



Air and Waste Matters

DNREC Division of Air and Waste Management

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Volume I, Issue 5

July 2007

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The Summer Smog Season is Here!

It's that time of year again when the hot, humid and hazy days of summer translate into increased levels of ground level ozone. High levels of ozone can irritate the respiratory system, reduce lung function and aggravate asthma. Children, the elderly, and those with respiratory disease are most likely to be adversely affected. Knowing when our area is likely to experience high ozone levels is the job of DNREC's air quality, monitoring and forecast team.

The forecasts, which are issued each afternoon for the next day, are based on current local and upwind pollutant loads coupled with expected weather patterns. Daily forecasts for the mid-Atlantic region are posted every day on DNREC's web page at:

<http://www.dnrec.delaware.gov/AQI/AQIForecast.htm>.

The forecasts are color-coded based on the level of ozone expected. Code Green (good) and Code Yellow (moderate) forecasts are noted on the web page without a specific warning. When the forecast reaches the Code Orange level, indicating an unhealthy level for sensitive groups or Air Quality Action Day, a notice is sent out to all citizens who have registered to receive air quality forecast alerts. To register to receive air quality forecast alerts, please visit:

<http://www.dnrec.state.de.us/DNREC2000/admin/maillists/maillists.htm>.

DNREC also notifies citizens of expected Code Red Action Days, indicating unhealthy levels for anyone spending a prolonged

(Continued on page 2)

What does the Air Quality Index Mean?

The air quality forecasting system uses a range of qualifiers or indicators, from good to unhealthy, to provide information to the public on air quality for the next day. The following codes are used:



Air Quality Forecast Index

Code Red is an Air Quality Action Day and indicates unhealthy levels for outdoor activities.

Code Orange is considered an Air Quality Action Day with an unhealthy level of air quality for sensitive groups.

Code Yellow forecasts are when moderate levels of ozone and particulates are expected.

Code Green is an excellent air quality forecast when both ozone and particulates are predicted to be in the good range.

The Summer Smog Season is Here! *Continued...*

(Continued from page 1)

period outdoors. On Air Quality Action Days, citizens are asked to take actions to reduce the pollution that causes ground-level ozone including:

- refueling your vehicle in the evening,
- not mowing your lawn, and
- using public transportation.

During the summer of 2006, there were fifteen Code Orange and two Code Red days for ozone. For five of those days, one or more of Delaware's ambient air monitors registered an exceedance of the 8-hour ozone standard.

Fine Particulate Alerts – (It's Not Just Ozone Anymore)

Daily forecasts are also posted for fine particulate pollution. Fine particulates are of concern because their small size enables them to reach deep into the lungs causing or aggravating a number of health problems such as heart disease, chronic bronchitis, and asthma. Cars, trucks, buses, boats, planes, power plants, other industries, home furnaces, fireplaces, wood stoves, open burning, and construction activities are some of the many sources of fine particulate pollution.

Unlike ozone, forecasts for fine particulates are issued daily throughout the year, although the likelihood of Code Orange or higher forecasts is greatest in the summer. There were five Code Orange days for particulates in 2006, four of which coincided with ozone alert days. Particulate forecasts are displayed on the same web page as the ozone forecasts.

Air Quality Now

While forecasts are helpful to some in planning activities, others may be interested in knowing what the air quality actually is at any given time. The Air Quality Index (AQI), which follows the same color scheme as the forecasts, provides the current level of air quality based on real-time monitors that continuously feed data to a national system. The AQI for Delaware can be viewed at the following link:

<http://www.epa.gov/airnow/>

For more information about air quality forecasts, Air Quality Action Days, and the AQI, please contact Terri Brixen, Air Quality's Outreach Coordinator, at (302) 323-4542, or terri.brixen@state.de.us.

Article by David Fees, AQMS

What is a Non-Attainment Area?

In April 2004, the US Environmental Protection Agency (EPA) designated 126 areas of the country as "non-attainment" under the 8-hour ozone National Ambient Air Quality Standard (NAAQS). Among those non-attainment areas is the Philadelphia-Wilmington-Atlantic City (PA-NJ-MD-DE) Moderate Non-Attainment Area (NAA). This NAA includes three counties in Delaware, five counties in eastern Pennsylvania, one county in Maryland and eight counties in southern New Jersey. Since this moderate NAA is centered by Philadelphia, it is often referred to as the "Philadelphia NAA." According to the federal Clean Air Act (CAA), the entire Philadelphia NAA must attain the 8-hour ozone NAAQS by 2010, the attainment year.

Ground level ozone, one of the principal components of "smog" in the non-attainment area, is a serious air pollutant that harms human health and the environment. Ozone is generally not directly emitted to the atmosphere; rather it is formed in the atmosphere by photochemical reactions between volatile organic compounds (VOCs), oxides of nitrogen (NOX), and carbon monoxide (CO) in the presence of sunlight. Consequently, in order to reduce ozone concentrations in the ambient air, the Clean Air Act Amendments of 1990 (CAAA) requires all non-attainment areas to apply controls on VOCs and NOX emission sources to achieve emission reductions.

The Problem with Ozone “Smog” in Delaware

Why is ozone beneficial in the outer atmosphere, but harmful near the surface of the earth? It is because ground level ozone is one of the principal components of “smog,” and is a serious air pollutant that harms human health and the environment. High levels of ozone can damage the respiratory system and cause breathing problems, throat irritation, coughing, chest pains, and greater susceptibility to respiratory infection. High levels of ozone also cause serious damage to forests and agricultural crops, resulting in economic losses to logging and farming operations.

In general, ozone is formed when volatile organic compounds (VOCs) and oxides of nitrogen (NO_x) react to sunshine during hot summer days. Therefore, the period from May to September is defined as ozone season, and VOC and NO_x are defined as two major precursors of ozone. Many sources such as industrial stacks, gasoline stations, motor vehicles, airplanes, and even gas-powered lawn mowers, emit VOCs and/or NO_x. Controlling and reducing VOCs and NO_x emissions from those sources is critical to controlling ozone concentration in our air.

One problem with ozone is that the gas and its precursors can move with the wind for hundreds of miles. For example, VOCs and/or NO_x emissions in an upwind state such as Ohio can contribute to the ozone problem in a downwind state such as Delaware. This problem is commonly known as the “long-range ozone/precursor transport” or simply, the “ozone transport” problem.

After Congress passed the Clean Air Act Amendments in 1990, EPA designated Delaware’s Kent and New Castle Counties as “severe non-attainment areas” under the 1-hour ozone national ambient air quality standard (0.12 parts per million [ppm], 1-hour average), because the air monitors in those two counties showed ozone concentrations over 0.18 ppm, much greater than the standard, and slightly above the standard in the previous three years (1987, 1988 and 1989). The Clean Air Act required Delaware to attain the 1-hour ozone standard by 2005.

In 2005, EPA replaced the 1-hour ozone standard by a more stringent 8-hour standard (0.08 ppm, 8-hour average), and designated all three counties in Delaware as “moderate non-attainment areas,” because the monitors in those three counties showed 8-hour average ozone concentrations slightly above 0.092 ppm in the previous three years. The Clean Air Act requires Delaware to attain the 8-hour ozone standard by 2010.

In the past 30+ years, especially since 1990, controlling emissions of ozone precursors (VOCs and NO_x) has been one major driving force in Delaware’s air quality campaign. As the primary regulatory branch engaging in air quality management in Delaware, DNREC’s Air Quality Management (AQM) Section has developed more than 40 regulations, and most of them have numerous sections targeting different emission sources. For example, Regulation 24 has 50 individual sections for controlling different VOCs emission sources.

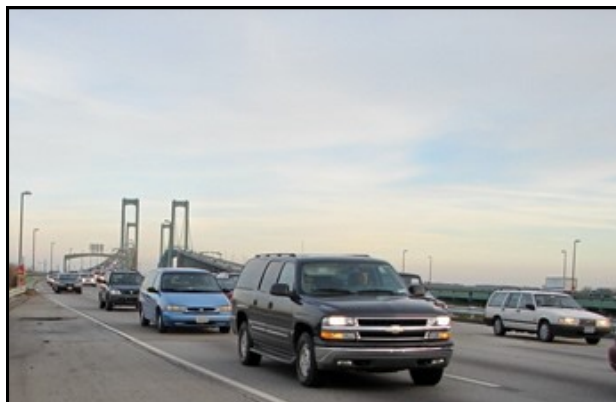
In addition, Delaware has actively participated in many national and regional control programs to solve the ozone transport problem. Many of Delaware’s air regulations are promulgated according to federal and regional rules.

Delaware’s efforts in controlling the ozone problem are encouraging. In particular, both VOCs and NO_x emissions in Delaware have been reduced significantly since 1990. Delaware emission inventories indicated that from 1990 to 2002, the state-total emissions were reduced about 40% for VOCs and about 20% for NO_x. The decreasing trends are expected to continue.

In addition, ambient monitors in all three counties in Delaware recorded ozone concentrations in compliance with the 1-hour ozone standard, indicating that Delaware attained the 1-hour ozone standard in 2005. Further, Delaware ambient monitoring data for the new 8-hour ozone standard from the last 3 to 4 years have demonstrated a clear decreasing trend in the 8-hour ozone concentrations throughout the entire state.

The air quality staff will continue working diligently with colleagues from other agencies, concerned citizens, and the regulated community toward our common goal of better air quality in Delaware.

Article by Frank Gao, AQMS



Mobile Sources: Major Source of Ground Level Ozone

Thinking About Burning Trash or Yard Waste? Think Again!

- Open Burning should be reported to DNREC's Toll-free 24-hour Complaint Line at 1-800-662-8802 or #367 for Verizon Wireless customers.

- Regulation 1113 and Restrictions can be found at: <http://www.awm.delaware.gov/Info/OpenBurning-Main.htm>

- Composting and Mulching Information can be found at: <http://www.dnrec.delaware.gov/yardwaste/YardWasteHomeowners.htm>

For many of us, a “burn barrel” at our parents or grandparents’ house was a regular fixture when we were kids. Of course, the U.S. population was less than half of what it is now, and we know more about better ways to recycle “trash” and yard waste. DNREC has prohibited the burning of trash, garbage and other trade wastes since the first open burning regulation was developed in the late 1960s. All open burning activities are banned during the Ozone Season from May 1st to September 30th with the exception of recreational or ceremonial fires such as barbecues, campfires and fires for scouting activities. These fires are limited to a size not to exceed 27 cubic feet of material (3x3x3 feet). However, during Air Quality Alert Days (forecast as Orange or Red—see cover story), these fire activities are banned as well.

DNREC’s Air Quality Management Regulation 1113 on Open Burning allows homeowners, land managers and farmers some open burning activities from the beginning of October through the end of April. These activities are subject to conditions that will minimize the negative impacts on air quality. During these fall, winter and spring months, permissible open burning activities include:

- Recreational or ceremonial fires such as barbecues, campfires and fires for scouting activities.
- Domestic burning of small amounts of yard waste and garden waste generated from a residential property owner.
- Some types of burning of vegetation from a farm, an orchard, nursery, tree farm or other agricultural land.
- Burning of vegetation for improving wildlife habitat, invasive species manage-

ment, and other forest and natural area management.

- Live fire training exercises conducted by authorized Fire Companies such as the demolition of structures and instructional events conducted by the Delaware Fire School.

Among the reasons for banning yard waste burning is because it typically contains a high amount of moisture. Moisture reduces the efficiency of burning producing more air pollutants such as carbon dioxide, nitrogen oxides and polycyclic aromatic hydrocarbons. Burning household trash has also been found to generate significant amounts of dioxins.

However, yard wastes are easily recyclable. Homeowners should therefore consider the alternatives – composting and mulching. Chipping and shredding yard waste and garden debris reduces the amount of material for disposal while generating a beneficial garden product. The decomposed materials form a rich, dark soil called humus. Humus returns nutrients to the soil, improves soil texture, and promotes new plant growth. For more information, please see the sidebar.

Article by Valerie Gray, AQM



Open Burning of Construction Debris

RGGI: Thinking Globally & Acting Locally on Climate Change

What exactly is RGGI? The Regional Greenhouse Gas Initiative (RGGI or "Rejie") is a cooperative effort by ten Northeast and Mid-Atlantic states—Connecticut, Delaware, Maine, Maryland, Massachusetts, New Hampshire, New Jersey, New York, Rhode Island and Vermont—to design a regional cap-and-trade program for carbon dioxide emissions from power plants in the region.



Connecticut Delmarva Generation-Edge Moor Power Plant
—Conectiv, 2005

New York Governor George E. Pataki sent letters to the eleven governors from Maine to Maryland in April 2003, inviting the states to participate in discussions to develop the regional cap-and-trade program within two years. By July 2003, the governor had received positive responses from nine of those governors, including Delaware. The states agreed to have their representatives participate actively in the discussions.

Staff representatives were assembled in August 2003 from the participating states' environmental agencies, as well as many of the state energy regulatory agencies. The group, called the "RGGI Staff Working Group," drafted an action plan that lays out the process to develop a regional cap-and-trade program covering carbon dioxide emissions from power plants.

The environmental commissioners and many of the energy regulatory agency chief executives endorsed the action plan on September 29, 2003. The initiative will first be aimed at developing a program to reduce carbon dioxide emissions from power plants in the participating states, while maintaining energy affordability and reliability. After the cap-and-trade program for power plants is implemented, the states may consider expanding the program to other kinds of sources.

Seven states announced an agreement to implement the Regional Greenhouse Gas Initiative on December 20, 2005, as outlined in a Memorandum of Understanding (MOU) signed by the governors of the participating states. The states that initially signed the MOU are Connecticut, Delaware, Maine, New Hampshire, New Jersey, New York, and Vermont. Massachusetts, Rhode Island and Maryland have subsequently signed on to the MOU bringing the state total to ten. The MOU outlines the program in detail, including the framework for a model rule. The participating states issued a model rule for the RGGI program on August 15, 2006.

The initiative will go into effect on January 1, 2009. DNREC's Air Quality Management Section is in initial stages of adopting the model rule for Delaware power plants. A stakeholder work group is anticipated to be formed this summer to discuss how the RGGI model rule should be adopted for reducing greenhouse gas emissions from Delaware's power plants. For more information on RGGI, please visit the RGGI website at:

www.rggi.org.

By Valerie Gray, AQM, with excerpts from rggi.org

On December 20, 2005, seven states announced an agreement to implement the Regional Greenhouse Gas Initiative, as outlined in a Memorandum of Understanding (MOU) signed by the governors of the participating states.

Recycling Assistance Grant Awards

DNREC and the Governor's Recycling Public Advisory Council (RPAC) have awarded a total of \$50,000 in Recycling Assistance Grants for fiscal year 2007 funding eight proposals to implement or expand recycling and waste reduction programs. Although there were more requests than funding available, the eight proposals are:

- **Wilmington Department of Public Works – \$20,000:** The Department will implement an outreach initiative promoting the City's curbside recycling program to maximize participation. They also will maintain detailed records on participation rates, set-out rates, and quantities of materials diverted from the landfill through the program.
- **Delaware Academy of Science/Iron Hill Museum, Newark – \$5,400:** The museum will implement an educational/outreach program on recycling, targeting about 40 elementary schools in New Castle and Kent counties, with a focus on grades 3 through 6. Activities planned include an essay contest, collecting paper at home, prizes for can collecting, and surveys of students and their parents before and after hearing about recycling through the program.
- **Sussex Central Middle School, Georgetown – \$365:** The school will educate students about the importance of recycling and implement a collection program for recyclables targeting plastic, paper and milk containers. Activities planned include promoting the Green Team, conducting a waste audit of paper and other trash being discarded in classrooms, and training Student Council and Honor Society members to educate their fellow students about recycling.
- **North Star Elementary School, Hockessin – \$2,287.50:** The school will educate students about the importance of recycling and implement a school-wide collection program for recyclables. Activities planned include monitoring and analyzing waste flow in the school and cafeteria, looking into replacing Styrofoam cafeteria trays with reusable plastic trays and exploring the possibility of composting on school grounds.
- **Thurgood Marshall Elementary School, Newark – \$3,066.95:** The school will educate students about the importance of recycling and implement a recycling collection and outreach programs. Activities planned include paper and beverage container recycling,



an on-site composting program at the school, and collecting and analyzing data from the recycling programs.

- **University of Delaware, Student Move-Out – \$8,600:** The University will conduct recycling and waste minimization programs, including outreach, to maximize waste diversion during the annual student move-out. Activities include informing and educating students on the importance of waste reduction, gathering data on the amount of materials being reused, recycled and discarded, and implementing a program for collecting discards for reuse and recycling.
- **Town of Camden – \$5,392:** The town will expand its curbside recycling program and purchase new recycling bins for approximately 500 new households.

- **University of Delaware Cooperative Extension – \$4,888:** The Cooperative Extension will educate about 2,000 Delaware elementary school students on the importance of composting through a series of presentations. The Extension also plans to distribute composting bins to 400 youth and 1,500 "Start Composting Today" brochures.

More than \$103,600 in state funding was requested by nine applicants this grant cycle. Of the eight applicants who were awarded funding, three received less funding than was requested, since only a total of \$50,000 was available for this year's grants.

The Recycling Assistance Grant Program is a matching grant program in which recipients must provide at least 25 percent of the total project cost in either cash or in-kind contributions. Funding for the program is subject to annual authorization by the General Assembly. If funding is authorized for Fiscal Year 2008, DNREC will announce the availability of grant money during the fall of 2007, with applications due by January 31, 2008.

For more information on the grant program, please contact Bill Miller, Solid and Hazardous Waste Management Branch, at 302-739-9403 or visit:

www.awm.delaware.gov/recycling.

Excerpts from DNREC Press Release 4/26/07

The Work of an Enforcement Officer

Officer Matthew Chamberlain, one of the Division's 12 Enforcement Officers, is on the job at 7:00 AM in New Castle County. He starts his day in his assigned Dodge Durango, a photo of his baby son tucked neatly above the visor. He calls the Kent Communications Dispatch Center System and cheerfully gives them the "10-8" code for being ready and available, back in service. After reporting for duty, he obtains the previous night's reports that were phoned in on the 24-hour environmental report and spill notification line, and starts investigating the complaints. Officer Chamberlain prepares himself for "whatever the day brings."



Officer Chamberlain Inspects Bags of Asbestos Material Dumped on Governor Lea Road

The day can be quite varied for an Enforcement Officer. Response to major oil spills like those from the oil tankers, *Athos* and *Bermuda Islander*, are part of his responsibilities. In addition to participating in the tri-state oil spill cleanup activities from the *Athos* and *Bermuda Islander*, Officer Chamberlain was the first to respond to the oil spill from the IPC facility over a year ago, and worked through the night, as well as the following days, to help contain the oil spill on the Christina River. He was also the first to respond to the chlorine railcar derailment at the DuPont Edgemoor facility, and he continues to participate in the on-going response to air quality and dust issues associated with the Claymont Steel facility.

When it comes to the environment, the Enforcement Officers are highly trained and skilled. In addition to the required four months of full-time training at the

Delaware State Police Academy in Dover, they have 40-hour hazardous waste operations training, as well as hazardous waste emergency operations technician training, and are part of the Emergency Response Team for DNREC. Many of the Enforcement Officers have additional, specialized emergency response training for addressing emergencies such as leaking railcars and drums. They work side by side with local fire departments and emergency responders and participate in exercises with the New Castle County Industrial Hazardous Materials Alliance.

Their trucks are equipped with emergency response and crime scene investigation or CSI equipment including: a laptop computer, fingerprinting kit, sampling kit, camera, personal protective equipment such as self contained breathing apparatus, fire-fighting turnout gear and extinguisher, a photo ionizing device for detecting gases, first aid kit, caution tape, flares, spill pool, adsorbent pads and oil dry, as well as a personal floatation device and a survival suit for when they are on the water.

When not responding to major environmental emergencies, the officers are on the road everyday, checking complaints that have been phoned in on the 24-hour environmental report and spill notification line, issuing misdemeanor criminal citations for violating burning regulations, diesel engine idling, illegal discharges of wastewater, dumping of trash or removal of asbestos, or septic system violations, as well as issuing notices of violations to individuals and businesses for other environmental violations. Vigilant enforcement is part of every Enforcement Officer's mandate to protect Delaware's precious resources, and human health and the environment.

Article by Christina Wirtz, DAWM



Off. Chamberlain follows up with Colin Gomes, AQM

**DELAWARE
DEPARTMENT OF
NATURAL
RESOURCES AND
ENVIRONMENTAL
CONTROL**

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We're on the web!
www.awm.delaware.gov

**Visit the Statewide
Calendar of Events**

at:

<http://www.delaware.gov/egov/calendar.nsf/FutureMeetings/ByDepartment?openview&Agency=Natural%20Resources%20and%20Environmental%20Control>

**for a complete listing
of the Department's
events.**



Integrity, Respect and Customer Focus

The Division of Air and Waste Management oversees the handling, transferring and storing of solid and hazardous materials by regulating, monitoring, inspecting, enforcing and responding to emergencies. The Division also implements the state's air monitoring, permitting and compliance programs. The Division's responsibilities include administering air and waste programs including:

- Delaware's Air Quality Section — air monitoring and regulating air emissions.
- Tank Management Branch — maintenance and installation of underground and above ground storage tanks & overseeing cleanup of tanks which may leak.
- Emergency Prevention and Response Branch — preventing industrial accidents, assuring emergency planning and community right-to-know, and responding to environmental emergencies.
- Enforcement Section — the Environmental Protection Officers enforce the state's air, waste and water pollution laws, and participate on DNREC's Environmental Response Team by responding to environmental emergencies.
- Site Investigation and Restoration Branch — remediation of sites contaminated by hazardous substances (Superfund/Brownfields/Voluntary Cleanup Program).
- Solid and Hazardous Waste Management Branch — reuse, recycling, transport and disposal of solid and hazardous waste.

EASY REFERENCE PHONE NUMBERS

24-Hour Report and Spill Notification Line - 1-800-662-8802
Aboveground Storage Tanks - 302-395-2500
Air Quality - Dover Office - 302-739-9402
- New Castle Office - 302-323-4542
Asbestos - New Castle - 302-323-4542
- Kent & Sussex - 302-739-9402
Boiler Safety - 302-744-2735
Brownfields - 302-395-2600
Emergency Prevention and Response - 302-739-9404
Enforcement - 302-739-9401 or 1-800-662-8802
Hazardous Waste - 302-739-9403
Medical Waste - 302-739-9403
Open Burning - 302-739-9402
Outreach Ombudsman - 302-395-2515
Recycling - 302-739-9403
Site Investigation & Restoration Branch (Superfund/Brownfields) - 302-395-2600
Solid Waste - 302-739-9403
Underground Storage Tanks - 302-395-2500

DID YOU KNOW?

With tougher restrictions on open burning and diesel truck/bus idling, the Division's Environmental Officers have increased enforcement actions by 50% over the same time period last year. The increase can be attributed to the officers' proactive patrol checks that target violations of the state's idling and open burning regulations, as well as those for vapor recovery and waste hauling. The patrols resulted in 109 enforcement actions, bringing attention to violations that can contribute to harmful health and environmental effects.