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



Health and Air Quality

Research Highlights Benefits of Vegetation for Mitigating Air Pollution from Transportation Sources.

A recent article, published in the journal *Transportation News* in September 2013, highlighted the benefits and challenges associated with using vegetative buffers to mitigate the health impacts of air pollution from transportation sources.

The article is based on the results of a workshop held among a multidisciplinary team of researchers and policy makers, including representatives of the U.S. Environmental Protection Agency (EPA) and U.S. Forest Service (USFS) held in Sacramento, California in 2012.

The researchers acknowledge that there is strong evidence that people that spend time near high volume roadways face increased risks for adverse health impacts from exposure to particle pollution, air toxics, and other pollutants. The article cites published data that shows that pollutant levels are high near heavily traveled roadways and that pollutant concentrations are often highest within the first 100-150 meters of the roadway but can remain elevated up to 500 meters or more from the edge of the pavement.

These elevated levels of pollutants from roadway sources are especially a concern when viewed within the context of sustainable landuse policies that include compact urban form and proximity between residences, recreation facilities, and transportation sources. Policies geared towards creating sustainable communities, reducing vehicle miles travelled and attendant pollutants, and curbing suburban sprawl may have negative health impacts for portions of the population that have consistent and chronic exposure to elevated levels of air pollution from transportation sources.

According to Dr. Greg McPherson, Research Forester at the USFS and lead author of the article, "properly designed and managed roadside buffers can help us breathe a little easier". The group of stakeholders at the 2012 meeting agreed that vegetation barriers can provide environmental, economic, and social benefits by reducing air pollution, storing carbon, raising property values, and treating stormwater runoff.

The article relies on field observations, computational modeling, and previous research to provide evidence for the benefits and detriments of these types of buffers in urban environments. Details, such as physical characteristics of the buffer, maintenance regimen, and species selection all influence how effective the buffer will be at mitigating air pollution from roadways and whether or not the buffer may have unforeseen detrimental characteristics such as impairing site distances or introducing allergens to the local environment.



Save the Date

**Monday,
March 10, 2014**

**Philadelphia Diesel
Difference Working Group
10:00 am – 12:00 pm**

*Location of Meeting:
DVRPC New Jersey Room
8th Floor
6th and Race Streets
Philadelphia, PA*

**Thursday,
April 3, 2014**

**Application Deadline
Pennsylvania Transportation
Alternatives Program**

Please visit
www.dvrpc.org/TAP/
For more information

The authors conclude there is good evidence supporting the use of vegetation as a component of green infrastructure to mitigate pollutants from roadways but call for more research and pilot studies to identify effective design and management practices that maximize the benefits of vegetative buffers.

For more information and to download the article *Integrating Vegetation and Green Infrastructure into Sustainable Transportation Planning*, please visit: www.treeseearch.fs.fed.us/pubs/45250.



Air Quality Information

Reports Indicate Emissions and Releases of Toxic Chemicals from Power Plants Continue to Decline in 2012.

Two reports released by federal agencies in January 2014 indicate that pollutant emissions and the release of toxic chemicals from power plants continued to trend downward in 2012.

The first report, published by scientists at the National Oceanic and Atmospheric Administration in the journal *Earth's Future*, quantified the reductions of carbon dioxide (CO₂), nitrogen oxides (NO_x), and sulfur dioxide (SO₂) from power plants between the years of 1997 and 2012.

The scientists report that CO₂ dropped 23 percent over that time period while NO_x and SO₂ emissions from power plants declined by 40 and 44 percent respectively. The authors attribute these declines in emissions to the introduction of combined cycle natural gas fired power plants in 1997. The combined cycle natural gas power plants use two engines in tandem to convert a higher fraction of heat into electricity than traditional natural gas fired power plants. On average, the combined cycle natural gas power plants emit 479 fewer grams of CO₂ per kilowatt hour of energy produced than coal fired power plants.

Emissions reductions gains from the more efficient combined cycle plants were amplified by the fact that the percentage of total energy production across the nation from coal power plants declined from 83 percent to 59 percent while the total portion of energy production from combined cycle natural gas power plants increased from 0 to 34 percent between 1997 and 2012.

The authors are clear to note that these reductions are calculated at the smokestack and do not account for the emissions from exploration, extraction, or delivery of fuel to the power plants.

The second report of note, the *2012 Toxic Release Inventory National Analysis*, was released by the U.S. Environmental Protection Agency (EPA). The EPA reported that the total releases of toxic chemicals discharged into the air, water, or on land declined by 12 percent between 2011 and 2012. The decline includes an eight percent decline in total toxic air releases, primarily due to reductions in hazardous air pollutant (HAP) emissions. HAPs include but are not limited to the acidic gases emitted by power plants.

The EPA attributes the reductions in HAP emissions to the implementation of emissions control technologies at power plants as well as the continuing trend of the use of cleaner fuels, such as natural gas, to fuel electricity generation.

The EPA anticipates that these trends in toxic releases will continue to decline as new rules and regulations aimed at reducing pollution for electricity generation and power plants are implemented.

More information on EPA's Toxic Release Inventory is available at:

www2.epa.gov/toxics-release-inventory-tri-program.

More information on the NOAA report on power plant emissions is available at:

www.sciencedaily.com/releases/2014/01/140109132656.htm



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