



NO₂, CO, SO₂

Trends in NO₂, CO, and SO₂ Concentrations

Nationally, annual mean concentrations of NO₂ decreased 33 percent between 2001 and 2010, as shown in Figure 17. In 2010, NO₂ concentrations were the lowest of the ten-year period. All recorded concentrations were well below the level of the annual standard (53 ppb).

Nationally, concentrations of 8-hour CO decreased 52 percent between 2001 and 2010, as shown in Figure 18. In 2010, CO concentrations were the lowest in the past ten years. All concentrations were below the 8-hour standard (9 ppm) and 1-hour standard (35 ppm).

Nationally, annual mean concentrations of SO₂ decreased 50 percent between 2001 and 2010, as shown in Figure 19. In 2010, annual SO₂ concentrations were the lowest of the ten-year period. One site in Hawaii showed concentrations above the level of the annual standard (30 ppb) and four sites in Hawaii showed concentrations above the level of the 24-hour standard (140 ppb). These high measurements were probably caused by emissions from a nearby volcano.

Downward trends in annual NO₂, CO, and SO₂ are the result of various national emissions control programs. Even though concentrations of these pollutants are low with respect to national annual standards, EPA continues to track these pollutants because of their contribution to other air pollutants (e.g., ozone and PM_{2.5}) and reduced visibility. On August 12, 2011, EPA finalized the decision to retain existing primary CO standards.

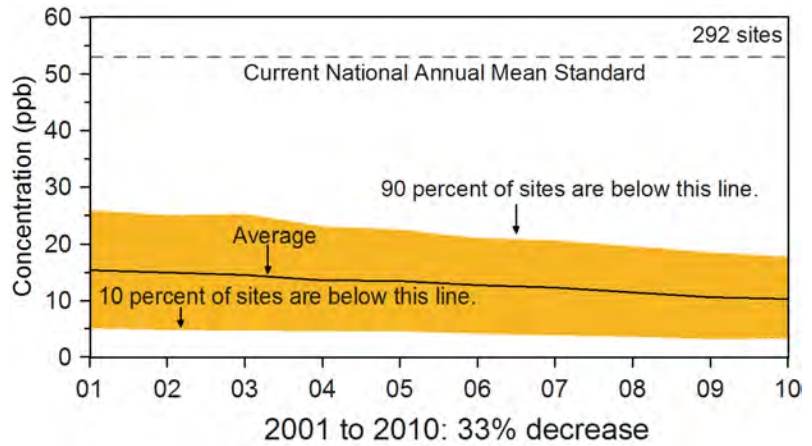


Figure 17. National NO₂ air quality trend, 2001-2010 (annual average in ppm).

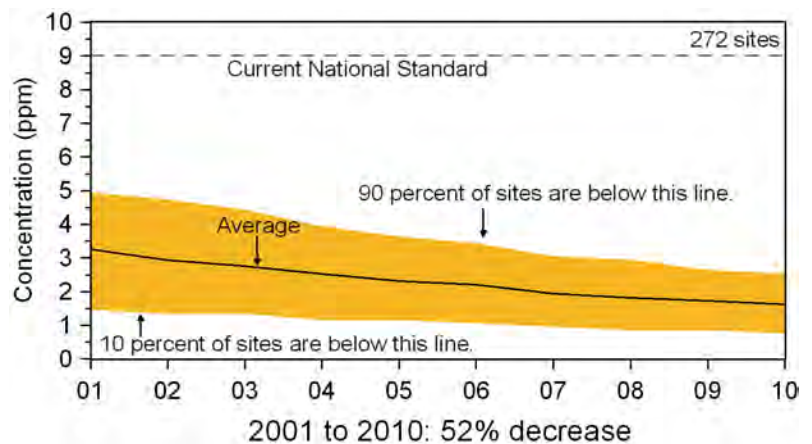


Figure 18. National CO air quality trend, 2001-2010 (second maximum 8-hour average in ppm).

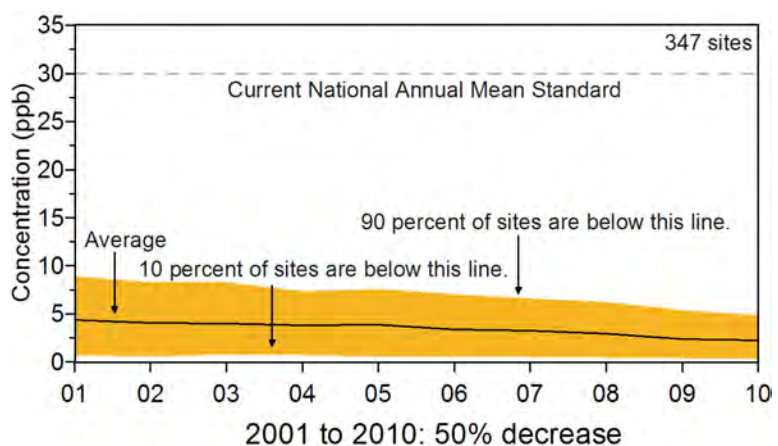


Figure 19. National SO₂ air quality trend, 2001-2010 (annual average in ppm).

2010 NO₂ and SO₂ Standards

On January 22, 2010, EPA strengthened the health-based NAAQS for NO₂. This action did not impact the NO₂ secondary standard, set to protect public welfare. EPA set the new 1-hour NO₂ standard at the level of 100 ppb. The form for the 1-hour NO₂ standard is the 3-year average of the 98th percentile of the annual distribution of daily maximum 1-hour average concentrations. EPA also retained, with no change, the current annual average NO₂ standard of 53 ppb. Although this new standard is a 3-year average, Figure 20 shows a snapshot of the 98th percentile of the 1-hour daily maximum NO₂ concentration for 2010 only.

On June 2, 2010, EPA strengthened the health-based NAAQS for SO₂. This action did not impact the SO₂ secondary standard, set to protect public welfare, which is currently under review. EPA replaced the existing annual and 24-hour primary SO₂ standards with a new 1-hour SO₂ standard set at 75 ppb to better protect public health by reducing exposure to high short-term (5 minutes to 24 hours) concentrations of SO₂. Although this new standard is based on a 3-year average, Figure 21 shows a snapshot of the 99th percentile of the daily 1-hour maximum SO₂ concentration for 2010 only. Note that Figure 21 shows that the highest daily 1-hour maximum SO₂ concentrations occurred at sites in the Upper Midwest and portions of the Northeastern U.S.

On July 12, 2011, EPA proposed action on the combined review of the secondary NAAQS for oxides of nitrogen (NO_x) and oxides of sulfur (SO_x). EPA sets secondary standards to protect against environmental damage caused by certain air pollutants. Consistent with the scientific evidence pointing to the interrelated impacts of NO_x and SO_x on plants, soils, lakes, and streams, EPA assessed the environmental effects of these pollutants together. Based on this scientific evidence, EPA is proposing to retain the existing secondary standards for NO_x and SO_x. The existing secondary standards are:

NO₂: 53 ppb (parts per billion) averaged over a year; and

SO₂: 0.5 ppm averaged over three hours, not to be exceeded more than once per year.

Also, EPA is proposing to establish an additional set of secondary standards identical to the new health-based primary standards the Agency set in 2010. The proposed new secondary standards would be:

For NO₂: 100 ppb (parts per billion) averaged over one hour; and

For SO₂: 75 ppb averaged over one hour.

For additional information on the proposed secondary standards visit www.epa.gov/air/nitrogenoxides/actions.html.

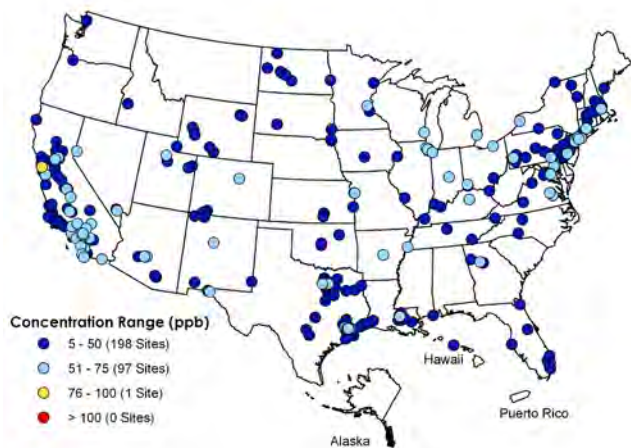


Figure 20. NO₂ concentrations in ppb, 2010 (98th percentile of daily 1-hr maximum).

Note: Typically the 1-hour standard is determined as the three-year average of the 98th (NO₂) or 99th (SO₂) percentile of the daily maximum 1-hour average; however, these maps only include one year (2010).

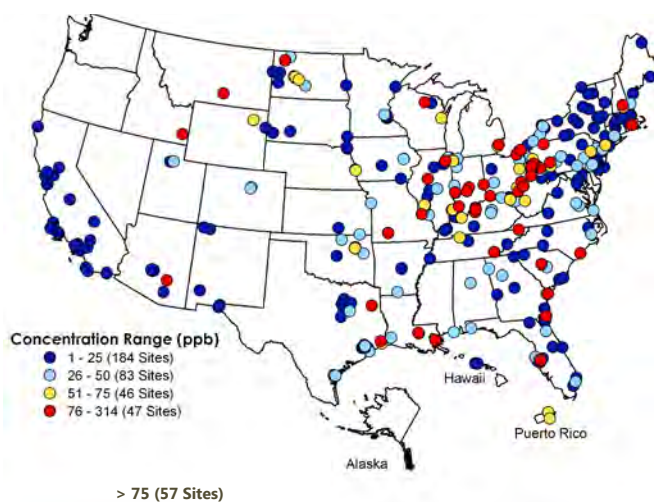


Figure 21. SO₂ concentrations in ppb, 2010 (99th percentile of daily 1-hr maximum).