

The attached guidance “Guidance for Including PM_{2.5} in Air Pollution Control Permit Applications” is intended for use by environmental consultants and other individuals responsible for submitting air pollution control permit applications to the WDNR Air Management Program. This guidance informs air permit applicants of Department policy decisions on the treatment of particulate matter with an aerodynamic diameter less than 2.5 micrometers, called PM_{2.5}, in different types of air pollution control permits and lays out an applicant’s obligation to submit emissions estimates of PM_{2.5} in an air pollution control permit application.

The Department has undertaken this guidance in conjunction with its policy decision concerning the regulation of PM_{2.5} emissions. In the past, any source of particulate matter was assumed to be a source of PM₁₀ and PM_{2.5}. However, not all emissions units that emit particulate matter are also sources of PM_{2.5}. This guidance is being prepared to explain to permit applicants when it is appropriate to assume that a given emissions unit emits PM_{2.5}, when and how an applicant should estimate PM_{2.5} emissions from a regulated unit, and when to expect air pollution permits to contain limitations on PM_{2.5} emissions.

The Department is soliciting comments from external stakeholders on the draft guidance for 30 days. Once the 30 day comment period is complete, all comments will be considered, revisions will be made to the guidance as appropriate and final guidance will be made available to the appropriate internal and external stakeholders.

Comments related to this draft guidance document should be sent to Kristin Hart, Kristin.hart@wisconsin.gov; (608) 266-6876.

DATE: DRAFT

TO: Air Permit Applicants

FROM: Kristin Hart, Chief, Air Permits and Stationary Source Modeling Section

SUBJECT: Guidance for Including PM_{2.5} in Air Pollution Control Permit Applications

Introduction: The Department has prepared a technical support document (TSD) on particulate matter with an aerodynamic diameter of 2.5 microns or less (PM_{2.5}) that examines the science behind the primary (direct) and secondary formation of PM_{2.5}, its distribution and lifetime in the atmosphere, statewide monitoring results of PM_{2.5} and the appropriateness of using refined air dispersion models to estimate concentrations of PM_{2.5} in the ambient air. Based on the conclusions of the PM_{2.5} TSD, two changes are being implemented in how the Department evaluates PM_{2.5} emissions in air pollution control permits:

- Examination of the science behind particle pollution leads to the conclusion that only combustion and high temperature industrial sources directly emit significant amounts of PM_{2.5}. PM_{2.5} emissions will not be estimated in an air permit review for fugitive dust sources, mechanical handling, grain handling, and other low temperature particulate sources.
- The PM_{2.5} TSD concludes that it is not appropriate or informative to perform air quality modelling for direct emissions of PM_{2.5} from individual sources and, instead, makes a finding using a weight of evidence approach, that direct emissions of PM_{2.5} do not cause or exacerbate a violation of the ambient air quality standards or increment.

These findings affect the air quality assessment portion of an air permit review, as well as how and when PM_{2.5} emissions are estimated. In the past, any source of particulate matter was assumed to be a source of PM₁₀ and PM_{2.5}. However, not all emissions units that emit particulate matter are also sources of PM_{2.5}. This memo offers guidance to permit applicants on when it is appropriate to assume that a given emissions unit emits PM_{2.5} emissions above *de minimus* levels, when and how an applicant should estimate PM_{2.5} emissions from a regulated unit, and when to expect air pollution permits to contain limitations on PM_{2.5} emissions.

Calculating PM_{2.5} Emission Rates:

Air permit applications are required to contain emission estimates of all air contaminants from the emissions units to be included in the permit. When estimating PM_{2.5} emissions, it is important to consider the formation mechanism of PM_{2.5}. PM_{2.5} is largely formed by chemical reactions in the atmosphere, nucleation, condensation, coagulation, and not by mechanical processes. Not all sources of particulate matter should automatically be assumed to emit PM_{2.5}. Primary sources of PM_{2.5} include combustion sources and high temperature industrial processes such as smelters, foundries, aluminum production, glass manufacturing, sulfate (Kraft) pulping, etc.

- Permit applicants should assume that mechanical processes such as crushing, grinding, sanding, sizing, evaporation of sprays, suspension of dusts, etc. are *not* sources of PM_{2.5} emissions and not include PM_{2.5} emission estimates for these types of sources in the application. This includes applications for all permit types including non-Title V and Title V operation permits, registration and general permits, minor source construction permits, and PSD and NAA major source construction permits. Applicants may reference this memo in their permit applications to justify emission estimates.

- Permit applicants should continue to include estimates of primary PM_{2.5} emissions for combustion processes, and high temperature industrial processes.

Many permit applicants rely on emission factors published in U.S. EPA document AP-42 when estimating emissions for air pollution control permitting. EPA's emission factor document is only one tool available to permit applicants for estimating emissions. The Department will not assume that an emissions unit emits significant amounts of PM_{2.5} or include PM_{2.5} emissions estimates simply because AP-42 has published an emission factor for low temperature and material handling processes.

Modeling PM_{2.5} Emissions:

As indicated above and in the *July 2015 Wisconsin Air Dispersion Modeling Guidelines*, individual source modeling of PM_{2.5} emissions for permits for existing sources, new minor sources, and minor modifications of major sources will not be performed by the Department. Modeling for PM_{2.5} will be required, according to applicable U.S. EPA guidance, for PSD and NAA major source permit reviews and major modifications when there are significant sources of PM_{2.5} (i.e. combustion sources and high temperature industrial processes).

PM_{2.5} Limitations in Permits

The following types of PM_{2.5} emission limitations may be included in air pollution control permits for emissions units that are considered sources of PM_{2.5}:

- Limits established to avoid major source construction permitting
- Limits previously established in a construction or operation permit (such limits may be changed through an appropriate permit action such as a new construction permit or a permit revision)
- A limit set as BACT or LAER in a PSD or NAA major source construction permit
- Any applicable PM_{2.5} limitation established in an applicable standard such as a New Source Performance Standard (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP)

PM_{2.5} emission limits or other requirements will not be established in permits for mechanical processes, which are not considered to be sources of PM_{2.5} emissions.

PM_{2.5} Requirements by Permit Type

- Operation Permits: PM_{2.5} emissions will not be modeled for operation permit actions, so generally, no PM_{2.5} emission limits or other requirements will be included in operation permits, unless the limits were previously established or were included in a requirement being incorporated or adopted from an existing construction permit or a federal standard.
- PSD Major Source Permits: Permits for major PSD sources or major modifications to PSD sources will establish PSD BACT limitations for PM_{2.5} for sources of PM_{2.5} if there is a significant net increase in PM_{2.5} emissions. Section NR 405.02(27)(a), Wis. Adm. Code defines a significant net increase to be 10 tons of PM_{2.5} per year, or 40 tons of NO_x per year or 40 tons of SO₂ per year as PM_{2.5} precursors. Since mechanical processes are not considered significant sources of PM_{2.5} emissions, no PM_{2.5} limitations for these types of emissions units will be included in permits for major PSD sources or major modifications to PSD sources. Existing construction permit limits and BACT limitations for PM_{2.5} emissions will remain in effect and be adopted by future permits, unless modified through a construction permit action.

- NAA Major Source Permits: There are currently no PM_{2.5} nonattainment areas in Wisconsin. If any PM_{2.5} nonattainment areas are designated in Wisconsin in the future, sources located in a nonattainment area undergoing a major source permit review may be subject to lowest achievable emission rate (LAER) limits and offset requirements for PM_{2.5} emissions, pursuant to ch. NR 408, Wis. Adm. Code. Note again, that mechanical processes are not considered significant sources of PM_{2.5} emissions and PM_{2.5} limitations for these types of emissions units will not be included in permits issued to sources in nonattainment areas. Existing LAER limitations and offset requirements for PM_{2.5} emissions will remain in effect and be adopted by future permits, unless modified through a construction permit action.
- Minor Construction Permits: For all other construction permit actions for sources of PM_{2.5}, no modeling will be performed even if the emissions units are significant sources of PM_{2.5}. The PM_{2.5} TSD concludes that these direct emissions do not affect ambient air quality. Specific PM_{2.5} emission limits will only be included if a limit is needed to assure that the project is a minor modification of a major source or if a limit was previously established and must be carried forward from a previous construction permit or from a federal standard.

Acronyms

BACT – Best Available Control Technology

LAER – Lowest Achievable Emission Rate

NAA – Nonattainment Area (used in reference to major source construction permitting in nonattainment areas)

NESHAP – National Emission Standards for Hazardous Air Pollutants

NO_x – Nitrogen Oxides

NSPS – New Source Performance Standard

PM – Particulate Matter

PM_{2.5} – Particulate Matter with an aerodynamic diameter of 2.5 microns or less

PM₁₀ – Particulate Matter with an aerodynamic diameter of 10 microns or less

PSD – Prevention of Significant Deterioration (used in reference to major source construction permitting in attainment areas)

SO₂ – Sulfur Dioxide

TSD – Technical Support Document