



**State of Ohio Environmental Protection Agency
Division of Air Pollution Control**

**Ohio's
2010 Nitrogen Dioxide Standard
Recommended Designations**

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On January 22, 2010, U.S. EPA revised and strengthened the health-based National Ambient Air Quality Standard (NAAQS) for nitrogen dioxide (NO₂). U.S. EPA set a new daily 1-hour primary NO₂ standard at the level of 100 parts per billion (ppb) (75 FR 6474, February 9, 2010), defining the maximum allowable concentration anywhere in an area, protecting against adverse health effects associated with short-term exposure to NO₂. This new standard supplements the existing annual standard of 53 ppb.

40 CFR Part 50, Appendix S provides the interpretation of the primary NAAQS for NO₂. The daily 1-hour primary NO₂ standard is met at a site when a valid daily 1-hour primary standard design value is less than or equal to 100 ppb. The design values are the metrics (statistics) that are compared to the NAAQS levels to determine compliance. The design values for the daily 1-hour primary standards are the 3-year average on annual 98th percentile daily maximum 1-hour values¹ for a monitoring site. A daily 1-hour primary NO₂ standard design value is valid if it encompasses three consecutive calendar years of complete data. A year meets data completeness requirements when all 4 quarters are complete. A quarter is complete when at least 75 percent of the sampling days for each quarter have complete data. As for the annual primary NO₂ standard, this standard is met at a site when the valid annual primary standard design value is less than or equal to 53 ppb. The annual primary standard design value for a site is the valid annual mean rounded to the nearest whole number or 1 ppb. Similarly, an annual primary standard design value is valid when at least 75 percent of the hours in the year are reported.

To determine compliance with the new daily 1-hour primary standard, U.S. EPA established new ambient air monitoring and reporting requirements for NO₂:

- In urban areas, monitors are required near major roads as well as in other locations with a population greater than or equal to 500,000 people. A second monitor is required near another major road in areas with either:
 - o Population greater than or equal to 2.5 million people, and
 - o One of more road segments with an annual average daily traffic count greater than or equal to 250,000 vehicles.
- A minimum of one monitor must be placed in any urban area with a population greater than or equal to 1 million people to assess community-wide concentrations.
- Working with the states, U.S. EPA will site a subset of monitors in locations to help protect communities that are susceptible and vulnerable to NO₂-related health effects.

As part of the promulgation of this revised standard, it is expected Ohio will need to expand its monitoring network to comply with the new standard. Currently, Ohio has a network of three (3) NO₂ monitors (Athens, Cuyahoga, and Hamilton Counties) that have been in place for a number of years; and although all three monitors meet the 2010 daily 1-hour primary NO₂ standard, the final NO₂ rule will require the installation of additional new near-road and community (area wide) NO₂ monitors.

¹ 98th percentile daily maximum 1-hour values is the value below which normally 98 percent of all daily maximum 1-hour concentration values fall.

The expansion of the monitoring network with near-road and community monitors will not be operating until January 1, 2013, and three years of data will not be complete until 2016. However, U.S. EPA expects to identify or designate areas as attaining or not attaining the new standard by January 2012, within two years of establishing the new NO₂ standard. These designations will be based on the existing monitoring network. Areas with monitors recording violations of the new standard will be designated nonattainment. U.S. EPA anticipates designating all other areas of the country “unclassifiable” to reflect the fact that there is insufficient data available to determine if those areas are meeting the revised NO₂ NAAQS.

Once the expanded network of NO₂ monitors is fully deployed and three years of air quality data have been collected, U. S. EPA intends to redesignate unclassifiable areas in 2016 or 2017, as appropriate, based on the air quality data from the new monitoring network.

In the air quality data presented below (Table 1), the annual 98th percentile values (for the daily 1-hour primary standard) and the annual values (for the annual primary standard) averages for monitors that are violating the standard are highlighted in red. Monitoring sites that do not meet the 75% capture criteria are highlighted in yellow.

Data are retrieved from the U.S. EPA’s Air Quality System (AQS) at <http://www.epa.gov/ttn/airs/airsaqs/> and are presented in ppb in all tables. AQS data retrieval sheets are provided in Appendix A. The State and local air monitoring stations (SLAMS) data certification report for calendar year 2009 is provided in Appendix B. It should be noted that the 2010 monitoring data will not be certified by the time this submittal is required.

Table 1. NO₂ Monitoring Data and Design Values

County	Site ID	Annual 98th Percentile Values				Daily 1-hour Design Value	Annual Values			Annual Design Value
		Year			Year					
		2007	2008	2009	2007		2008	2009		
Athens	39-009-0004	29.2	28.9	26.8	28.3	5.67	5.11	4.23	5.0	
Cuyahoga	39-035-0060	61.0	58.0	56.0	58.3	20.36	16.57	17.07	18.0	
Hamilton	39-061-0040	56.0	58.0	50.0	54.7	17.06	15.95	14.40	15.8	

Ohio EPA’s NO₂ monitoring network consists of three (3) monitors located in Athens, Cuyahoga, and Hamilton Counties, respectively (refer to Figure 1). None of these monitors showed violations for the 2007-2009 design value. The final NO₂ rule will require the installation of additional new near-road and community (area wide) NO₂ monitors. Therefore, Ohio EPA is recommending all Counties in Ohio be designated

unclassifiable based on the current NO₂ monitoring data until the additional NO₂ monitoring data are available from the new network.

Figure 1: NO₂ Monitoring Network



APPENDIX A

Air Quality System (AQS) data sheets

APPENDIX B

SLAMS 2009 Nitrogen Dioxide Certification

APPENDIX C

Public Notice
Public Hearing
And Comments