Exceedance Locations and Levels

On Thursday, September 8, 2016, there were no exceedances in New Jersey of the new 8-hour average ozone NAAQS of 70 ppb that became effective in December 2015. The highest 8-hour average ozone concentration recorded in New Jersey on September 8, 2016 was 70 ppb at the Colliers Mills station. The highest 1-hour average ozone concentration recorded on September 8, 2016, in New Jersey was 95 ppb at Colliers Mills, which is below the 1-hour ozone NAAQS of 120 ppb.

The number of days in 2016 on which exceedances of the new 8-hour ozone NAAQS of 70 ppb were recorded in New Jersey remains at twenty-three (23). By the 8th of September in 2015, there were a total of seventeen (17) days on which ozone exceedances were measured in New Jersey (based on the former 75 ppb NAAQS of 2008), and there were two (2) days by this same date in 2014.

There is a group of monitoring stations in designated counties of five (5) states, New York, Connecticut, Pennsylvania, Delaware and Maryland, that are included in New Jersey’s ozone nonattainment areas. From this group of stations in the neighboring states, there were two (2) exceedances of the new 8-hour ozone NAAQS of 70 ppb recorded on Thursday, September 8, 2016 (see Table 1):

Table 1: Ozone NAAQS Exceedances at Other Monitoring Stations in New Jersey’s Ozone Nonattainment Areas on September 8, 2016

<table>
<thead>
<tr>
<th>STATE</th>
<th>STATION</th>
<th>Daily Maximum 8-Hr Average (ppb)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT</td>
<td>Danbury</td>
<td>80</td>
</tr>
<tr>
<td>CT</td>
<td>Westport</td>
<td>71</td>
</tr>
</tbody>
</table>

The highest 1-hour average ozone concentration recorded was 101 ppb at the Danbury station in Connecticut, which is below the 1-hour ozone NAAQS of 120 ppb.

Thursday marks the 25th day in 2016 on which an exceedance of the new 8-hour ozone NAAQS of 70 ppb was recorded in Connecticut. The number of days remains at eighteen (18) for New York, eleven (11) for Pennsylvania, eight (8) for Delaware, and seven (7) for Maryland.
Figure 1. Ozone Air Quality Index for September 8, 2016

**Daily Ozone AQI**
*Thursday, September 08, 2016*

The color orange shows where ozone reached a level that was **Unhealthy for Sensitive Groups** and there was an exceedance of the ozone standard (70 ppb). The color red signifies **Unhealthy** ozone levels and at these concentrations, ozone can begin to have adverse effects on the general population. Yellow represents **Moderate** ozone and air quality is acceptable at this level except for those that are unusually sensitive. Areas that are green means ozone levels are **Good** and pose little risk.

Source: [www.airnow.gov](http://www.airnow.gov)

For ozone terminology definitions see NJDEP Air Quality Planning’s Glossary and Acronyms webpage: [http://nj.gov/dep/baqp/glossary.html](http://nj.gov/dep/baqp/glossary.html)

**Weather**
Meteorological data from across the region showed temperatures reached into the mid 90°F’s, while winds were from the north/northeast with the remnants of tropical storm Hermine over the Atlantic Ocean. At the same time a decaying frontal boundary was located over the region allowing for recirculation of winds. This weather feature led to increased cloud cover over New Jersey and southern New York with isolated afternoon showers and thunderstorms. Interior Connecticut experienced partly sunny skies allowing the local ozone concentrations to exceed the ozone standard. Abundant sunlight and warm temperatures, are all meteorological conditions commonly seen on high ozone days.

**Where Did the Air Pollution that Caused Ozone Come From?**
Figures 2, 3, and 4 show the back trajectories at different wind heights for the monitored exceedances on September 8, 2016. The figures illustrate where the winds came from during the 48 hours preceding the high ozone event.

The low level wind (Figure 2) traveled southwest from Massachusetts down to the NYC metropolitan area where they picked up emissions from cars, trucks, and industry before recirculating back up to the Connecticut monitors. The back trajectories for the mid-level winds (Figure 3) show a similar pattern except that the wind originated over the ocean. The higher level winds (Figure 4) originated over the
Great Lakes region and traveled across New York bringing additional emissions from industry, and power plants to Connecticut. These winds, in combination with the lower level winds, caused air pollution from a variety of mobile and stationary sources to be transported in the areas of Connecticut that experienced high ozone on September 8, 2016.

**Figure 2. 48-hour Back Trajectories for September 8, 2016 at 10 meters**

Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The low level wind (10 meter) traveled south from Massachusetts, picking up emissions from cars, trucks, and industry, on the way to Connecticut.
Figure 3. 48-hour Back Trajectories for September 8, 2016 at 500 meters

NOAA HYSPLIT MODEL
Backward trajectories ending at 1800 UTC 08 Sep 16
NAMS Meteorological Data

Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The mid-level wind (500 meter) originated in the Atlantic Ocean and traveled across New England, bringing pollution from cars, trucks, and industry to the exceedance monitors in Connecticut.
Figure 4. 48-hour Back Trajectories for September 8, 2016 at 1500 meters

NOAA HYSPLIT MODEL
Backward trajectories ending at 1800 UTC 08 Sep 16
NAMS Meteorological Data

Wind trajectories look backwards 48 hours to show what direction the wind was blowing during that time frame. The higher level wind (1500 meter) originated in the Great Lakes Region and traveled across New York transporting emissions from large industrial sources and power plants.
**How is Smog Created?**

Ground-level ozone, also known as smog, is an air pollutant known to cause a number of health effects and negatively impact air quality and the environment in the state of New Jersey. Smog is formed when oxides of nitrogen (NOx) and volatile organic compounds (VOCs) react in the presence of sunlight. Smog can irritate any set of lungs, but those with lung-related deficiencies should take extra precautions on bad ozone days.

**Find Out About Air Quality Every Day**

The “What's Your Air Quality Today?” page at [http://www.nj.gov/dep/cleanairnj/](http://www.nj.gov/dep/cleanairnj/) tells you how to sign up to receive notifications and find out when your local air has reached unhealthy ozone levels.