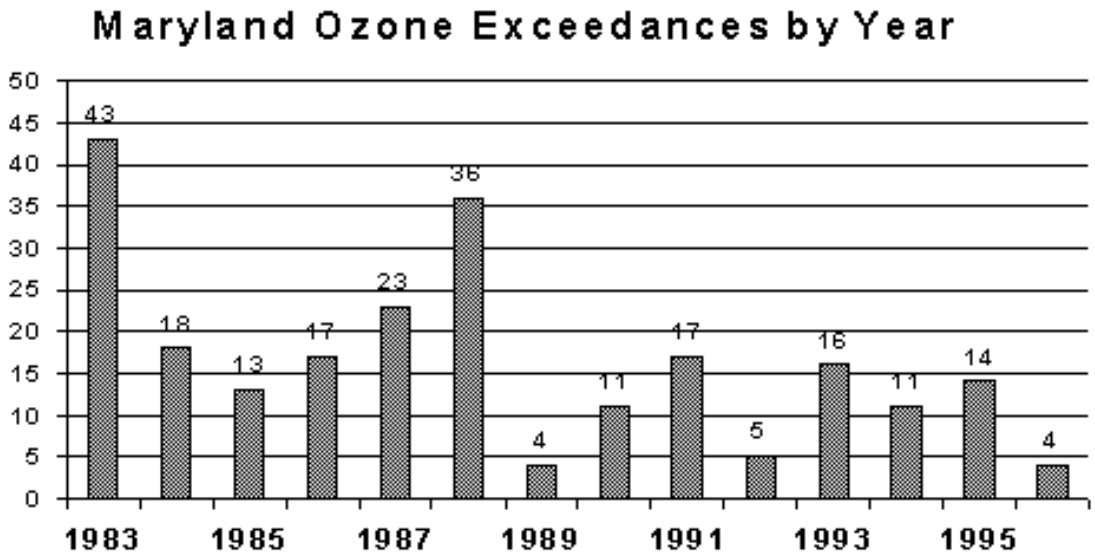
MARYLAND DEPARTMENT OF THE ENVIRONMENT

1996 Ground-level Ozone Report

1996 Weather

Tornadoes. Hurricanes. Nor'easters. Floods. Canadian Cold Fronts. 70 degree temperatures on the Fourth of July. All of these atypical summertime events were more the norm during one of the coolest and most bizarre summers on record. Officially, the summer of 1996 will go down in the record books as the 5th coolest since the National Weather Service began keeping records at BWI airport in 1950. In fact, the Baltimore region averages 31 '90 degree days' per summer; in 1996, there were 14, with only 6 of these days occurring after the month of June.

The unusual summertime weather can be readily attributed to a displacement of the jet stream, which is a "river" of fast flowing air that steers storm systems. During the summer months, the jet stream usually retreats northward to a position along the U.S.-Canadian border. This leaves much of the eastern U.S. under the oppressive influence of the Bermuda High, which is responsible for the typical hazy, hot, and humid weather that Marylanders are used to. However, rather than retreat northward as expected, the jet stream remained much farther south and often dug into the southeastern U.S.; this is a pattern usually seen in the fall and winter. This river of air acts as a 'pathway' for cold fronts and storm systems, and with the storm path firmly entrenched over the eastern U.S., strong storm systems ushered in plenty of rain as well as cool Canadian air and below normal temperatures. The good news for Marylanders (although many a summer vacation was spoiled) was the cool and wet weather meant below average levels of air pollution during 1996.

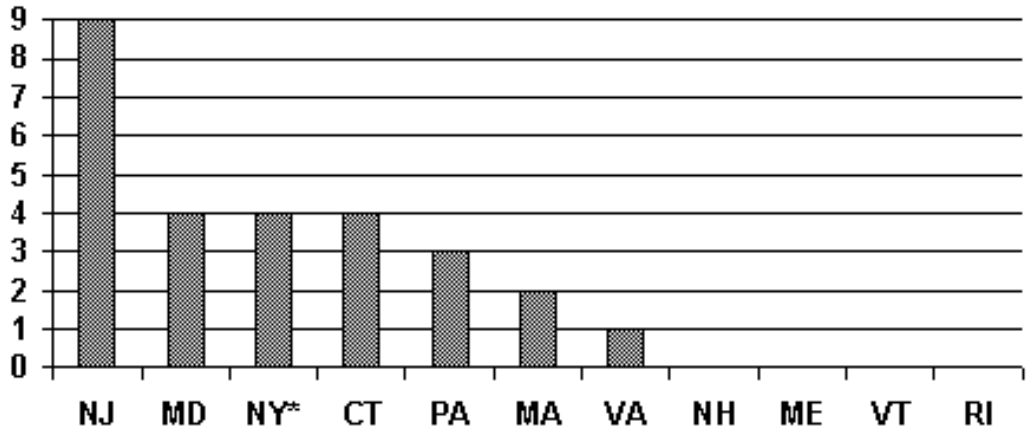


Ozone

Ozone, measured hourly, exceeds the federal health standard when values are above .12 parts per million, (ppm). The exceedances are called "code red" unhealthful air quality alerts in Maryland. Three ozone exceedances in a three year period are the federal limits for acceptable air quality. Maryland experienced levels above the standard four times in 1996 and 29 times in the last three years. The individuals who are most likely to feel the effects of moderate air pollution are the 600,000 Marylanders who suffer from respiratory ailments.

The ozone season was as mild as the summer. There were only 4 ozone exceedances in 1996, significantly less than the 14 observed in 1995. The weather patterns discussed above were responsible the exceptionally good ozone year. Maryland, which has at least tied for most exceedance days in the Northeast in the last two years was a distant second in 1996 along with New York and Connecticut. Whether ozone is transported into the region has been a long standing question. Several groups have researched this area, including NARSTO. NARSTO is a public/private partnership formed to determine how ozone travels within a region. Data from the summer of 1995 has become available and has yielded interesting results. For example, ozone levels of 100 ppb were measured west of Baltimore at heights of 1500 meters. In fact, high levels of ozone were recorded at the surface as well in rural areas, such as the Shenandoah Valley. This suggests that ozone transport may be an issue for more than just the northeast.

Ozone Exceedances in the Northeast - 1996



*Includes ground-level data only

Maryland's 1996 Ozone Exceedances

Eastern Standard Time

	1200	1300	1400	1500	1600	1700
22-Jun-96						
Fort Meade	131 ppb					
06-Jul-96						
Aldino			131 ppb	126 ppb		
Fairhill				139 ppb	135 ppb	
08-Jul-96						
Aldino				126 ppb	129 ppb	
Edgewood				127 ppb		
Essex				128 ppb		
23-Aug-96						
Aldino				131 ppb		
Edgewood			136 ppb	135 ppb	131 ppb	
Fort Meade				126 ppb		

Ozone Programs

The Maryland Department of the Environment monitors ozone levels at 16 locations throughout the state. The state has monitored air pollution for over twenty years and began forecasting ozone levels three years ago throughout the summer ozone season. In 1995, Maryland became the first state in the country to broadcast an animated ozone pollution map on the Baltimore television station WJZ-TV. This year, the state launched "Ozone Action Days" to help reduce air pollution emissions when the ozone levels are predicted to approach unhealthful levels.

In May of 1996 MDE launched Ozone Action Days as part of a broader effort called ENDZONE -- Partners to End Ground-Level Ozone. The purpose of Ozone Action Days is to advocate and facilitate air pollution prevention on days when meteorologists predict that weather is conducive to the formation of ozone (codes orange and red).

Ground-level ozone is formed when the sun reacts with two pollutants, volatile organic compounds (which are vapors from paint, gasoline and other liquids) and nitrogen oxides (exhaust from motor vehicles and smoke stacks). Weather plays an important role in forming ground-level ozone. Ozone is usually high when it is hot (upper 80's and 90's), with few clouds, and light winds. High concentrations of ozone at ground level are harmful and can inflame, irritate, and damage the lungs. Ozone also exists naturally in the earth's upper atmosphere (the stratosphere) where it shields us from the sun's ultraviolet radiation.

Ozone Action Days is an important new program not only because it helps to educate Marylanders about ground-level ozone, but also MDE estimates that significant air pollution reductions are possible if enough people prevent air pollution. For example, MDE estimates that if 20% of the population in the Baltimore/Washington region do not use lawn and garden equipment, paints, solvents, and hair sprays, volatile organic compounds would be reduced by 22 tons each day.

For more information on ozone, call the Maryland Department of the Environment's ozone information line at 1-800-539-6656.

Partner Participation

Approximately 80 businesses, government agencies and organizations in the Baltimore/Washington region have signed on as Ozone Action Days partners, which involves the following long-term actions:

- Educating employees and customers
- Selecting employees to coordinate Ozone Action Day activities including articles in newsletters and other publications

On Ozone Action Days, partners did the following:

- Alerted employees and customers that it was an Ozone Action Day
- Reminded employees and customers of individual actions that can reduce air pollution
- Postpone maintenance activities that cause air pollution
- Shift operations (if possible) to reduce emissions

Among the most innovative Ozone Action Day plans were the following efforts:

- MDOT posted messages informing people of Ozone Action Days and pollution prevention actions on electric highway signs
- Aberdeen Proving grounds agreed to shut down its medical waste incinerator when possible on Ozone Action Days
- AMOCO offered $4 rebated to individuals who filled up their gasoline tanks after dark on 5 Ozone Action Days
- John D. Lucas Co. Inc., shifted high polluting printing jobs away from Ozone Action Days
- H & S Bakery agreed to fly Ozone Action Days flags from their fleet of delivery trucks on Ozone Action Days
- International Paper worked with Odenton elementary school to educate children and their parents about ozone and created Ozone Action Days stickers to put on polluting products/equipment as a reminder to reduce use of those products on Ozone Action Days

In addition, the following companies included Ozone Action Days information in their newsletters:

- Printing Industries of Maryland
- Aberdeen Proving Grounds
- Northrop Grumman
- BGE
- MDE
- Prince George's Chamber of Commerce