

# Air Quality Summary

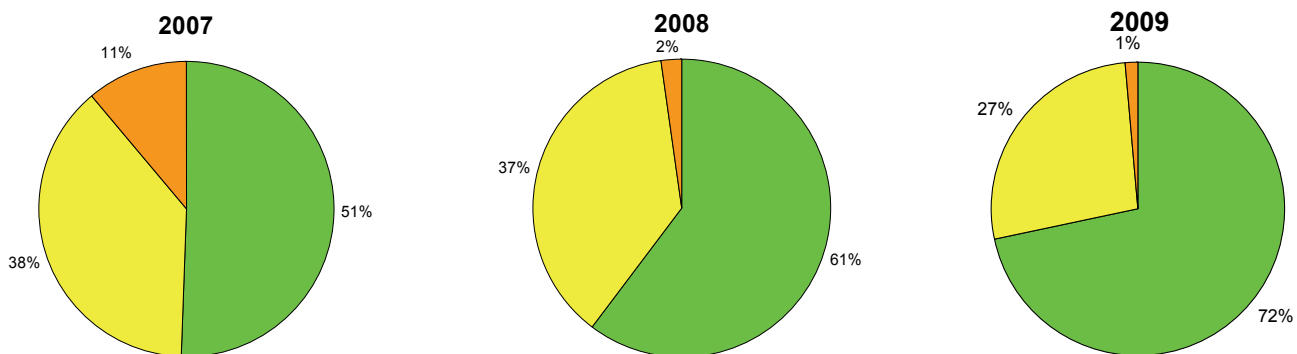
Youngstown: April 1 through October 31, 2009

There were fewer Moderate and Unhealthy for Sensitive Groups (USG) Air Quality Index (AQI) days during the 2009 summer season in Youngstown compared to the summer seasons of the previous two years. AQI levels over 100 were observed on less than 1% of days this year, compared to 2% in 2008 and 11% in 2007. Particle pollution (PM<sub>2.5</sub>) was the primary pollutant on most days when Moderate or USG levels were reached; only 20 (32%) of those days reaching at least Moderate AQI levels were attributable to ozone as the dominant pollutant. This pattern is similar to those during the summer seasons of 2007 and 2008, when PM<sub>2.5</sub> was the primary pollutant on the majority of days.

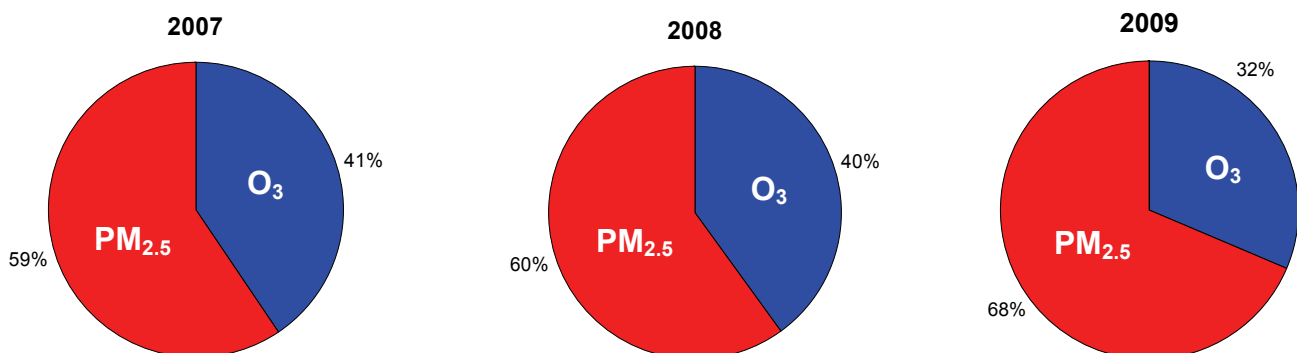
The improved air quality this summer was likely attributable, in part, to a cooler-than-normal summer over much of the Midwest and Great Lakes regions (see page 2). Furthermore, reduced emissions of ozone precursors due to the implementation of regulatory programs may have contributed to the lower number of USG or high ozone days this year.

Note: In early spring 2008, a more stringent ozone standard of .075 ppm replaced the .084 ppm standard. A PM<sub>2.5</sub> standard of 35.5 µg/m<sup>3</sup> was also implemented in fall 2006. The data shown in this flyer are based on these new standards for all years, ensuring that previous years' data are comparable with 2008 data.

## Number of Days at Each AQI Level



## Dominant Pollutant on Days with AQI Levels of Moderate or Above





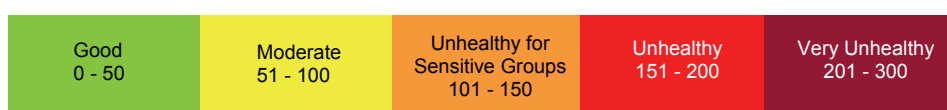
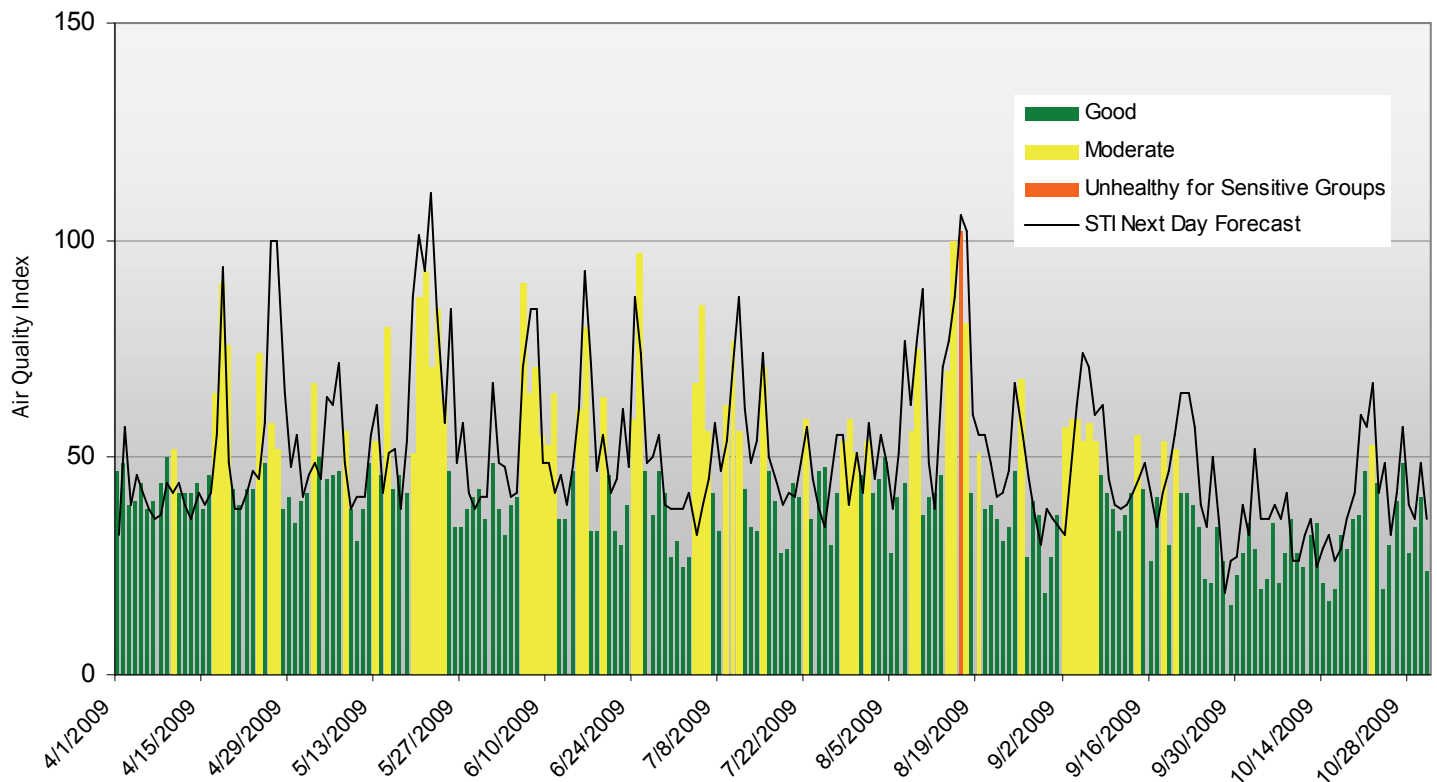
# Highest AQI Days

## 2009 Exceedance Days

During the 2009 summer season, the 24-hr PM<sub>2.5</sub> standard was exceeded on one day in the Youngstown area. There were no 8-hr ozone exceedances.

DATE	OBSERVED AQI	POLLUTANT	MONITORING SITE
8/16/09	102	PM <sub>2.5</sub>	Youngstown—Head Start

## Daily Maximum AQI Values and Forecasts



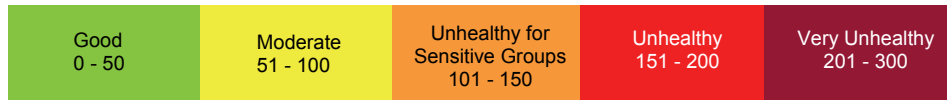
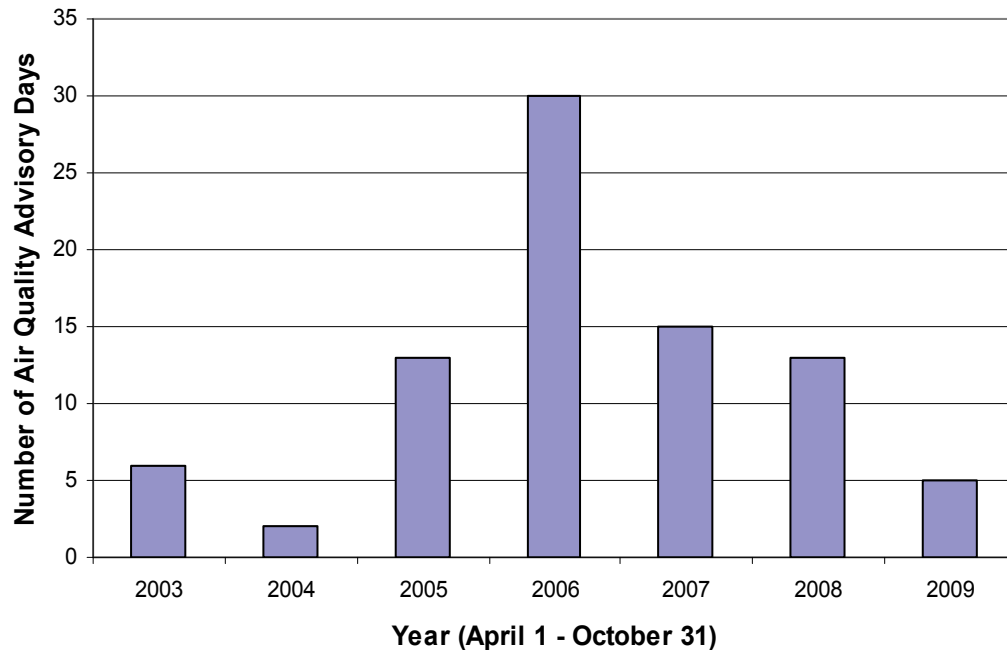
# Air Quality Advisory Days

## Air Quality Advisory Days

Five Air Quality Advisory Days were called during the 2009 summer season. Maximum AQI levels reached the USG threshold on one of these days. When AQI levels did not reach USG as predicted, the air was still polluted with an average maximum observed AQI of 83.

DATE	POLLUTANT	NEXT-DAY FORECAST	SAME-DAY FORECAST	MAXIMUM OBSERVED
5/20/09	Ozone	101	101	87
5/21/09	Ozone	93	106	93
5/22/09	Ozone	111	101	71
8/16/09	Ozone	106	111	61
	PM <sub>2.5</sub>	105	103	102
8/17/09	Ozone	101	101	51
	PM <sub>2.5</sub>	102	103	81

As indicated in the chart below, the number of Air Quality Advisory Days issued has decreased each year since 2006.



# Next-day Forecast Performance

## Next-day Forecast Statistics for Moderate to USG AQI Threshold

STI provides current, next-day, and extended AQI daily forecasts for the Youngstown-Warren region. A statistical summary of next-day forecasting performance is provided below, using a variety of statistical measures explained at the bottom of the page. Statistics are based on a comparison between forecasted and observed AQI levels for the Moderate-USG threshold.

The overall forecast performance was good. Of the 212 forecasts issued, 208 were correct, resulting in a Percent Correct of 99%. In addition, observed AQI levels were above the 101 AQI threshold on one day, which STI meteorologists correctly forecast, resulting in a Probability of Detection (POD) of 100%. Finally, of the four days with a next-day forecast above 100 AQI, three of them did not verify, leading to a False Alarm Rate (FAR) of 75%. The chart at the bottom of page 3 shows that STI was able to capture the AQI trend for most episodes. STI meteorologists conducted several case studies on missed forecasts to improve the FAR in the future.

## Statistical Measures

**Percent Correct (PC):** The percentage of forecasts that correctly predicted whether the observations would be above or below a certain threshold.

**False Alarm Rate (FAR):** The percentage of cases for which a forecast of high pollution (at or above the threshold) was incorrect.

**Probability of Detection (POD):** The ability to correctly predict high-pollution events (at or above a certain threshold).

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