

EPA Issues Power Plant Emissions Data for 2021

WASHINGTON – Today, the U.S. Environmental Protection Agency (EPA) released publicly available, annual data on 2021 emissions of nitrogen oxides (NO_x), sulfur dioxide (SO₂), carbon dioxide (CO₂), and mercury from power plants in the lower 48 states. Emissions in 2021 were higher than 2020, reflecting a rebound in coal-fired generation as natural gas prices and energy demand increased. However, compared to 2019, 2021 emissions fell between 3% and 11%, reflecting the long-standing trend of decreasing annual emissions.

“The 2021 increase in coal-fired generation and resulting rise in air pollution shows how important it is to urgently forge ahead in building and supporting a cleaner power sector,” **said EPA Administrator Michael S. Regan**. “Thanks in part to EPA rules and policies, we have made great progress in lowering dangerous pollution over the last several decades. But it’s clear our work is far from done, as we deliver on our commitment to protect the health of everyone and especially those most vulnerable among us.”

Compared to 2020, the 2021 data show a 6% increase in NO_x emissions, a 20% increase in SO₂ emissions, a 7% increase in CO₂ emissions, and a 13% increase in mercury emissions. Additionally, ozone season (May 1 to September 30) NO_x emissions increased by 5%. Overall, based on the first 11 months of 2021, electricity demand increased by 3% compared to 2020.

Between 1990 and 2021, annual emissions of SO₂ from power plants fell by 94% and annual emissions of NO_x from power plants fell by 88%. In 2021, sources in both the Cross-State Air Pollution Rule (CSAPR) annual program and the Acid Rain Program (ARP) together emitted 0.94 million tons of SO₂, a 14.8 million ton reduction from 1990 levels. In 2021, sources in both the CSAPR NO_x annual program and the ARP together emitted 0.78 million tons, a 5.6 million ton reduction from 1990 levels. While complying with programs to reduce SO₂, NO_x and mercury, CO₂ emissions from power plants dropped by 21% between 1995 and 2021.

Long-term declines in emissions are due primarily to changes in the mix of fuels used in electricity generation. While data from 2021 showed a one-year 16% increase in coal generation and a 3% decrease in natural gas generation, there is a shift underway from higher emitting to lower and zero emitting generation.

These long-term reductions in power sector emissions protect community health. NO_x and SO₂ emissions contribute to the formation of ground-level ozone and particulate matter, which can lead to respiratory and cardiovascular problems, and exposure to mercury, a potent neurotoxin, affects the nervous system and brain functions, particularly in infants and children, and is known to cause other significant health effects.

Ambient particulate sulfate concentrations in the eastern United States have shown substantial improvement, decreasing between 76 and 79% from the 2000-2002 to 2018–2020 observation periods. All areas of the eastern United States have shown significant improvement in wet sulfate deposition in this period, with an overall 70% reduction. In addition, these emissions reductions are resulting in positive ecosystem impacts. The level of acid neutralizing capacity, an indicator of recovery, improved significantly from 1990 levels at lake and stream monitoring sites in the Adirondacks, New England and the Catskill mountains.

EPA collects detailed SO₂, NO_x, CO₂, and mercury emission data and other information from power plants across the country, as part of ARP, the CSAPR Programs, and the Mercury and Air Toxics Standards (MATS). Emissions data collected through these programs are posted online and accessible to the public in summary form at: <https://www.epa.gov/airmarkets/power-plant-emission-trends> .