Chapter 6:
SIP- or Modeling-Based Limit

Table of Contents

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6.1 Overview of Ambient Air Quality Standards (NAAQS and MAAQS)

States or the USEPA may impose limitations over and above standards of performance in order to protect the ambient air quality standards. 40 CFR Part 50 defines standards for the six criteria air pollutants: sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$), nitrogen oxides (NOx), carbon monoxide (CO), ozone (O3), and lead. The National Ambient Air Quality Standards (NAAQS) are set to protect human health and the environment; they are shown in Table 6-1.

Table 6-1. National Ambient Air Quality Standards (NAAQS)

Pollutant	Averaging Period	Primary NAAQS (ug/m3)	Secondary NAAQS (ug/m3)
SO_2	3-hour	None	1300
	24-hour	365	None
	Annual	80	None
PM_{10}	24-hour	150	150
	Annual	50	50
$PM_{2.5}$	24-hour	65	65
	Annual	15	15
NOx	Annual	100	100
CO	1-hour	40,000	40,000
	8-hour	10,000	10,000
Ozone	1-hour	235	235
	8-hour	157	None
Lead	Quarterly	1.5	1.5

Minn. R. 7009.0080 set out the Minnesota Ambient Air Quality Standards (MAAQS). In addition to the six criteria pollutants, the MPCA also sets standards for hydrogen sulfide and retains a standard for total suspended particulates (TSP). MAAQS are shown in Table 6-2.

Table 6-2. Minnesota Ambient Air Quality Standards (MAAQS)

Pollutant	Averaging Period	Primary MAAQS (ug/m3)	Secondary MAAQS (ug/m3)
SO_2	**1-hour**	**1300**	None
	3-hour	None	**1300 ***
	24-hour	365	None
	Annual	80	**60**
TSP	**24-hour**	**260**	**150**
	Annual	**75**	**60**
PM_{10}	24-hour	150	150
	Annual	50	50
$PM_{2.5}$	24-hour	65	65
	Annual	15	15
NOx	Annual	100	100
CO	**1-hour**	**35,000**	**35,000**
	8-hour	10,000	10,000
Ozone	1-hour	235	235
	8-hour	157	None
Lead	Quarterly	1.5	1.5
Hydrogen Sulfide (H2S)	½-hour, not to be exceeded twice/year	70	
	½-hour, not to be exceeded twice in 5 days	42	

* Not to exceed 915 ug/m3 in northern Minnesota (Air Quality Regions 127, 129, 130, and 132)

Changes subject to NSR/ PSD must demonstrate that the proposed changes will protect NAAQS and MAAQS. The MPCA may require that any change will protect the MAAQS, but it generally only imposes such a requirement on major sources undergoing changes which trigger NSR/PSD. (The exceptions would apply mostly to confined-animal facilities and some food-processing facilities, which may be required to demonstrate attainment of the MAAQS for H_2S.) Demonstration of attainment is generally provided by modeling, which is discussed in more detail in Chapter 8.

6.2 Current Status of Minnesota Air Quality

Currently, all areas of Minnesota meet the NAAQS and MAAQS (with a few potential exceptions for large confined-animal facilities and food-processing facilities that may not have attained the MAAQS for H_2S). As a result, the entire state is classified as in attainment with the NAAQS.

6.3 State Implementation Plan Administrative Orders

In the past, some areas in the state did not meet the NAAQS. These include the entire Twin Cities, St. Cloud, and Duluth for CO and SO_2; Rochester for SO_2; Duluth and parts of St. Paul for PM; and a small area in Eagan for lead. Because at one time these areas did not meet the ambient air quality standards, the MPCA prepared a State Implementation Plan (SIP), which imposed site-specific requirements over and above requirements imposed by federal or state standards of performance or NSR/PSD requirements.

Except for the CO non-attainment areas (which were largely caused by vehicles), the rest of the SIPs consist of administrative orders, some now rolled into Title V (Part 70) permits for a few very large specific sources. These include, for example, some Twin Cities power plants, the two refineries, a secondary lead smelter, some coal- and grain-handling facilities in St. Paul and Duluth, and a few other sources.

The limitations on the sources subject to SIP requirements include emission limitations, as well as sufficient monitoring, testing, reporting, and recordkeeping requirements to demonstrate compliance for the averaging times of the NAAQS covered by the SIP.

Other than a source with a SIP administrative order (or SIP conditions in their Title V Part 70 permit—and they know who they are) or a new source constructed and large enough to threaten the NAAQS, MAAQS or PSD increment, no other sources in Minnesota are subject to SIP orders.

Modifying SIP requirements

If a source is subject to SIP requirements (or becomes subject in the future) and chooses to modify a SIP requirement, it must go through a two-step public process before the change can be made. The two steps include a major permit modification and a federal rule making. The proposed changes should be listed on Form CD-01 and accompanied by a modeling demonstration of continued maintenance of the NAAQS. First, the source must demonstrate that the change will continue to be protective of the NAAQS and submit a major permit amendment application. Upon approval by the MPCA, the proposed permit amendment goes through the normal public notice and comment period. Once the public notice and comment period is completed, the issued permit is forwarded to the USEPA (along with other documents updating the state's legal authorization to make such changes and to enforce the permit conditions). Upon review and approval by USEPA, a proposed modification to the Minnesota SIP rule (40 CFR § 52, Subp. Y) is published in the Federal Register for public notice and comment. Once the public notice and comment period is completed and the revised Minnesota SIP rule takes effect, the source may make the change proposed.

Such changes frequently take 18 months to several years to move through the process. This can be particularly problematic when making even the most minor change in structures (stack height) or building dimensions, or in making modest changes to monitoring, reporting or recordkeeping requirements. Some sources have modified the SIP to require the source to have as the SIP requirement a monitoring, reporting and recordkeeping plan approved by the MPCA. Then changes can be made to the plan, subject to MPCA approval, but not needing the full USEPA rulemaking to have effect.

Practical Tips

To avoid modifications to a SIP order, model emissions using conservative stack parameters and emission rates. For example, use a stack exhaust temperature that is much less than the current temperature range in the event that a future project (e.g., to recover heat from the exhaust) lowers the exhaust temperature. The impact on ground-level modeled concentrations is negligible, and doing this may prevent project delays.