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Alert

Alert is a monthly update on transportation and air quality planning activities in the Delaware Valley.

Air Quality Regulations

Relaxing Greenhouse Gas Regulations on Energy Production Would Worsen Ozone Pollution in the US

Researchers at the Georgia Institute of Technology published a study on October 25, 2019, in the journal *One Earth* that outlined how weakening greenhouse gas (GHG) emissions regulations on power plants will ultimately result in higher ground-level ozone concentrations across the nation.

Currently, 30 percent of the U.S. population lives in areas with ozone levels that exceed federal health-based standards. Though past environmental regulations have vastly helped clean the air and put the U.S. on a positive path to reduce pollutants, including ozone, the study looks at how policy rollbacks could not only slow progress towards meeting the National Ambient Air Quality Standard (NAAQS) for ozone but actually reverse past gains.

Since ozone is not directly emitted but is formed through a series of chemical reactions that combines nitrogen oxides (NO_x) and volatile organic compounds (VOCs), reducing ozone requires controlling the component pollutants. While VOCs are also a pollutant associated with transportation and industry, there are natural sources of VOCs, such as evergreen trees, that cannot be controlled through technology or regulation. Therefore, reducing ozone production largely relies on starving the chemical reaction of NO_x. Sunlight and higher temperatures drive the chemical reactions that form ozone by providing more energy for the reaction to take place.

The research models impacts of higher emissions and potential ozone formation that may result from not implementing the 2015 regulation known as the Clean Power Plan. The Clean Power Plan was an Obama era regulation of electricity generation that required controls on GHG emissions from power plants. Under the plan, companies would be able to develop strategies to reduce emissions by investing in new, cleaner technologies, such as renewable energy sources, and reducing the amount of energy generated from coal-fired power plants. The regulation included incentives for investing in renewable energy sources that not only reduced GHG emissions, but also NO_x and other harmful air pollutants that are commonly emitted by coal-generated energy production. The Clean Power Plan was expected to reduce NO_x emissions from the power generation sector by 25% when it was fully implemented. In 2017, the Trump Administration repealed the Clean Power Plan and replaced it with regulations that would not have the same reductions in GHGs or NO_x emissions.

The authors identify three factors resulting from weaker regulations on power plants that may contribute to worsening ozone levels. One factor is a direct result and the other two are results of GHG driven climate

Save the Date

Monday
November 18, 2019
9:00 AM – 1:00 PM

Climate Adaptation Forum
Philadelphia Climate Change Resilience Initiatives
Location of Meeting:
DVRPC Conference Center
8th Floor
6th and Race Streets
Philadelphia, PA

For more information visit:
www.dvrpc.org

Tuesday
December 31, 2019

Application Deadline for Pennsylvania DEP Environmental Education Grants

For information on the grant program, please visit:
www.DEP.pa.gov

change. The factors are: 1) more NO_x pollution in the air, 2) higher temperatures from climate change induce more VOC production from plants and natural sources, and 3) higher temperatures fuel the chemical reaction that forms ozone from NO_x and VOCs.

The authors maintain that not implementing the Clean Power Plan will result in more NO_x in the atmosphere and will hasten higher temperatures associated with climate change. Those higher temperatures will increase VOC production from natural sources but will also provide more energy for the production of ozone.

The authors highlight that many of these polluting power plants that were targeted by the Clean Power Plan are located in different states and great distances from those areas with the worst ozone pollution. The transport of these air pollutants makes attainment of the NAAQS more difficult in places, such as the northeastern US, that do not have jurisdiction to regulate facilities or reduce emissions in other states.

To read the article *Relaxing Energy Policies Coupled with Climate Change Will Significantly Undermine US Efforts to Attain Ozone Standards*, please visit the open access journal *One Earth* at: https://www.cell.com/one-earth/

Research Shows that Air Pollution in US is Worsening for First Time in Twenty Years

Data on Fine Particle Pollution ($PM_{2.5}$) from the US Environmental Protection Agency (EPA) show that $PM_{2.5}$ concentrations increased in both 2017 and 2018, over 2016 levels. This is the first time in two decades that levels of fine particle pollution increased in the US.

Researchers at Carnegie Mellon University published an analysis of the causes and impacts of this increase in $PM_{2.5}$ pollution in a working paper for the *National Bureau of Economic Research* in October 2019. According to the researchers, there have been over 10,000 additional premature deaths in 2018 that can be attributed to the increase in $PM_{2.5}$ pollution over 2016 levels.

Fine particles can damage a person's respiratory system, accumulate in the brain, and send people to the emergency room. The elderly appear to be especially susceptible to $PM_{2.5}$, which has been linked to dementia and cognitive decline. And the data shows that many of the pollutant's effects occur at levels well below current regulatory thresholds.

Overall, concentrations of the pollutant have risen about 5.5 percent since 2016, and the researchers identified several reasons for this, including rising natural gas use and people driving more. The corresponding rise in emissions from those sources more than offsets the falling levels being realized by the decline in coal being burned by electricity-generating plants in the US.

According to the researchers, an increase in wildfires is another factor because they release large amounts of smoke and fine particles into the atmosphere. Big fires, particularly in California in 2018, played a role in driving up total national air pollution. Removing those fires from the analysis lessens the increase in pollution in 2017 and 2018 but doesn't eliminate it. The research indicates that nearly 43 percent of those additional deaths would have happened in California, largely because of the wildfires there. Informal calculations suggest the Camp Fire alone caused more than 1,400 deaths due to air pollution exposure.

A final potential driver of rising pollution is the rollback of regulatory enforcement by EPA. Clean Air Act enforcement actions fell in the first two years of the Trump administration, although the researchers note that the trend toward lax enforcement started well before 2017.

"Our understanding of the health effects of air pollution has risen dramatically in the past five or ten years, largely because of an alarming series of findings on the harm caused by pollutant exposure. Given the recent findings", the Carnegie Mellon researchers say, "the decline in federal enforcement is concerning in light of the increases in air pollution" that have occurred since 2016.

For more information on rising $PM_{2.5}$ levels impact on mortality, please visit: https://nber.org

DELAWARE VALLEY dvrpc REGIONAL PLANNING COMMISSION

DVRPC, 8th Floor
190 N. Independence Mall West
Philadelphia, PA 19106-1520
Phone: 215.592.1800 | Fax: 215.592.9125 | Web: www.dvrpc.org

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