

Ozone National Ambient Air Quality Standard Health Exceedance on May 5, 2015

Exceedance Location and Levels

On Tuesday, May 5, 2015 an exceedance of the 8-hour average National Ambient Air Quality Standard (NAAQS) for ozone (75 ppb) was recorded at one (1) New Jersey station: Colliers Mills with a concentration of 81 ppb. The highest 1-hour average ozone concentration recorded on May 5, 2015 was 84 ppb (also at Colliers Mills), which is below the 1-hour NAAQS of 120 ppb.

There is a group of monitoring stations in designated counties of 5 states; New York, Connecticut, Pennsylvania, Delaware and Maryland, that are included in New Jersey's ozone non-attainment areas. From this group of stations in the other neighboring states, there were no exceedances of the 8-hour ozone NAAQS recorded on Tuesday, May 5, 2015. The highest 8-hour average ozone concentration recorded was 75 ppb at the Susan Wagner station in New York. The highest 1-hour average ozone concentration recorded was 83 ppb, also at Susan Wagner. Figure 1 shows the ozone AQI across the region for May 5.

Figure 1. Ozone Air Quality Index for May 5, 2015



Source: www.airnow.gov

For ozone terminology definitions see NJDEP Air Quality Planning's Glossary and Acronyms webpage: <http://nj.gov/dep/baqp/glossary.html>

Weather

Meteorological data from McGuire Air Force Base showed temperatures reached 83°F. Winds were light from the west/southwest as a weak and slow moving cold front was approaching the area. Cloud cover did increase over the course of the day. However, it was not enough to limit ozone formation and prevent an exceedance of the standard at the Colliers Mills site. Sufficient sunlight, along with warmer temperatures, and light west/southwest winds are all weather features commonly seen with an ozone exceedance. Cloud cover was enough over remaining areas to prevent an exceedance of the standard.

Where Did the Air Pollution that Caused Ozone Come From?

Figure 2 shows the back trajectories for the monitored exceedance for May 5. Figure 2 shows that surface layer winds (red line) traveled up along the I-95 corridor, carrying emissions from motor vehicles. Mid and higher level winds (blue and green lines) originated from the west, where there are many coal fired power plants and large industrial sources. The combination of these winds caused air pollution from both mobile sources and distant power plants to be transported into central New Jersey where the high ozone occurred on May 5.

On May 4th there were several forest fires (totaling approximately 83 acres) in the Whitesbog area of Woodland Township, just a few miles southwest of the Colliers Mills ozone monitoring site. Historically Colliers Mills records some of the highest ozone values throughout New Jersey's monitoring network, but elevated ozone concentrations on May 5th could have been exacerbated by these fires. Forest fires release volatile organic compounds, which are major ozone precursors, into the atmosphere and the predominant winds for those days were from the southwest. The increased precursor emissions may have contributed to the higher ozone values seen on May 5th.

Figure 2. 48-hour Back Trajectories for May 5, 2015

