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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

INTEROFFICE COMMUNICATION

TO: Note to file

FROM: Julie Brunner, AQD - Permit Section
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DATE: DRAFT - February 20, 2013

SUBJECT: Analysis - AQD Policy and Procedure, Subject: 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. This policy and procedure replaces 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.

The new AQD dispersion modeling guidance policy is meant to address Office of Regulatory Reinvention (ORR) Environmental Recommendation No. A-5, Subject: Dispersion Modeling Guidance Document.

Item	Description	Position	Explanation
A-5	Dispersion Modeling	Proposed Modification	<u>Proposed Modification:</u> The AQD should develop a policy and procedure addressing dispersion modeling. The process for developing the document should include stakeholder input, address the new National Ambient Air Quality Standards (NAAQS) for nitrogen dioxide and sulfur dioxide, and provide for subsequent new or revised NAAQS. The guidance document should be developed by March 1, 2012.

ANALYSIS

This policy outlines the authority under the Clean Air Act (CAA), and the federal and state statutory and regulation-based requirements to assure compliance with the National Ambient Air Quality Standards (NAAQS) and the Prevention of Significant Deterioration (PSD) increments in all instances when evaluating New Source Review (NSR) applications. States develop implementation plans to prevent significant deterioration of air quality. All sources, whether major or minor, cannot interfere with the attainment or maintenance of the air quality standard for any air contaminant as part of Michigan's attainment program.

The procedures in the policy address how the new NAAQS for nitrogen dioxide (referred to as NOx), sulfur dioxide (SO₂), and particulate matter less than 2.5 microns (PM_{2.5}), and any subsequent new or revised NAAQS should be addressed. The permit application review must demonstrate that the air quality standards are protected. For major source actions, the applicant is required to submit this demonstration. For minor sources or those sources proposing a less than significant change as defined in the regulations, the agency recommends that the applicant perform a demonstration. The policy

includes guidance on where dispersion modeling may be necessary for actions not triggering a major source review that is consistent with federal guidance, including the recent Minor New Source Review rule for Tribal Lands.

- Poor dispersion characteristics due to building or stack design or area topography. (e.g., non-vertical discharges, obstructions such as raincaps, stack heights less than 1.5 times the building height, changes in stack parameters that degrade dispersion characteristics.)
- Close proximity of sensitive populations such as hospitals and schools.
- Knowledge of an existing or potential NAAQS or PSD increment problem in the area.
- High background concentration where a minor impact could trigger a NAAQS violation.
- High short-term (hourly) emission rates in relation to the annual emissions.
- A change in the NAAQS since the last dispersion modeling was performed for the source.
- Modeling results for other similar sources.

The policy also includes criteria for when dispersion modeling may not be necessary as identified by the following situations:

- Cases where the allowable emissions are less than the significant emissions threshold and the associated stacks are discharging unobstructed vertically, at both a minimum height of 60 feet and 1.5 times the building height;
- Cases where the allowable emissions are less than 50% of the significant emissions threshold and the associated stacks discharging unobstructed vertically, at both a minimum height of 40 feet and 1.5 times the building height; and
- For an existing source that is not triggering a major modification and is not increasing its allowable emission limits, a qualitative analysis as opposed to a modeling analysis may also be used. An example of this would be a source that is replacing a particulate control device with an equivalent or better control device where the impact on air quality is improved.

The criteria for when dispersion modeling may not be necessary was developed as follows:

- AERSCREEN modeling was utilized to develop high confidence stack scenarios where proposed insignificant emissions increases would yield non-violating NAAQS impacts. Significant emission thresholds were annualized and analyzed with various stacks heights greater than or equal to 1.5 times the prevailing prominent building height.
- AERSCREEN modeling, with proposed emissions increases less than 100% of a significant emissions threshold, demonstrated acceptable NAAQS hotspot impacts (combined with an average background concentration) with a minimum 60 foot stack and a maximum 40 foot building.
- Additional AERSCREEN modeling, with proposed emissions increases less than 50% of a significant emissions threshold, demonstrated acceptable NAAQS hotspot impacts (combined with an average background concentration) with a minimum 40 foot stack and a maximum 27 foot building.
- Even with insignificant emissions increases, stack scenarios not meeting these criteria, or in areas with very high background concentrations, could yield NAAQS violations and should be explicitly reviewed with an appropriate screening or refined model for compliance.

REVOCATION OF THE 80% INCREMENT PROCEDURE:

In a modeling analysis, the applicant must demonstrate that a proposed project will not cause or significantly contribute to the deterioration of air quality greater than the specified allowed PSD

increments, and not cause a violation of the NAAQS. In addition to modeling for NAAQS compliance, the department has historically requested that no new project consume more than 80% of the available increment. This position was implemented at the request of the Commission over 30 years ago to ensure that there was always available increment for future growth and to prevent clustering of sources which would potentially consume all available increment in a given area. Our experience has shown that this scenario was never realized. With the most recent promulgation of new increment thresholds being restrictive in nature, requiring applicants to further reduce increment consuming impacts may severely limit new permit processing. The AQD believes that growth potential will still be available because new projects are modeled using their maximum allowed emissions while measured increment consumption is based on actual emissions. As such, the AQD is rescinding the 80% increment approach and will no longer request applicants to meet this more restrictive provision. Sources are therefore required to demonstrate that new projects will not consume more than the full available increment threshold for applicable criteria pollutants.