

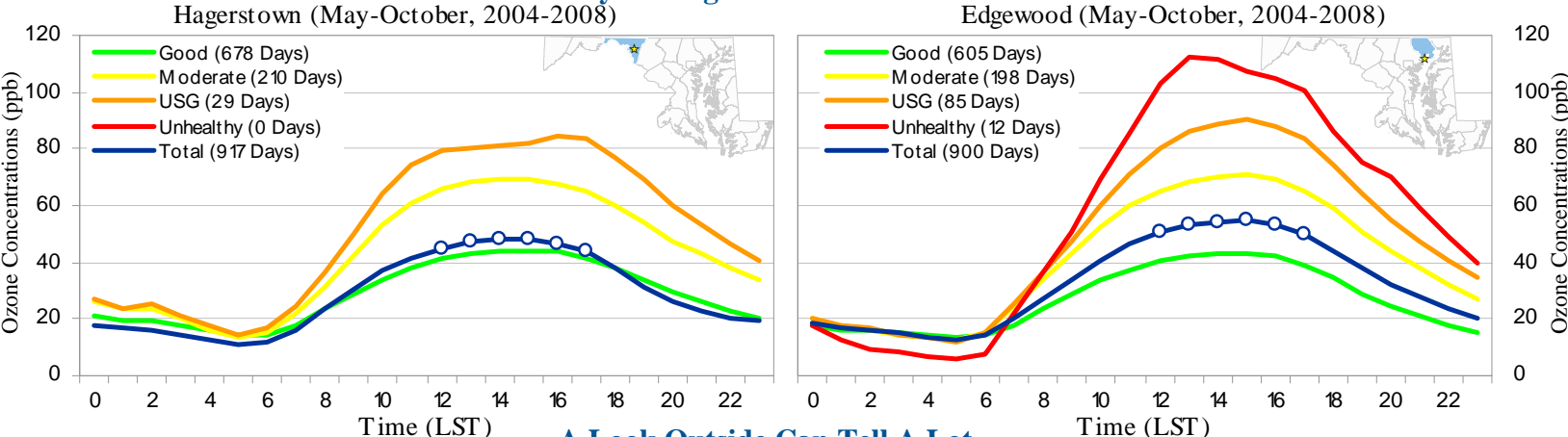
Air Quality Facts

OZONE – DIURNAL CLIMATOLOGY

WHEN IS OZONE THE WORST DURING THE DAY?

In Maryland, ground-level ozone pollution has a strong diurnal pattern with lowest concentrations exhibited before sunrise and highest concentrations occurring between noon and early evening (Noon – 5 PM). Before sunrise, ozone concentrations are low for two main reasons: (a) absence of mixing of polluted air from aloft down to the surface due to a nighttime (nocturnal) temperature inversion; and (b) destruction of ozone through contact with surfaces and “ozone scavenging” from reactions with Nitric Oxide (NO). At sunrise, the presence of sunlight allows Oxides of Nitrogen (NO_x) and Volatile Organic Compounds (VOCs) to chemically react to form ozone. Around 9 AM, surface heating allows the temperature inversion to break. Air aloft, which has higher ozone and ozone precursors (originating primarily from out of State), mixes down to the ground. The mixing down of ozone results in a substantial increase around 10 AM. This process is extremely important on bad air days as aloft ozone mixing down to the surface often exceeds the standard. In the afternoon, local effects such as, emissions and micro-meteorology (e.g. Bay/Sea Breeze), continue to contribute to the ozone concentrations observed at ground level. The combination of locally produced and transported ozone reach a peak between noon and early evening. After sunset, ozone destruction occurs at the surface and persists through the night. The duration of peak ozone on bad air days can persist through the late evening hours depending on the rate of ozone destruction after sunset and the maximum concentration. In addition, the severity of ozone pollution is different at rural, suburban, and urban centers. To learn more about these differences across the State, check out the Air Quality Facts on “Ozone – Extent of the Ozone Pollution Plume”

Hourly Averaged Ozone Concentrations



Frostburg Haze Cam (Western Maryland)

Baltimore Haze Cam (Central Maryland)



Negro Mountain Range
(on the Horizon)
~13-15 miles away
CLEARLY Visible!

Downtown Baltimore
~10 miles away
CLEARLY Visible!

Jul-21-2007 May-23-2008

May-03-2008 Jun-13-2008

Meadow Mountain
~6 miles away
**BARELY Visible
in Background!**

Downtown Baltimore
~10 miles away
NOT Visible!

Peak AQI: 111

Peak AQI: 154

During the summer, hazy conditions are a direct result of particle pollution, and they almost always occur in conjunction with an ozone pollution event. If you are not able to obtain real-time air quality information via the computer or the air quality hotline, a look outside can tell you a lot! Pick at least one visual vista(s) that is/are at least 7 miles away from your home and see whether you can see it. The rule of thumb is that the further you see, the safer the air is to breathe. If your vista is less clear or obstructed by haze, then the outside air is likely to be polluted. Protect your health by knowing the current air quality conditions and forecasts. Visit www.cleanairpartners.net or call the air quality hotline at 410-537-3247.

Air Quality Index (AQI)



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