dvrpc | November 2014

Alert

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

Air Pollution News

NOAA Study Explains Source of Wintertime Ozone Exceedances in Utah Oil and Gas Fields

An article published in the October, 2014 issue of the journal *Nature,* identifies the environmental conditions responsible for elevated wintertime ozone concentrations in the oil and gas fields of the Uintah Basin in northeastern Utah in 2013 and 2014. Ozone concentrations in this region exceeded the National Ambient Air Quality Standards (NAAQS) for ozone 49 times during the 2013 winter season.

Violations of the ozone NAAQS in the winter are unusual because ozone formation typically requires the more intense sunlight of the summer months to drive the chemical reaction between nitrogen oxides (NO_x) and Volatile Organic Compounds (VOCs) that form ozone.

According to Peter Edwards, lead researcher with the National Oceanic and Atmospheric Administration's (NOAA) Cooperative Institute for Research in Environmental Sciences, levels of VOCs from natural gas and oil production facilities build high enough to drive the chemical reaction themselves.

In the winter months, layers of warmer air above the earth trap the pollutants in the cooler air that is closer to the ground, creating what is referred to as a thermal inversion. Thermal inversions further concentrate already elevated levels of VOCs from the extraction industry.

The researchers noted that snow in the region plays a role in the formation of ozone. The presence of snow increases light reflection. While the reflected sunlight would not provide enough energy to drive the reaction under normal conditions, the elevated VOCs in the gas and oil fields, promote ozone formation in a less light-intense environment.

Measurements of ozone precursor VOCs and NO_X were high in the region in 2012, 2013, and 2014 but there was little snowfall in 2012. Ozone violations were positively correlated with the snowfall, with many ozone violations in 2013–14 and very few in 2012. Researchers concluded that the ingredients for ozone formation are all present in northeastern Utah; elevated precursor pollutant levels, stagnant air masses during periods of thermal inversions, and the energy from light reflected from snowfall, which accelerates ozone formation.

The NOAA research highlights the importance of considering local environmental conditions when siting and permitting emitting facilities and may have implications for the operations of oil and gas wells in similar environments across the nation.

Save the Date

Monday,
November 17 , 2014

Air Quality Partnership
Board Meeting
10:00 am – 12:00 pm

Location of Meeting:
DVRPC Conference Center
8th Floor
6th and Race Streets
Philadelphia, PA

Wednesday and Thursday,
December 9 and 10, 2014

FHWA Course:
Air Quality 101

PennDOT
District 6–0 Offices
King of Prussia, PA

Please contact Michael Baker at michaelba@pa.gov for more information

For more information on the NOAA study of wintertime ozone exceedances in the Uintah Basin, please visit: www.noaanews.noaa.gov

Air Quality Regulations

Clean Air Act Has Improved Water Quality in the Chesapeake Bay Watershed

A recent study by researchers at the University of Maryland Center for Environmental Science and published in the journal *Environment Science and Technology* shows that the reduction of nitrogen oxides (NOx) from power plants in the eastern and midwestern U.S., as a result of the Clean Air Act, have reduced nitrogen pollution in the Chesapeake Bay.

The accumulation of nitrogen pollution in the environment has significant consequences for air quality, human health, terrestrial productivity, and both acidification and eutrophication of aquatic ecosystems. In water bodies, nitrogen pollution can cause water to become more acidic, fuel the growth of algae, and create anoxic "dead zones" that do not support aquatic life. In the Chesapeake Bay, these conditions cost the economy approximately $22 billion each year in lost productivity of seafood and recreational opportunities (Chesapeake Bay Foundation).

The researchers have reviewed over 23 years of historic data (1986–2009) to evaluate nitrogen concentrations in forested streams that feed the Chesapeake Bay. Forested streams were chosen to illustrate the amount of nitrogen that is deposited by air and rainfall and not influenced by agricultural or urban run–off. The data showed a steady decline in nitrogen concentrations in the stream waters as the Clean Air Act was implemented, beginning in 1990. According to the U.S. Environmental Protection Agency (EPA), human caused nitrogen emissions of NOx declined by 32% between 1997 and 2005 due to regulations on coal fired power plants in the eastern U.S.. The data in the University of Maryland study correlates these declines in atmospheric NOx with watershed concentrations.

According to the Chesapeake Bay Foundation, approximately 13% of NOx pollution entering the bay comes from air emissions from power plants, vehicles, and industry. The researchers claim that the recorded improvements in water quality in the forested watersheds in the study can be attributed to coincidental benefits of the Clean Air Act.

For more information on the benefits of the Clean Air Act for the Chesapeake Bay Watershed, please visit: www.umces.edu

Air Quality Information

FHWA to present "Air Quality 101" Training Course in King of Prussia in December, 2014

The Federal Highway Administration (FHWA) will be presenting a two-day course titled "Air Quality 101" at the PennDOT District 6–0 offices in King of Prussia on December 9 and 10, 2014. The two day, introductory - level course will introduce attendees to the fundamentals of transportation conformity, federal air quality standards, and a host of related topics. The course is free and open to DVRPC planning partners in Delaware, New Jersey, and Pennsylvania

For more information about FHWA's "Air Quality 101" course please contact Sean Greene at sgreene@dvrpc.org or Michael Baker at michaelba@pa.gov .

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DVRPC NEWS IS FUNDED THROUGH GRANTS FROM THE FEDERAL HIGHWAY ADMINISTRATION (FHWA), THE FEDERAL TRANSIT ADMINISTRATION (FTA), THE PENNSYLVANIA AND NEW JERSEY DEPARTMENTS OF TRANSPORTATION, AND DVRPC'S MEMBER GOVERNMENTS. DVRPC FULLY COMPLIES WITH TITLE VI OF THE CIVIL RIGHTS ACT OF 1964 AND RELATED STATUTES AND REGULATIONS IN ALL PROGRAMS AND ACTIVITIES. FOR MORE INFORMATION, OR TO OBTAIN A TITLE VI COMPLAINT FORM, VIEW THE DVRPC WEBSITE, WWW.DVRPC.ORG, OR CALL 215.238.2871.