

Clean Air Act Report

Biennial Report to the Maryland General Assembly

2003-2004



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EXECUTIVE SUMMARY

Thirty-four years ago when the initial Clean Air Act was enacted we could literally see the problems we faced. Black smoke belched from smokestacks, smoke from cars and trucks was an all too common sight and the air over Maryland's major metropolitan areas was far from clear. Since that time, we can safely say that our air quality has improved dramatically with respect to certain pollutants, despite large increases in population and the greater use of fossil fuels.

Owing mostly to improvements in gasoline, ambient concentrations of carbon monoxide and lead have been brought within the federal health-based standards. Coarse particulate matter, nitrogen dioxide and sulfur dioxide levels remain, as they always have, below the federal standards.

With respect to ground-level ozone, Maryland's most pervasive air quality problem, ambient levels for the one-hour ozone standard have improved. On average, we violate the one-hour standard half as much in recent summers as we did during the summers of the 1980's and early 1990's. When violations do occur, the peak values are now lower and the duration of the peaks has lessened. The years 2003 and 2004 were particularly clean for the one-hour standard: a total of three violations over the two-year period. The improvements in ozone air quality allowed Maryland to redesignate Kent and Queen Anne's counties from nonattainment to attainment in 2004. Progress on the ozone front is due to the institution of numerous pollution control programs aimed at mobile, stationary (smokestack) and area sources, such as gas stations and auto body shops.

These programs have reduced ozone-forming pollutants by 40% from 1990 levels – twice the national average. These localized reductions, despite their magnitude, are insufficient

on their own to bring about attainment with the one-hour ozone standard due to the negative influence of ozone transported from the Ohio River Valley and from areas south of Maryland. The extent of this influence can be seen most easily during the worst one-hour ozone episodes, when the concentration of ozone drifting in from out-of-state air masses have reached 110 parts per billion – with the standard being 120 parts per billion. This pool of ozone over Maryland mixes down as the day progresses and combines with local ozone-forming pollutants from Maryland sources. With the high levels of ozone being delivered to Maryland during such episodes, it is nearly impossible for Maryland to stay below the one-hour ozone standard. Some help, however, in addressing ozone transport has recently arrived in the form of a major federal program called the NO_x SIP Call. This program, implemented in 2003 within the Ozone Transport Region (OTR) and 2004 elsewhere, helps reduce ozone formation and ozone transport by bringing about emissions reductions from power plants in a twenty-two state region in the eastern half of the nation.

Despite the significant progress, Maryland's air pollution problems are not solved. A new eight-hour ozone standard and a fine particulate matter standard, both proposed by the U.S. Environmental Protection Agency (EPA) in 1997, are now final and need to be met in 2010. Much of Maryland is designated nonattainment for the eight-hour ozone and the fine particulate matter standard. Pollution transport, again from large emission sources west and south of Maryland, will be a significant factor in our effort to achieve these two standards. So too will be the emissions from smaller sources in the region southeast of Maryland, for such sources in this area can contribute to our ozone problems during certain meteorological events.

The issue facing Maryland is how to address these out-of-state emission sources. In this regard, the EPA is attempting to further address pollutant transport by developing a rule that imposes stricter standards on power plants. The rule, called the Clean Air Interstate Rule (CAIR), is principally the regulatory equivalent of the proposed Clear Skies Act. In the eyes of several states severely affected by pollutant transport, the rule does not provide enough reductions in NO_x emissions (for ozone) or sulfur emissions (for fine particulate matter) to effectively allow these states to achieve the new standards. The gap between the pollution benefits that the rule provides and what states would still need to do from an emissions control perspective to achieve attainment is much too great. In addition, the benefits achieved under the rule will accrue in the 2018-2020 timeframe, much too late to help in achieving the mandated 2010 deadline.

Maryland worked with the other member states of the Ozone Transport Commission (OTC) and developed an alternative to the Clear Skies Act and CAIR, which calls for larger emission cuts and to have them occur in time to benefit states facing a 2010 attainment deadline. The Commission adopted the alternative in 2004. Maryland is attempting to gather support from states beyond those of the OTC.

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The mission of the Maryland Department of the Environment (MDE), in part, is to ensure that the air is safe to breathe for all who live in and visit Maryland. Air pollution harms respiratory systems, contributes to illness, damages agricultural crops, and degrades water quality. MDE is involved in preventing and reducing emissions of air pollutants from stationary sources such as industries, utilities, and small businesses; and from on-road and non-road mobile sources, including vehicles, construction equipment, and yard equipment, through a variety of regulatory and educational activities.

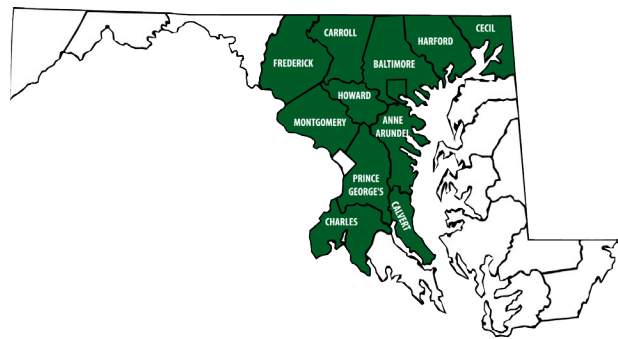
This report fulfills a requirement of Section 2-103.1 of the Environment Article, Annotated Code of Maryland, for the Secretary of the Environment to furnish a biennial report, in conjunction with the Secretary of Transportation, to the Legislative Policy Committee, the Senate Judicial Proceedings Committee, and the House Environmental Matters Committee. The purpose of this report is to provide “updated information on the State’s progress in meeting the requirements of the federal Clean Air Act Amendments of 1990, including current and projected methods and programs utilized in the State to reduce air pollution, the projected public and private costs of these methods and programs, and any other significant information.”



Maryland's Air Quality in Overview

The Maryland Department of the Environment (MDE) tracks Maryland's air quality with a state-wide system of air monitors that measure pollutants for which the United States Environmental Protection Agency (EPA), under the Clean Air Act, has established air quality standards: particulate matter, lead, sulfur dioxide, carbon monoxide, nitrogen dioxide and ozone. These pollutants are considered harmful to public health and the environment, and the federal standards specify concentrations in the outside (ambient) air that are not to be exceeded. An area may be designated as nonattainment if air monitor measurements exceed the standard (so-called exceedances.)

Maryland meets federal standards for lead, sulfur dioxide, carbon monoxide, nitrogen dioxide, and coarse particulate matter. Central Maryland, however, is in nonattainment of the current one-hour ozone standard.



*Nonattainment Counties
One-Hour Ozone Standard*

Overall, air monitoring data show that the State has made real progress in reducing ozone air pollution. The frequency, severity, and pervasiveness of ozone exceedances have decreased. Although exceedances of the current ozone standard continue to occur throughout much of central Maryland, peak exceedance values are lower now than in earlier years, the total number of monitoring stations recording exceedances of the standard is dropping, and the duration of peak exceedances is shorter.

In order to achieve this progress toward cleaner air, MDE has worked very aggressively to control emissions from most air pollution sources within Maryland. In many cases, other states in our region consider Maryland to be a model for air pollution control regulations development. But while air quality has improved, we now face additional challenges in the form of a new, stricter federal ozone standard and a newly-introduced federal standard for fine particulate matter (PM_{2.5}.) We have a long way to go to comply with these new requirements, and MDE must continue to develop strategies to address them.

Progress Toward Clean Air...

Redesignation Of Kent And Queen Anne's Counties

A single ozone monitor, located in the Millington Wildlife Management Area near Massey in Kent County, measures air quality in Kent and Queen Anne's Counties . The Millington monitor was installed at the EPA approved site in 1989. EPA regulations at 40 CFR, Part 50 Appendix H, state that if the number of exceedances for a three-year period, divided by three, is one or less, then the ozone standard has been attained. In the last three-year period, 2001 – 2003, the Millington monitor recorded three exceedances of the ozone standard: two in 2002 and one in 2003. There were no exceedances in 2001.

In December 2003, MDE submitted a formal request to EPA to redesignate Kent and Queen Anne's Counties as attainment for the one-hour standard for ozone. The request summarized the progress of the area in attaining the ozone standard, demonstrated that all federal requirements for attainment have been adopted, and presented a maintenance plan to assure continued attainment over the next ten years. MDE held a public hearing in Queen Anne's County on January 30, 2004 to present the redesignation request and maintenance plan.

On August 2, 2004, EPA issued a proposed rule to approve Maryland's redesignation request (69 FR 46124). The public comment period extended to September 1, 2004, and no comments were received during the comment period. EPA issued the final rule on October 21, 2004 (69 FR 61766) approving Maryland's redesignation request and the maintenance plan established in the SIP revision.

Kent and Queen Anne's Counties are the first nonattainment area under the one-hour ozone standard in Maryland to be redesignated to attainment of that standard. This marks an important milestone in MDE's efforts to improve air quality.

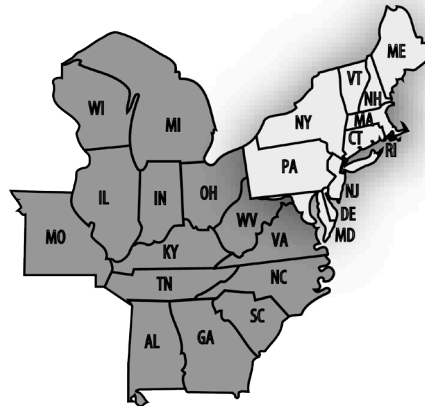
MDE's research has shown that transported pollution, that is, air pollution blowing in from other states, is a significant factor in the quality of Maryland's air. Unfortunately, on our worst days well over half, perhaps up to 70 or 80 percent, of Maryland's air pollution problem originates in upwind states.

Regional control programs aimed at reducing emissions for broad areas affecting states like Maryland are a significant part of the solution to our problem. Without strong regional controls, Maryland will be unable to achieve the new federal ozone and fine particulate matter standards and forced to turn to more aggressive local controls to achieve clean air. As a result, Maryland citizens and businesses would be severely affected economically... something that is not equitable and certainly not cost-effective.

Many of the control programs already adopted in Maryland would provide local air quality benefits in any state choosing

to adopt them and would provide air quality benefits to other downwind states affected by transported pollution. The more widespread these measures, the more benefits they provide. Candidate measures include our most recent rules for

cleaner paints, consumer products, and gas cans. These programs are being implemented now in the Ozone Transport Region (OTR) by the Ozone Transport Commission (OTC) member states (shown in white.)



Implementing regional control programs like these beyond the OTR can provide significant air pollution benefits for the entire eastern United States.

“Leveling the playing field” by requiring some baseline controls for all states that affect other states’ air quality makes good sense. Under the Clean Air Act, only EPA is authorized to impose multi-state requirements to address transported air pollution. MDE led the development and adoption of a multi-pollutant resolution by

the OTC, urging federal policy-makers to take appropriate actions to address the critical issue of air pollution transport.



Current Air Quality Trends and the Effects of Weather

During the summer of 2004, Maryland experienced only one day when air quality levels reached Code Red conditions for ground level ozone, indicating unhealthy levels and an exceedance of the current federal ozone standard. The Washington, DC metropolitan area had two Code Red days during 2004. These numbers are significantly lower than the seasonal averages of 11 for Baltimore and six for Washington, DC.

Weather conditions have a strong influence on ozone formation, because ozone is a secondary air pollutant that forms when primary pollutants, emitted from industrial, transportation, and other human activities such as lawn maintenance and painting, react in strong sunlight. During the summers of 2003 and 2004, Maryland experienced higher than normal rainfall and overcast skies, and generally good to moderate air quality. These conditions helped keep Maryland's ozone exceedances at lower than average levels.

In comparison, by the beginning of summer 2002, Maryland was in the midst of an extreme drought. In August 2002, ground water and wells were at record low levels and water-use restrictions were in effect in most of the state. The lack of rain led to a higher number of wildfires, dead vegetation, and poor crop production. The clear skies during the summer allowed the intense sunlight to cook chemical compounds in the atmosphere to form more ground level ozone. The absence of rain allowed pollutants to remain suspended for long periods. As a result of these conditions, Maryland experienced 16 Code Red days in 2002.

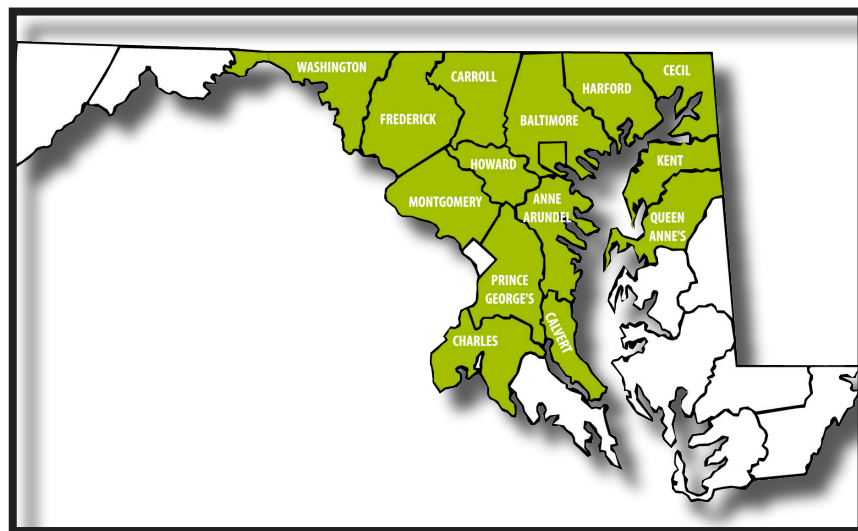
The contrast in the weather of the past several summers shows how weather plays an important role in air quality, as well as the difficulty in drawing conclusions by comparing one year of data to another because of the impact of differing weather conditions from year to year.

New Federal Air Quality Standards

The federal Clean Air Act requires EPA to establish air quality standards for commonly occurring air pollutants that pose public health threats. The standards are set to protect public health with an adequate margin of safety.

The Ozone Standard

EPA established a new eight-hour ozone standard that becomes effective on June 15, 2005. The level of the standard has been reduced from 0.12 parts per million (ppm) to 0.08 ppm to provide better protection against long-term exposure to ozone. Ozone levels must be averaged over an eight-hour period, replacing the current individual exceedances over a one-hour period, to account for the influence of meteorology (weather and wind conditions).



Revised Ozone Requirements

As a result of the adoption of the new ozone standard, states were required to evaluate air monitoring data and other information, and recommend to EPA areas that should be designated as nonattainment for the new standard. In developing the nonattainment area designation recommendations, MDE conducted an extensive public education campaign to inform elected officials, local governments, metropolitan planning organizations, and the general public about the designation requirements, and sought input regarding the boundaries and designations. MDE received comments from the Metropolitan Washington Air Quality Committee, the Baltimore Regional Transportation Board, and numerous stakeholders regarding the recommendations for boundaries and designations. On April 15, 2004, EPA officially designated parts of Maryland as nonattainment for the eight-hour standard.

EPA designated the majority of nonattainment areas in Maryland as moderate, requiring the ozone standard to be met by 2010 as prescribed by the Clean Air Act. The first ozone air quality improvement plan, called a State Implementation Plan or SIP, is due April 15, 2007. The SIP is a collection of pollution-reducing measures affecting stationary, mobile, area, and non-road sources. Under the one-hour standard MDE implemented a multitude of control programs that were cost-effective and helped reduce Maryland's emissions by approximately 40%. However, cost-effective local controls will be tougher to find when planning for the new eight-hour ozone standard. It is not expected that federal rules like the Clean Air Interstate Rule will by themselves bring Maryland into attainment of the new standards, so more help will be needed. Regional and national controls are the most cost-effective and efficient forms of control and ones that distribute requirements to control air pollution to all sources responsible for emitting air pollutants.

The eight-hour moderate nonattainment area for ozone includes the following counties: Anne Arundel, Baltimore, Baltimore City, Calvert, Carroll, Cecil, Charles, Frederick, Harford, Howard, Montgomery, and Prince George's. Washington County is listed as an Early Action Compact Area (more below). Washington County was formally in attainment of the one-hour ozone standard, but must now participate in the eight-hour ozone planning process. Kent and Queen Anne's Counties, which were originally listed as marginal nonattainment counties under the one-hour ozone standard until meeting that standard and being redesignated as attainment in 2004, are listed as marginal nonattainment counties under the new standard.

Early Action Compact

Washington County has been designated an Early Action Compact area in the eight-hour ozone planning process. This means that the county was in attainment for the one-hour standard and is committed to implementing a number of ozone control measures quickly that will ensure it is in compliance with the eight-hour standard on an accelerated schedule. Through voluntary, local, enforceable measures to be approved as part of a SIP, the Early Action Compact is designed to achieve the eight-hour ozone standard faster than the Clean Air Act would otherwise require. Washington County plans to achieve the eight-hour ozone standard by the end of 2007, three years earlier than the remainder of the eight-hour ozone nonattainment areas.

The Ozone "Bump-Down"

In July 2004, Maryland Governor Robert L. Ehrlich, Jr. sent a letter to EPA requesting that Kent and Queen Anne's counties be reclassified to marginal nonattainment for the eight-hour ozone standard, which would be a less cumbersome designation for the counties than the original designation of moderate nonattainment. The request included supporting documentation prepared by MDE showing that the counties met EPA criteria for a reclassification to a lower nonattainment designation - a "bump down".

In addition to air monitoring data from the Millington, Maryland air monitor, there are numerous compelling statistics supporting the reduced designation of Kent and Queen Anne's counties to marginal nonattainment. The counties' recent attainment of the one-hour standard, ozone exceedance statistics, pollution transport evidence, the mix of sources and air pollutants in the area, emission reductions over time, and trends in demographics were all reviewed during the development of the reclassification request. On September 22, 2004 EPA reclassified nine areas nationwide, including Kent and Queen Anne's counties, from moderate to marginal, effective November 22, 2004.

The marginal classification allows Maryland more latitude in selecting appropriate additional controls for these counties that complement the stringent controls already in place. However, it also means that the area is expected to achieve clean air sooner. While moderate areas must attain the federal eight-hour ozone standard no later than June 2010, marginal areas must attain no later than June 2007.

The Particulate Matter Standard

The EPA added a new standard for fine particulate matter, with diameter less than or equal to 2.5 micrometers ($PM_{2.5}$). The level of the $PM_{2.5}$ daily standard is set at $65 \mu\text{g}/\text{m}^3$ (micrograms per cubic meter) for a 24-hour period. Additionally, the $PM_{2.5}$ standard requires that the 3-year average of the annual levels remain below $15 \mu\text{g}/\text{m}^3$. The form of the standard uses a statistical test to determine compliance with the standard.

Maryland's PM-Fine Monitoring Network

To measure the amount of fine particulates to which Marylanders are exposed, MDE obtained federal grant funds to install a network of 19 air monitors that specifically measure $PM_{2.5}$. Review of more than two years of monitoring data shows that areas of Maryland will not be in compliance with the new $PM_{2.5}$ standard. In general, portions of Baltimore City and an area near Washington, DC have $PM_{2.5}$ levels above the annual standard to varying degrees. In addition, there are several areas with levels below but close to the standard.

While only some counties show monitored levels above the $PM_{2.5}$ standard, a much larger region is considered nonattainment. These areas have monitored readings very close to the $PM_{2.5}$ standard and have been identified as significant contributors to the $PM_{2.5}$ problem. When EPA designates areas as nonattainment, a whole host of criteria is reviewed including population growth, emissions and sources, motorist driving patterns, and census statistical areas, in addition to monitoring data.



Piney Run Monitoring Station

Revised Particulate Matter Requirements

On February 23, 2004, Governor Robert L. Ehrlich, Jr., with the advice of the Attainment Plan Task Force, submitted recommendations to EPA for establishing PM_{2.5} nonattainment boundaries in Maryland. On December 17, 2004, EPA officially designated the following counties as nonattainment: Anne Arundel, Baltimore, Baltimore City, Carroll, Harford, Howard, Charles, Frederick, Montgomery, Prince George's, and Washington. MDE will begin its efforts, using stakeholder input, to develop a plan that will reduce fine particulate concentrations and lead to clean air in areas not attaining the fine particulate matter standard.

The sources of fine particulates include fuel combustion from gasoline and diesel-powered vehicles, power plants, wood burning, and industrial processes. Fine particulates are also formed in the atmosphere from chemical reactions of gases such as sulfur dioxide, nitrogen oxides, and volatile organic compounds, all of which are also products of fuel combustion. The ability and cost to control these and other sources will be evaluated during the plan development process. MDE expects that the attainment plan for the PM_{2.5} standard will be due to EPA in early 2008.

Strategy for Reducing Regional Haze

Haze is caused by fine particles in the air that are so small that they settle out very slowly. Large areas of haze reduce visibility over a wide region, that is, over a portion of a state or over several states. EPA adopted the Regional Haze Rule in 2000 to combat the aesthetic and environmental impacts of regional haze, with a goal of natural visibility conditions for all national parks by 2064. In addressing regional haze, EPA has strongly encouraged the states to work together to develop and implement air quality plans for haze. MDE is part of a regional planning organization known as the Mid-Atlantic Northeast Visibility Union, or MANE-VU, which includes 11 states from Maryland to Maine and Washington, DC. MANE-VU participants are working to develop regionally coordinated implementation



MDE Staff Installing Regional Haze Camera

plans. Regional plans, instead of individual state plans, will better address the haze problem in the northeast and mid-Atlantic regions.

Maryland has been participating in the MANE-VU planning process since its inception in 2000, and an MDE representative has chaired the technical committee since 2000. In the past several years, MANE-VU has completed numerous regional haze projects that will help states like Maryland prepare their regional haze strategies. These projects include development of air quality modeling for regional haze, detailed examination of the sources of regional haze, and assessment of stationary source control under the regional haze rule.

Air Pollution Control in Maryland

Maryland's efforts to reduce local air pollution are among the most aggressive in the United States. Maryland's air pollution control programs regulate familiar sources like cars and trucks, and power plants and other "smokestack industries," as well as less familiar sources like bakeries, weed whackers, paints, hairspray, and perfume. Many of these programs implement federal requirements. A brief description of many of the air quality programs, and some highlights, are presented here.

Mobile Source Controls

Vehicle Emissions Inspection Program (VEIP)

The most prominent of the mobile source programs, VEIP limits emissions from gasoline-powered on-road motor vehicles by identifying and requiring the repair of polluting vehicles.

Maryland's VEIP has changed significantly since its start in 1984. In 1990, the VEIP was expanded geographically, to 14 of 23 jurisdictions. The test procedures have changed to keep pace with the technological advancements in cars and trucks. VEIP has evolved from a simple, idle tailpipe test, to the transient dynamometer (IM240) test, to the state-of-the-art On-Board Diagnostics (OBD) test which consists of an electronic check of the vehicle's computerized emissions control system.

Test Type	VEIP Initial Tests		Total Tests
	% of Total Tests		
	2003	2004	
OBD	58%	66%	1,617,926
IM240	36%	29%	850,685
Idle	7%	5%	151,614
Total Tests	100%	100%	2,620,225

New Vehicle Certification Standards

Significant reductions are being obtained from the implementation of stricter federal emissions certification standards for new cars. The Clean Air Act authorized two programs referred to as Tier 1 and Tier 2. The first set of standards, Tier 1, took effect in 1994. The Tier 2 standards were to take effect no earlier than 2004. Even with the benefits associated with the earlier Tier 1 program, Maryland and the 12 northeast states and the District of Columbia that comprise the Ozone Transport Commission (OTC) recognized the need for additional emissions reductions from motor vehicles in order to reach attainment and pursued regional adoption of the only alternative, the California Low Emission Vehicle (CA LEV) program. These efforts were not successful.

In lieu of the CA LEV program, the automobile manufacturers proposed an alternative program, the National Low Emission Vehicle (NLEV) program. Maryland and the OTC worked with EPA and the automobile manufacturers to develop the NLEV program. NLEV required the LEV emission standard vehicle in the northeast in 1999 (phase-in) and nationwide in 2001. This voluntary national program made cleaner vehicles available nationwide sooner than could have been required by EPA. MDE is very proud of its participation in this unique collaborative program.

Based on the success of the NLEV program, Maryland and the other states then turned their efforts to developing a strong federal Tier 2 program. MDE, along with the OTC and national organizations, pushed EPA to use the NLEV program as the foundation for the federal Tier 2 program. The resulting Tier 2 program is comparable to the current California program, CA LEVII. MDE is committed to the federal Tier 2 program because it produces emissions reductions in a timeframe consistent with attainment of the new eight-hour ozone standard in 2010, and it was developed with an emphasis on the nitrogen oxides reductions that are critical to controlling ozone in this region.

Diesel Vehicle Control Program

The diesel vehicle control program is operated by the Maryland State Police and the Maryland Transportation Authority Police with technical assistance from MDE. The owner of a vehicle that fails the smoke opacity test is issued a Safety Equipment Repair Order, requiring vehicle repair and retest to demonstrate compliance with the emissions standards. Conversely, other states with pull-over type programs only issue a citation which requires payment of a fine but not repair of the vehicle. Tests conducted in Maryland demonstrate a 68% improvement in emissions from vehicles that initially failed the smoke test, were repaired, and received a retest.

Fuels

The Clean Air Act requires the use of reformulated gasoline (RFG), designed to reduce VOC and NO_x emissions from motor vehicles, in severe ozone nonattainment areas. Because RFG is a critical component of Maryland's clean air plan, MDE took advantage of opportunities to extend the Clean Air Act requirement to all areas of the State that are nonattainment for the one-hour ozone standard. Emissions benefits are also obtained when RFG is used in gasoline-powered lawn and garden equipment and non-road vehicles.

In 2004, MDE began to find methyl tertiary-butyl ether (MTBE), a component of RFG, present in groundwater at levels warranting further action. MDE is developing regulations that address MTBE contamination where it is most serious; that is, in areas where groundwater is the source of water supply. The regulations will require early detection and better containment of MTBE within underground gasoline storage systems in high-risk groundwater use areas. In addition to these regulations, MDE is developing an enhanced inspection program that will require the detailed yearly inspection of motor fuel underground storage tank systems across the State.

Stationary Source Controls

Maryland has been very aggressive in controlling pollution that is generated within the State's borders. Maryland was one of the first states to implement the NOx SIP call (2003), and our NOx Reasonably Available Control Technologies, or RACT (1995) and NOx Budget Programs (2000) are viewed as wholesale successes in air pollution control. As a state with severe one-hour ozone nonattainment areas, our stationary source thresholds (25 tons per year) are relatively small, compelling us to control most of our stationary sources. In many cases, Maryland is looked at as the model for rule development by other states throughout the mid-Atlantic and northeast regions.

Typically born from combustion processes, NOx emissions are a precursor to ozone pollution and deposit nitrogen into the Chesapeake Bay. Also in the late 1990s, EPA issued a decree to 22 states, including Maryland, to drastically reduce NOx emissions. This measure, called the NOx SIP Call, has been a vital component of the control program aimed at large-scale combustion facilities such as power plants.

Controls have been added to reduce emissions from large commercial ovens. Commercial bakeries generate VOC emissions (primarily ethanol) from the fermentation and baking processes used to produce yeast-raised baked goods.

Total Registered Sources Of Air Pollution In Maryland	11,500
Drycleaners	600
Gas Stations	1,650
Sources With State Operating Permits	500
Large Sources With Federally Enforceable Operating Permits (Utilities, Steel Plants, Cement Kilns, Etc.)	165
Other	8,750

Area Source and Non-Road Source Controls

Since the early 1970's MDE has been developing and implementing control programs to reduce emissions of VOCs and NOx. These control efforts have required reductions from sources in all sectors of the inventory and ranged from traditional command and control regulations to voluntary programs focusing on reductions during poor air quality events. From a regulatory perspective, very few sources of VOCs and NOx have not been subject to some form of regulatory initiative at the State or federal level.

Listed below is a partial list of some of the regulatory controls MDE has implemented to control air pollution from sources other than our larger stationary sources:

- Gasoline Dispensing Vapor Recovery – Maryland requires vapor recovery systems on gas pumps to reduce escaping gasoline vapors during refueling.
- Landfills – Landfills must control gases caused by decomposition of waste, including methane, carbon dioxide, and Volatile Organic Compounds (VOCs.)
- Open Burning – Open burning historically has been a method for the disposal of yard wastes and leaves. Because the emissions from open burning are completely uncontrolled, open burning activities are strictly banned throughout Maryland during the ozone season.
- Surface Cleaning and Degreasing – MDE regulates all sources that use degreasing products, such as vehicle repair facilities and smaller mechanical shops.
- Architectural Coatings – MDE has taken an aggressive stance on the types of paints that can be used in the State. In Maryland (and the 13 northeast states of the OTR) household paints, primers, varnishes, and stains are all subject to a low VOC standard.

- Consumer Products – Hair spray, charcoal lighter fluids, nail polish – all these products are controlled in Maryland – many requirements go above and beyond the national requirements. While considered minute sources individually, consumer products collectively have a significant effect on air quality.
- Nonroad Small Gasoline Engines – Equipment such as leaf blowers, weed whackers, and chain saws are all controlled in Maryland to help with our air quality problems. Federal small engine standards apply to these sources.
- Autobody Refinishing – In addition to reducing emissions from the paints used, Maryland pioneered the use of low volume paint guns and paint booths to reduce overspray. This rule helps control VOCs in Maryland and helps protect the health and safety of the users.
- Portable Fuel Containers – Since January 2004, Maryland has required that all portable gasoline cans sold in the State be low-emitting and spill-proof to reduce emissions.

Air Quality Permits

MDE issues permits to ensure that sources of air pollution operate within regulatory requirements. Permits to Construct, State Operating Permits, Federal Acid Rain Program Permits and Federal Title V Operating Permits are issued to stationary sources of air pollution in Maryland.

Construction permits ensure that air pollution sources are constructed in accordance with air quality regulatory requirements protective of public health and the environment.

Conditions in permits are driven by mandatory federal requirements and State requirements developed in response to the overall need for Maryland to achieve compliance with the federal ozone standard and to maintain compliance with other Clean Air Act ambient air quality standards. These permits also ensure that emissions of toxic air pollutants will not endanger public health.

Operating permits, through imposition of monitoring, record keeping, and reporting requirements, ensure that air pollution sources, once constructed and placed in operation, are operated in compliance with Clean Air Act and State air quality requirements.

MDE has implemented a number of streamlining measures to improve the permitting process for the regulated community, while continuing to provide the same level of environmental protection.

Eight air quality general permits to construct are now available including, small boilers, vehicle refinishing, dry cleaners, small gasoline storage tanks, certain printers, medium boilers, char-broilers, and groundwater remediation systems.

General permits improve service to the regulated community by reducing the time necessary to obtain the required permit, while still requiring permitted sources to be constructed in compliance with all air quality regulatory requirements. Streamlining the requirements for these numerous small sources allows MDE to focus more of its limited resources on the larger emissions sources.

MDE also continues to implement the federally mandated Title V (Part 70) air operating permits program. Title V of the 1990 Clean Air Act Amendments introduced an operating permit program whose purpose is to combine, into a single document, all the State and federal air quality requirements applicable to a company. Title V affects the largest emission sources, and there are currently 153 Title V sources in Maryland.

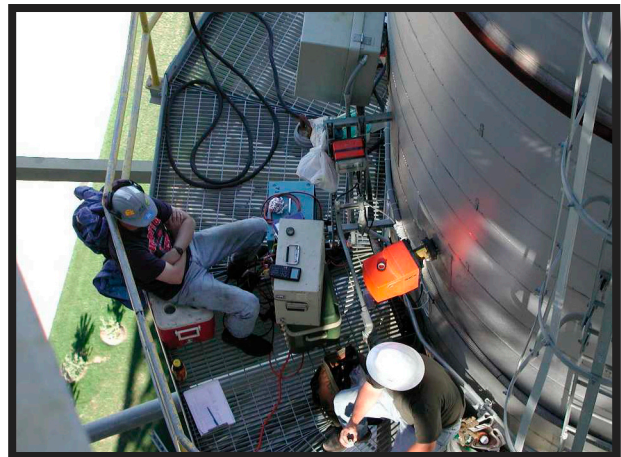
MDE was granted final full approval of its Title V program effective February 2003, and has until February 2005 to issue all remaining initial Title V permits. MDE is well on the way to achieve this goal. As of September 2004, MDE has issued 88% of its initial permits. In addition, MDE has begun to issue Title V renewals. The Title V operating permits program is funded through emissions fees paid by the regulated sources. In Fiscal Year 2004, these fees amounted to \$4.5 million.

Permits Issued Fiscal Years 2003-2004		
Type of Permit	Fiscal Year 2003	Fiscal Year 2004
Permits to Construct	838	1,639
State Permits to Operate	111	109
Part 70 Permits to Operate	7	17
Total Permits to Operate	118	126
Grand Total	956	1,765

Air Quality Compliance

MDE conducts compliance activities to ensure compliance with federal Clean Air Act as well as State air pollution requirements at stationary sources of air pollution in Maryland. MDE is responsible for over 11,500 registered sources of air pollution, including 165 large sources with federally enforceable operating permits (such as utilities, steel plants, cement kilns, incinerators, chemical plants), 500 sources with State operating permits, 600 drycleaners, and 1,650 gas stations. MDE also tracks and regulates asbestos in State buildings and schools, and regulates asbestos removal projects in Maryland.

The compliance status of a facility is determined through a variety of methods, including on-site inspections and review of periodic reports, continuous monitoring data, and stack test reports. Inspected sources are priority ranked based on size and potential risk to public health or the environment. Often, multiple inspections are performed at large or problematic sources over the course of a year. Inspections are both announced and unannounced, depending on the nature and purpose of the inspection. Attention is given to smaller, lower risk sources through special initiatives that may focus on inspecting all sources within a particular source category, or spot-checks of a percentage of sources in a category where the category contains a large number of small sources.



MDE also conducts compliance assistance outreach to work towards increased compliance rates. This initiative includes outreach presentations at trade group meetings and other venues where appropriate. Compliance Assistance Workshops targeted at specific categories of sources or group of stakeholders are also conducted. In 2004, Compliance Assistance Workshops were held for gas stations and asbestos removal contractors. Compliance Assistance Workshops on asbestos removal and management plans were also held for school management personnel.

MDE provides compliance assistance regarding State and federal asbestos requirements to individuals and companies. Approximately 200 asbestos removal contractor licenses are issued by MDE each year. About 3,000 asbestos project notifications are received per year; MDE inspects approximately thirty percent of these notified projects each year.

MDE provides technical assistance to Maryland schools in support of their efforts to comply with federal regulations for asbestos control. MDE works with EPA to inspect public and private schools for compliance with federal regulations.



Asbestos Removal

MDE also has responsibility for Maryland's Asbestos Oversight Committee, which addresses imminent, asbestos-related health hazards in State-owned buildings. Since 1987, in excess of \$15,000,000 has been spent to address such hazards. MDE provides training to State employees in all agencies to perform asbestos-related work in their facilities. About 800-1,000 workers are trained annually. MDE coordinates medical monitoring of all State employees involved in asbestos-related work.

Enforcement actions may be necessary to address cases of non-compliance. Financial penalties and corrective actions are pursued in these instances. Sometimes, a Supplemental Environmental Project (SEP) is used in the settlement of an enforcement action. A SEP is an environmental or public health related project implemented by a facility in lieu of a portion of a penalty payment to settle an enforcement action. SEPs deliver air quality benefits directly to the community near the now-compliant facility. SEPs used to resolve air pollution

violations include improvements at schools such as installation of solar panels and boiler upgrades, and elimination of freon in industrial applications.

MDE works with EPA as a partner to ensure compliance at stationary sources of air pollution. EPA provides grants to partially fund this activity. In exchange, MDE commits each year to inspect certain large sources of air pollution for compliance with federal requirements. Results of the inspections, and any enforcement actions that follow, are reported in a federally managed database.

MDE faces many new challenges created by ongoing implementation of the Clean Air Act and revisions to ambient air quality standards for ozone and fine particulate matter. Air toxics regulations implemented pursuant to the Clean Air Act continue to affect large and small sources, necessitating additional testing, monitoring, and reporting requirements. Federal operating permits also require additional monitoring and reporting. Determining compliance with recently implemented regulations that focus on additional sources of air pollution such as the consumer products rule will require new inspection practices. These requirements create additional inspection and paperwork responsibilities for MDE.

Summary of Regulatory Controls

MDE has been very aggressive in implementing all available controls in a fast and efficient manner. As a result of these efforts:

- Mobile sources emissions have decreased by about 75% since 1990. Because the mobile source controls (including both vehicle design standards and fuels) get tougher over time, emissions in 2030 are expected to be less than 10% of 1990 levels.
- Regulations to control area sources, including our portable fuel container regulation, open burning ban, and commercial and consumer product regulations, have reduced emissions by over 10% since 1990.
- Stationary source controls such as the installation of scrubbers on major smoke stacks and the requirement that major sources install reasonably available control technology, have reduced emissions by almost 40% since 1990.

As part of the OTR, Maryland must, at minimum, implement throughout the State air quality control strategies that are found in moderate nonattainment areas. This means most of the air pollution controls that are required of nonattainment areas (like the central portion of Maryland) are applied statewide, even though many of the more rural parts of the state are in attainment of the federal air quality standards. Strategies like this help with intrastate pollution transport, and emission reductions in attainment areas greatly assist in improving air quality throughout the State. If these controls were being implemented regionally or nationally we believe we would certainly be better positioned to meet the national air quality standards by the deadlines under the Clean Air Act.

Educating the Public About Air Pollution

Non-Regulatory Programs

MDE is active in promoting non-regulatory activities to achieve clean air. These activities involve public education and consumer options, including:

- Commuter Choice Maryland – Provides tax incentives to encourage employers to support mass transit options for employee commuting.
- The Maryland Energy Star Program - Administered by the Maryland Energy Administration, this program increases awareness of the importance of energy efficiency throughout the State, to aid citizens in choosing energy-efficient goods and services. Reducing energy consumption helps control emissions from power plants through a decrease in energy demand.
- Diesel Vehicle Retrofit and Fuel Projects – MDE is assisting State and local governments in reducing diesel vehicle emissions through the installation of advanced emissions control equipment and the use of cleaner diesel fuel.
- Advanced Technology Vehicles – Through the Advanced Technology Vehicle Project and the Clean Cities Program, MDE is working to promote the use of cleaner fuels such as natural gas, propane, clean diesel, and electricity, and ensure an adequate fuel infrastructure.

Diesel School Bus Retrofit Project

In early 2003, MDE was notified that Maryland would be the recipient of funds from a Supplemental Environmental Program (SEP) agreement between EPA, the Department of Justice, and Virginia Electric Power Company. The SEP funds were earmarked for diesel school bus retrofit programs. MDE began outreach efforts to the local governments that own and operate school buses, as well as to private school bus owners and operators. The primary efforts were conducted through the School Vehicle Advisory Board.

In October 2003, MDE announced the "Maryland School Bus Retrofit Technology Assistance Program," seeking proposals for participation in a program that would reimburse up to 100% of the costs to purchase and install diesel retrofit technology on school buses. Anne Arundel, Montgomery and Prince George's counties submitted proposals, and all three counties were awarded funds for emissions reduction projects for their school bus fleets. The SEP funding was received in July 2004 and the purchase of the retrofit equipment is moving forward.

Montgomery County will retrofit approximately 125 buses with diesel oxidation catalysts and convert from regular diesel fuel to ultra low sulfur diesel fuel for those vehicles. Anne Arundel County will retrofit approximately 50 buses with diesel oxidation catalysts as well as reprogram four engines to produce lower emissions. Prince George's County will retrofit approximately 80 buses with diesel oxidation catalysts. The diesel oxidation catalysts will reduce particulate matter emissions by approximately 25% as well as reduce other harmful emissions.

MDE has been working extensively to educate the public school bus fleet operators on new advanced diesel emission control technologies and possible funding opportunities to implement the technologies. In an effort to educate local governments and private school bus fleets, MDE hosted a "Diesel Engine School Bus Retrofit Technology Workshop" in April 2004. Private sponsorship covered all costs associated with the daylong expo, which brought together over 100 school bus fleet owner/operators and school bus administrators with industry experts and regulators to facilitate the adoption of strategies and programs that reduce emissions from diesel school buses.

Transit Bus Projects

In partnership with the Maryland Mass Transit Administration (MTA), MDE is providing low sulfur diesel fuel for 165 transit buses at the Eastern Maintenance Facility in east Baltimore. This facility is located in an Environmental Benefit District, a specially designated area in which MDE concentrates efforts to promote environmental justice by strengthening government infrastructure at local levels to support marginalized communities. The project funds, which cover the cost difference between the low sulfur fuel and regular diesel fuel, are from a combination of federal and State sources. The majority of funding is from a retrofit technology justice grant that MDE secured from EPA; the remaining funding was provided by

MDE and the Maryland Department of Transportation. The MTA buses are currently using the low sulfur fuel.



*MDE Secretary Kendl P. Philbrick
Announces Low Sulfur Fuel Project at
MTA's Eastern Maintenance Facility*

MDE is also partnering with Howard County on a project to retrofit approximately 40 transit buses with diesel oxidation catalysts (DOCs). These DOCs will reduce particulate matter emissions by approximately 25%, as well as reduce other harmful emissions. This project is being funded by the State. Howard County participated in MDE's retrofit workshop, which assisted them in identifying a technology suitable to their individual needs. The first transit buses will be retrofitted by mid-2005.

Ozone Pollution Map

To help citizens visualize Maryland's ozone pollution problem, MDE and the American Lung Association of Maryland developed the Ozone Pollution Map. The Ozone Pollution Map is a regular feature of television weather reports that animates real-time air monitoring data to show the formation, movement, and dissipation of ozone throughout the course of the day. The Map provides viewers with timely, detailed information regarding ozone air pollution levels in their communities and throughout the region, allowing them to plan daily activities and limit exposure to unhealthy air. The Maryland Ozone Pollution Map was so well received that EPA used it as a foundation for a multi-state Ozone Mapping System. The Ozone Mapping System had grown to 45 states providing data from over 1,500 air monitors across the country. Ozone Maps are updated daily during the ozone season at the EPA's AIRNOW web site at [HTTP://WWW.EPA.GOV/AIRNOW/](http://www.epa.gov/airnow/).

AirWatch and AirAlert

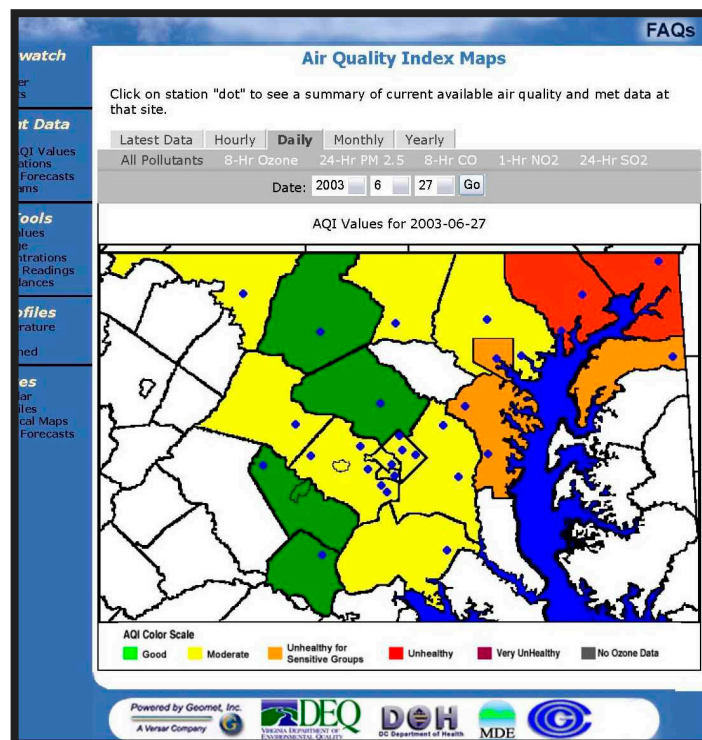
Another excellent tool for educating Marylanders about local air quality is the Internet-based AirWatch, a real-time air quality data notification system located at [HTTP://WWW.AIR-WATCH.NET](http://www.air-watch.net). The AirWatch program is a regional initiative aimed at developing environmental awareness for the citizens of the Baltimore–Washington, DC metropolitan region, specifically about air pollution. AirWatch visitors throughout the region are learning about their local air and how they can keep it clean.

AirWatch covers air quality monitors throughout Maryland, Washington, DC, and Northern Virginia. Hourly air quality levels collected from 30 monitors throughout the region are displayed in a graphical, interactive map. The map is color coded to represent current monitor readings within counties and municipalities recording pollution data. Users may click through

the map to review data from multiple monitors within a county and review data archived over the previous 24 hours.

The real-time map allows the public to monitor air quality conditions near their community and adjust their daily activities accordingly. By investigating their local air quality, people develop an understanding of air quality issues, and are encouraged to become actively involved in finding solutions to air pollution.

AirWatch is closely supported by the "AirAlert" e-mail notification system. AirAlert is a free service provided by MDE, which automatically notifies users by e-mail when unhealthy levels of air pollution are measured at air monitoring stations throughout Maryland, Washington, DC, and Northern Virginia. Users can either choose to receive notifications for the entire region, or simply select air monitoring stations near where they work or live. Real-time e-mail notifications advise people when air pollution is a problem and allows them to take actions to protect their health and reduce polluting activities.



Particulate Pollution Forecasts

Since May 1, 2003, new information on air quality has been made available year-round for the Baltimore-Washington metropolitan area. As part of an on-going effort to protect the public from air pollution, MDE, together with federal and local governments, has expanded air quality forecasts to include daily information on particulate pollution. Unlike ozone pollution, which is known to be highest during summer months, particulate pollution can vary throughout the year. The expanded air quality forecasts give people the information they need to protect their health all year.

Air Quality Action Days

MDE is a member of Clean Air Partners, a public-private partnership chartered to build and broaden awareness of how individuals, businesses and other organizations contribute to air pollution while informing them about the adverse effects of ground-level ozone.

The Clean Air Partners Air Quality Action Day program encourages citizens, businesses, local, state, and federal governments, and health and environmental organizations to take voluntary actions to help reduce pollution-forming emissions on Air Quality Action Days. An Air Quality Action Day is called when weather forecasters predict that conditions will be conducive to the formation of unhealthy levels of ozone and or particulate matter. Though we cannot control the weather, we can control what we release into the air. When weather conditions are conducive to ozone formation – Code Red or Code Orange – MDE advises the public to take voluntary actions to reduce emissions of air pollutants. Some of these actions are as easy as deferring use of a gasoline-powered lawn mower until air quality improves. Other actions may include using public transit or carpooling.

Air Quality Action Days not only educate Marylanders about pollution, but can also produce significant air pollution reductions if enough people participate. Approximately 500

businesses, government agencies, and organizations in the Baltimore–Washington region have become Air Quality Action Days partners. Partners help to educate their employees and customers about air quality and its effects, and implement actions to reduce polluting activities.

CODE	AIR QUALITY	ACTIONS PEOPLE SHOULD TAKE
GREEN	GOOD	Enjoy Activities
YELLOW	MODERATE	People Unusually Sensitive To Air Pollution: Plan strenuous outside activities when air quality is better
ORANGE	UNHEALTHY FOR SENSITIVE GROUPS	Sensitive Groups: Cut back or reschedule strenuous outside activities
RED	UNHEALTHY	Everyone: Cut back or reschedule strenuous outside activities Sensitive Groups: Avoid strenuous outside activities
PURPLE	VERY UNHEALTHY	Everyone: Significantly cut back on strenuous outside activities Sensitive Groups: Avoid all outside physical activities

