minimum requirements for major sources, and it should not be assumed that these guidelines are also the minimum requirements for minor sources which fall under state jurisdiction.

8. *USEPA has made it clear through the draft guidance (USEPA issued PM2.5 modeling guidance on March 4, 2013) that they do not recommend requiring applicants to conduct analysis of secondary PM2.5 when emissions are less than the significant emission rates (SERs).*

An analysis of secondary PM2.5 is only required if emissions of the precursor are above the SER. Precursors are defined in Michigan's Air Pollution Control Rules, Part 18. Prevention of Significant Deterioration of Air Quality. Only new major sources or major modifications are subject to Part 18, and therefore, required to perform an analysis if potential NOx emissions or SO_2 emissions are above PSD SER. This analysis is not required for minor sources since they are not subject to Part 18.

MODELING SURVEY RESULTS

Twenty-five states were surveyed on their criteria pollutant modeling program and nineteen states responded to the survey.

Fifteen states have rules and/or policies that require modeling of minor sources and minor modifications. Four states responded that they only model PSD projects but they had exceptions for minor source and minor modifications if certain conditions existed (i.e., poor dispersion characteristics, existing air quality concerns, controversial, source type).

Surveyed states listed other reasons to not model including projects with emission increases that are below state-only thresholds and projects that are judged by the permit engineer to neither cause nor contribute to an exceedance of the NAAQS and PSD increment.

TIMELINE

The following is the list of dates and actions taken to final the AQD policy on dispersion modeling guidance.

Dates:	**Actions:**
02/20/2013	Draft AQD Policy and Procedure, Subject: Dispersion Modeling Guidance for Criteria Pollutants presented to the Air Advisory Committee (AAC).
03/20/2013	MMA comments and markup of Draft AQD Policy and Procedure AQD-022, Dispersion Modeling Guidance for Criteria Pollutants
05/07/2013	Memo to James Haywood (AQD) and Julie Brunner (AQD) from MMA dated March 26, 2013 but never received in this timeframe by AQD staff, Subject: Comments on Dispersion Modeling Guidance for Criteria Pollutants AQD Policy and Procedure
10/21/2013	Updated Draft AQD Policy and Procedure, Subject: Dispersion Modeling Guidance for Criteria Pollutants per AAC input from October 16, 2013 meeting.
12/10/2013	Updated Draft AQD Policy and Procedure, Subject: Dispersion Modeling Guidance for Criteria Pollutants per AAC input.
02/07/2014	Updated Draft AQD Policy and Procedure, Subject: Dispersion Modeling Guidance for Criteria Pollutants per AAC input.
02/14/2014	Letter dated February 14, 2014 from Andrew Such (MMA) listing a number of concerns with Draft AQD Policy and Procedure AQD-022, Dispersion Modeling Guidance for Criteria Pollutants
02/19/2014	Letter dated February 19, 2014 from Lynn Fiedler (AQD) postponing implementation of AQD Policy and Procedure AQD-022, Dispersion Modeling Guidance for Criteria Pollutants