dvrpc | October 2013

Alert

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

Air Quality Regulations

Region Experiences Fewer High Ozone Days in 2013 than in Previous Summers

September 30 signaled the official end to the 2013 ozone season. This summer the Greater Philadelphia region experienced far fewer Air Quality Action Days, or days when air quality exceeded the federal health-based standard, than in previous summers. Nine days were forecast to be unhealthy for people sensitive to ozone pollution between May 1 and September 30, 2013, with only four of those days actually violating the National Ambient Air Quality Standard (NAAQS) for ground-level ozone, according to the U.S. Environmental Protection Agency (EPA).

Over the past five years the DVRPC region has averaged almost 16 Air Quality Action Days per summer with the standard being violated on 30 days in 2010. Since ozone formation requires sunlight to drive the chemical reaction between its constituent pollutants and winds can dissipate pollutants and even push them out of the region, weather patterns play a critical role in the number of days with high ozone levels.

While trends in the region continue to show improving air quality, the especially low number of high ozone days this summer is probably partially due to the fact that the summer of 2013 was the wettest season on record for the Greater Philadelphia region since recordkeeping began in the 1870s. The number of days lacking sufficient sunlight to "bake" pollutants into ozone, combined with the attendant winds and declining level of nitrogen oxides (NOx) and volatile organic compounds (VOCs) in the atmosphere have given the lowest number of days violating the ozone standard in over 20 years.

The EPA is required by the Clean Air Act to review the NAAQS every five years. This schedule requires EPA to issue a finding on the ozone standard in 2013. Scientific research continues to demonstrate the impacts of ozone pollution on the environment and public health even at low levels, so it is anticipated that the ozone NAAQS will be tightened beyond the current level of 75 parts per billion of ozone in the air. A new ozone standard and emerging research of the dangers of ozone pollution underscore the need to continue efforts to improve air quality throughout the region and the nation.

For access to the EPA's air quality database, including graphs of the number of days violating the NAAQS, please visit: http://epa.gov/airdata.

Save the Date

Friday,
October 18, 2013
Greater Mercer TMA
Annual Meeting
11:00 – 1:00 pm

Location of Meeting:
Nassau Inn
Princeton, NJ

Please register at jlockwood-reck@gmtma.org

Wednesday,
October 23, 2013
PA DEP Energy Education Workshop for Educators
8:30 am

Location of Meeting:
Chester County Intermediate Unit
455 Boot Road
Downingtown, PA

Please register at sgove@gove.org

Air Quality Information

Unrelated Studies Show that the Clean Air Act Provided Significant Benefits to Human Health and the Environment Since its Adoption in 1970

Two, seemingly unrelated lines of research, published in respected peer reviewed journals in 2013, show that the air quality benefits accrued from implementation of the Clean Air Act in 1970 and its amendments in 1990, are not only measurable but significant.

Research published in the *New England Journal of Medicine* in January 2013, conducted by Arden Pope of Brigham Young University and collaborators at the Harvard School of Public Health, reported that life expectancy in 51 American cities has increased by almost three years between 1980 and 2000 and that the reduction of fine particulate matter or $PM_{2.5}$ during that time period is responsible for up to five months or 15 percent of that increase. Researchers state that the gains are likely the result of reductions in cardiovascular and cardiopulmonary disease caused by breathing fine particle pollution.

The researchers used statistical models to account for other factors that impact life expectancy, such as income, education, and smoking. The scientists found that for every 10 microgram per cubic meter ($\mu g/m^3$) decrease of $PM_{2.5}$ in ambient air, life expectancy increased by approximately seven months. During the 1980s and 90s, average $PM_{2.5}$ pollution decreased by between 21 to 14 $\mu g/m^3$ in the studied cities. The research indicated that lifespan improved even in cities with relatively clean air that showed further improvements to air quality, supporting the assertion that efforts to improve air quality continue to yield health benefits.

In related research published in the *Journal of the American Medical Association* in June 2013, a team of scholars, which included Pope, demonstrated that improvements to air quality between 1990 and 2010 have sparked a 35 percent reduction in deaths and disability directly attributable to air pollution.

The Clean Air Act's benefits for the environment were demonstrated in a September 2013 article published in the *Proceedings of the Academy of Natural Sciences.* This study demonstrated that improvements to air quality, specifically reductions of $PM_{2.5}$ pollution and its precursors, not only improves human health but also benefits forests.

West Virginia University biology professor Richard Thomas has used tree ring studies to show that trees (the Eastern Red Cedar in this study) have shown improvements in growth and physiology in the decades since the Clean Air Act was passed in 1970. Researchers focused on the red cedar tree because of its long lifespan (100-500 years) and sensitivity to environmental change.

Thomas' team was able to track growth patterns and calibrate the tree rings to specific points in time over the past 100 years. The research showed that despite increases in carbon dioxide in the atmosphere, which typically encourages tree growth, the tree rings showed that tree growth declined until around 1982 when provisions of the original Clean Air Act had been implemented and air pollution levels declined. After 1982, the growth trajectory of the study forest in the Appalachian Mountains started to show widespread recovery.

Long-term studies continue to be published demonstrating the benefits of clean air legislation for human health, the environment, and the economy and form the backbone of recommendations to periodically update the National Ambient Air Quality Standards.

For more information on the history and science behind the Clean Air Act, please visit: http://epa.gov/air/caa.

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