

US EPA ARCHIVE DOCUMENT

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COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
SUBCOMMITTEE ON CLEAN AIR, CLIMATE, AND NUCLEAR SAFETY**

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Thank you Mr. Chairman and members of the Environment and Public Works' Subcommittee for the opportunity to speak with you today about implementing the National Ambient Air Quality Standards (NAAQS) for fine particles and ground-level ozone.

There is no doubt that emissions of key pollutants into the air are going down in the United States. America's air is the cleanest in three decades. Emissions have continued to decrease even as our economy has increased more than 150 percent. Since 1970, the aggregate total emissions for the six pollutants [Carbon Monoxide (CO), Nitrogen Oxides (NOx), Sulfur Dioxide (SO2), Particulate Matter (PM), Volatile Organic Compounds (VOCs) and Lead (Pb)] have been cut from 301.5 million tons per year to 138.7 million tons per year, a decrease of 54 percent. Total 2004 emissions were down 21.5 million tons since 2000, a 13.4 percent reduction.

The Clean Air Act has been a critical driver of that success. The goal of the Clean Air Act is to bring all areas into attainment with national air quality standards, so that the air is healthy to breathe for residents of every neighborhood, town, city and county. The Clean Air Act provides us with the structure for achieving that goal as expeditiously as practicable. In addition to setting the air quality standards, EPA establishes national emissions standards for certain important sources, such as motor vehicles, and requires states to control interstate pollution transport.

The Act requires states to take the lead role in studying the unique air pollution problems in their areas and in crafting State Implementation Plans that contain strategies for solving them. EPA assists the states by providing technical support, for example, on emission reduction measures and costs. Together, we will find an appropriate mix of national, regional, state, and local measures to bring all areas into attainment with the national standards.

The record of the Clean Air Act demonstrates that the structure outlined in the law is sound. For example, we designated 101 areas as nonattainment for the 1-hour ozone standard. 79 of them have met that standard. The story is similar for particulate matter smaller than 10 micrometers (PM-10) and carbon monoxide nonattainment areas. 87 areas were designated nonattainment for PM-10 in the

early 1990's. 64 now meet that standard. For carbon monoxide, air quality in all of the original 43 nonattainment areas now meets the NAAQS. Even in cities that have not attained the 1-hour ozone or PM-10 standards, the number of days above the standards is down significantly. By any measure, this is a success story.

EPA has put in place national and regional pollution control programs that will go a long way toward assisting the states in solving the fine particle and ozone nonattainment problems. Our modeling indicates that by 2010, 18 of the 39 areas currently not attaining the fine particle standard will come into attainment with the regulatory programs already in place, including the Clean Air Interstate Rule, Clean Diesel Rules and other federal measures even assuming no additional local controls are adopted. Four more PM_{2.5} areas are projected to attain the standards by 2015 based on the implementation of these programs.

The story is also good for ozone. 104 of the 126 current 8-hour ozone nonattainment areas will attain the NAAQS by 2010 because of national mobile and stationary source control programs. By 2015, modeling shows that only ten 8-hour ozone nonattainment areas will remain.

These EPA programs are an excellent example of where federal and regional programs can assist the states in meeting their obligation to attain national air quality standards. For areas that will still be out of attainment with the ozone and PM_{2.5} standards, states will need to take additional local steps to reduce ozone and fine particles from other sources. In many cases, this burden will be lighter due to federal programs.

Today, I would like to give you an overview of the fine particle and ozone problems, some of the key national rules that will help reduce levels of these pollutants, and ways in which EPA is assisting the states as they develop plans to achieve these air quality standards.

Fine Particle and Ozone Health Effects

Americans will realize significant health benefits when all areas of the country meet the 8-hour ozone and fine particle standards. Ground-level ozone continues to be a pollution problem in many areas of the United States. Ozone (a major component of smog) is a significant health concern, particularly for people with asthma and other respiratory diseases, and children and adults who are active outdoors in the summertime. Ozone can exacerbate respiratory symptoms, such as coughing and pain when breathing deeply. Ozone may reduce lung function and inflame the linings of the lung. Ozone has also been associated with increased hospitalizations and emergency room visits for respiratory causes. Repeated exposure over time may permanently damage lung tissue.

Ozone is rarely emitted directly into the air but is formed by the reaction of volatile organic compounds (VOCs) and NO_x in the presence of sunlight.

Ground-level ozone forms readily in the atmosphere, usually during hot summer weather. VOCs are emitted from a variety of sources, including motor vehicles, chemical plants, refineries, factories, consumer and commercial products, other industrial sources, and biogenic sources. NO_x is emitted from motor vehicles, power plants, and other sources of combustion. Changing weather patterns contribute to yearly differences in ozone concentrations from region to region. Ozone and the pollutants that form ozone also can be transported into an area from pollution sources located hundreds of miles upwind. Based on 2002-04 data, more than 138 million people live in nonattainment areas that violate the 8-hour ozone standard.

Of the many air pollutants regulated by EPA, fine particle pollution is perhaps the greatest threat to public health. Dozens of studies in the peer-reviewed literature have found that these microscopic particles can reach the deepest regions of the lungs. Exposure to fine particles is associated with premature death, as well as asthma attacks, chronic bronchitis, decreased lung function, and respiratory disease. Exposure is also associated with aggravation of heart disease, leading to increased hospitalizations, emergency room and doctor visits, and use of medication. Based on data through 2004, 90 million people live in areas not attaining the fine particle standards, primarily in California and in the eastern half of the United States.

Particulate matter is the general term used for a mixture of solid particles and liquid droplets found in the air. PM_{2.5} describes the “fine” particles that are less than or equal to 2.5 micrometers in diameter. PM_{2.5} is formed mostly through atmospheric chemical reactions. These reactions involve a number of precursor gases including sulfur dioxide from sources such as industrial facilities and power plants; nitrogen oxides from sources such as automobiles, diesel engines, power plants and other combustion sources; carbon formed from organic compounds, including a number of volatile organic compounds from automobiles and industrial facilities; and ammonia from various sources. PM_{2.5} can also be emitted directly from certain sources, such as industrial facilities, diesel engines and fire. PM_{2.5} concentrations can be elevated at all times of the year, not just in the summertime. Changing weather patterns contribute to yearly differences in PM_{2.5} concentrations from region to region. Also, PM_{2.5} can be transported into an area from sources located hundreds or thousands of miles upwind.

National Programs

There is no doubt that emissions of key pollutants into the air are going down in the United States and that the Clean Air Act has been a critical component of that improvement. Congress carefully laid out the role that states and EPA must play in implementing the NAAQS. Among other things, EPA is responsible for setting the standards, designating areas as attaining or not attaining the standards, addressing the regional, national, and international aspects of air pollution problems, and helping the states deal with problems that are generated locally. States are given the primary responsibility for assuring that air quality within its borders is maintained. This is achieved through source-specific requirements in State Implementation Plans.

Several federal programs already in place will help bring many areas into attainment and help others come much closer to attainment, thus making the burden of local controls lighter.

Mobile Source Sector

It is no surprise that the transportation sector – cars, buses, and trucks – contributes a significant amount to air pollution problems in many communities. Emissions of NO_x, PM and other pollutants have been and will continue to decrease significantly as a result of the successful implementation of the series of EPA regulations controlling emissions from new mobile sources and the fuels they use.

Most recently, EPA has adopted emission standards for new nonroad diesel engines used in construction, agricultural, and industrial operations. These engine standards will be combined with very low sulfur limits in the fuel for these engines, which will allow optimal performance of the engines' pollution control equipment. EPA's nonroad standards are estimated to reduce 129,000 tons of PM and 738,000 tons of NO_x in 2030, and prevent annually 12,000 premature mortalities, 15,000 non-fatal heart attacks, and almost 9,000 hospital admissions.

Fine particle and ozone pollution will also decrease as a result of EPA's 2007 Clean Diesel Truck and Bus Rule to clean up pollution from new diesel trucks and buses. When fully phased in, these rules will result in diesel trucks and buses being 95% cleaner than today's models for smog-causing emissions and 90 percent cleaner for particulate matter. The rule also requires very low sulfur diesel fuel to enable the use of advanced aftertreatment technologies. We estimate that this program will prevent 8,300 premature deaths and 1.5 million lost work days among other quantified benefits.

As a result of this program, there will be a dramatic transformation of diesel engines over the next decade. The benefits of these rules will be added to those from two other mobile source rules. Starting with the 2004 model year, cars and light trucks must comply with the Tier II program which established tighter tailpipe standards and limited the amount of sulfur in gasoline. The program will be fully

phased in by 2009. This rule requires for the first time that larger vehicles like SUVs, minivans and pick-up trucks meet the same tailpipe emissions standards as cars. The associated gasoline sulfur standards will ensure the effectiveness of emission-control technologies in vehicles. These new standards require passenger vehicles to be 77 to 95 percent cleaner than those on the road today.

We have a number of other nationally applicable programs that will achieve needed reductions, such as new standards for motorcycles and lawn and garden equipment. We are also working on new requirements, for sources like locomotive and marine engines, which will help states meet their clean air goals.

Voluntary Programs

In addition to our regulatory programs, EPA has a number of innovative voluntary programs that work to achieve measurable environmental results in a cost-effective and beneficial way without the need for regulation. These programs are available to assist states and Tribes in implementing programs that reduce ozone and particulate matter. I want to thank you, Mr. Chairman, for the leadership you have shown in the effort to reduce diesel emissions. Your recent legislation, included in the Energy Policy Act of 2005, shows strong support for voluntary retrofit programs.

National Clean Diesel Campaign

Building on the successes of EPA's regulatory and voluntary efforts to reduce emissions, the Agency created the National Clean Diesel Campaign (NCDC) to address the important issue of diesel emissions. The National Clean Diesel Campaign encompasses the stringent regulations that reduce emissions from new engines and addresses the more than 11 million engines in operation today through voluntary approaches. Successful programs like the Clean School Bus USA and the SmartWay Transport Partnership are important parts of the NCDC. Technical and financial assistance is provided to stakeholders interested in reducing their emissions effectively and efficiently. Strategies include reducing unnecessary truck and rail idling along major transportation corridors and in rail yards, use of ultra-low sulfur fuel in advance of federal compliance dates, replacing old vehicles or engines with cleaner new models, installing "retrofit" control technologies on existing vehicles or engines, and other approaches. NCDC projects exist in 44 states.

The National Clean Diesel Campaign has created a number of tools to assist states and local governments in reducing diesel emissions. EPA provides technical assistance to help educate stakeholders on the wide array of clean diesel technologies and strategies that can be used to cost effectively reduce diesel pollution. NCDC's vendor-funded technology verification program evaluates the effectiveness and efficacy of clean diesel technologies so that users of the technology can be assured that the emissions benefits captured in the field match those advertised by the manufacturer. The Agency has also created peer-reviewed emission models and provides State Implementation Plan

(SIP) guidance to state air partners so that they may implement clean diesel strategies as cost effectively as possible. In the coming months guidance for quantifying and using diesel retrofit projects in SIP and conformity plans will be made available and the Agency is also working with the Department of Transportation to provide guidance for utilizing Congestion Mitigation and Air Quality Improvement Program funding for diesel retrofit projects.

Market-Based Programs

Emissions from power plants contribute to most of the nonattainment areas in the eastern US. The nitrogen oxides and sulfur dioxide from these facilities mix with emissions from local and biogenic sources to cause ozone and fine particle problems. Through market-based programs, emissions from this sector have dropped and will continue to drop for years to come.

Since 1995, EPA has been implementing the Acid Rain Program to reduce SO₂ and NO_x emissions from power plants nationwide. The centerpiece of the program is an innovative, market-based “cap-and-trade” approach to achieve a nearly 50% reduction in SO₂ emissions from 1980 levels. The results of the program have been dramatic – and unprecedented. Compliance has been nearly 100 percent. Reductions in power plant SO₂ emissions were larger and earlier than required, confirming the high value of a cap and trade system and the high value of its effects -- earlier human health and environmental benefits. Now, in the tenth year of the program, we know that the greatest SO₂ emissions reductions were achieved in the highest SO₂-emitting states; acid deposition dramatically decreased over large areas of the eastern United States in the areas where reductions were most critically needed; trading did not cause geographic shifting of emissions or increases in localized pollution (hot spots); and the human health and environmental benefits were delivered broadly. Allowance trading provided sources with an incentive and the flexibility in developing a compliance strategy. It has reduced compliance costs by 75 percent from initial EPA estimates.

A similar cap-and-trade program has been incorporated into two other programs aimed at reducing the interstate transport of air pollution – the NO_x SIP Call and the recently issued Clean Air Interstate Rule. The 1998 NO_x SIP Call is showing results. To fulfill emission reduction responsibilities under the SIP Call, states are requiring power plants and large industrial emitters in the eastern US to reduce emissions of the ozone-precursor nitrogen oxide (NO_x) during the summer months. After adjusting for the effects of meteorology, ozone levels across the East were on average 10% lower in 2004, the first full year of the program, than in 2002.

In March 2005, EPA issued the Clean Air Interstate Rule (CAIR), which will reduce power plant emissions of sulfur dioxide and nitrogen oxides in 28 eastern states and the District of Columbia by 70 percent and more than 60 percent respectively from 2003 levels when fully implemented. This will go a long way to help many areas attain the fine particle standards and the ozone standards.

However, we have received 14 Petitions for Review and 11 Petitions for Reconsideration for the 2005 Clean Air Interstate Rule. EPA has also received two administrative stay requests; two judicial stay motions have been filed. While we are confident that we will prevail in the litigation concerning CAIR, there is always some uncertainty regarding the outcome of any litigation.

The Administration prefers to reduce emissions from power plants through multipollutant legislation such as the President's Clear Skies legislation. The key difference between the Acid Rain Program and our cap and trade rulemakings is statute versus regulation. Congress enacted the Acid Rain Program in 1990. EPA has relied on authority in the Clean Air Act to put in place the NO_x SIP call and CAIR. This authority is limited. Regulations do not provide enough certainty – that is why EPA has been urging Congress to pass a permanent, nation-wide solution, Clear Skies, which will result in substantial reductions in pollution, and help ensure stable and affordable energy costs for the American consumer.

In response to Senate requests in April of this year, EPA Administrator Johnson directed EPA staff to conduct additional analyses on a number of legislative proposals concerning control of power plant emissions currently before Congress. This is a detailed, thorough, comprehensive legislative analysis – we believe it is the most detailed analysis we have produced for a Congressional debate ever. The analysis incorporates the latest computer models and assumptions to compare the President's Clear Skies legislation to several alternatives introduced on Capitol Hill – an apples-to-apples comparison.

President Bush and EPA are committed to working with Congress to enact Clear Skies legislation to cut power plant emissions to help states meet air quality standards in a way that is consistent with a health economy. Clear Skies delivers dramatic health benefits across the nation without significantly raising energy costs. Legislative enactment of Clear Skies will provide the certainty utilities need to build large new clean coal plants and incentivize efficiency at existing units, significantly reducing the potential for increased utility use of natural gas to meet demand and new air quality requirements. This will make more natural gas available to consumers and manufacturers. Clear Skies will significantly minimize the regulatory impact on electricity prices for households and manufacturers. I urge the Committee members to avail themselves of this detailed analysis.

Working with States & Tribes

To help states implement the NAAQS, EPA has developed analyses and analytical tools that can help states assess their air quality problems and evaluate potential control measures. EPA is working to provide implementation guidance to states on the minimum requirements for their state implementation plans. In addition, we have worked with states to achieve ozone reductions

earlier than required through their voluntary participation in the Early Action Compact program.

We issued Phase 1 of the Ozone Implementation Rule in April 2004, at the same time that we designated nonattainment areas and attainment areas for the 8-hour standard. This rule established classifications for the 8-hour ozone NAAQS; outlined the attainment dates for the 8-hour standard, revoked the 1-hour ozone NAAQS; established how anti-backsliding principles will ensure continued progress toward attainment of the 8-hour ozone NAAQS; and described the timing of emissions reductions needed for attainment.

We have just issued the second part of the Ozone Implementation Rule. It includes, among other things, our interpretation of requirements for reasonably available control measures, reasonably available control technology, attainment demonstrations and modeling requirements, and new source review guidelines for the 8-hour ozone nonattainment areas. States will have until June 2007 to formulate their State Implementation Plans. Together, this rule and the Phase 1 Ozone Implementation Rule issued a year and a half ago, provide a complete framework to guide development of State Implementation Plans, including detailed guidance on many implementation issues.

EPA has also proposed the Fine Particle Implementation Rule. This 2005 proposal addresses the required elements of State Implementation Plans for the fine particle air quality standard, which are due in April 2008. The rule is based on the more general and more flexible Clean Air Act requirements for attainment planning (known as "subpart 1" of section 172). For example, this part of the Act provides flexibility on whether to require a specific multi-tiered classification system for nonattainment areas or not. In addition, it does not require specific control measures to be implemented in certain nonattainment areas, but instead provides the States with greater flexibility to design local control strategies to meet the attainment needs of each individual area.

We are also assisting the states in evaluating their options. EPA has included a general list of strategies in the implementation proposal that should be considered by the States in developing their plans, and the Agency has provided STAPPA/ALAPCO with grant funding to develop a PM_{2.5} "menu" of control options document. The final document is expected by the end of this year or early next year.

The Clean Air Act presumptively requires each area to attain the PM_{2.5} standard within five years of designation, by April 2010, with authority for EPA to grant a state an attainment date extension of up to an additional five years for a specific area. In order to be considered for an extension, a state would include such a request with its April 2008 submittal.

We acknowledge that we are late in completing these rules to guide states in developing implementation plans for the PM_{2.5} and 8-hour ozone standards. I wish that the timeline for our rules could have been different. Some states have

expressed concern about achieving the new ozone and PM2.5 attainment deadlines. We are committed to assisting states as they work to identify local or regional control measures for their SIPs and of course, our federal programs will provide significant reductions for these areas. The Clean Air Act does provide opportunities for an area under certain circumstances to obtain additional time and we are also committed to exploring these options if needed.

Beyond this, we are working to help states identify and implement strategies that can help cut emissions by issuing policies and guidance on specific implementation issues, providing technical assistance and analytical tools, and offering training and support for NAAQS implementation. And, in those cases where information gaps remain, we are working to close them as quickly as possible.

Please see attachment for additional details.

We appreciate the work that the states are doing to bring cleaner air sooner to the millions of Americans living in fine particle and 8-hour ozone nonattainment areas. It will be a challenge but national rules and state plans together will bring the health benefits of the fine particle and ozone standards to the American people. The numerous successes of the past inform our optimism toward the future.

Thank you. Mr. Chairman that concludes my testimony. Once again, thank you for inviting me to appear before this Subcommittee. I would be pleased to answer any questions you may have.

Attachment

Examples of Policies and Agency Guidance to States

- 1997 – “Mobile Source Voluntary Measures Policy” -- supports the use of voluntary mobile source measures such as programs that reduce idling emissions from trucks, locomotives, and school buses, retrofit programs, commuter benefit programs such as parking cash-out programs, employer-based telecommuting programs, and small-engine buyback programs.
- 2001 – “Improving Air Quality with Economic Incentive Programs” -- provides information on developing and implementing economic incentive-based control strategies.
- 2004 – “Incorporating Emerging and Voluntary Measures in a State Implementation Plan” -- supports and encourages states to test new and innovative stationary source control strategies.
- 2004 – “EPA and FAA National Guidance on Airport Emissions Reduction Credits for Early Measures” - allows airport sponsors to use certain funds to finance airport air quality improvements such as low emission vehicles, refueling and recharging stations and gate electrification. Credits generated by the emission reductions are kept by the airport sponsor and may be used for current or future general conformity determinations.
- 2004 – “Guidance on SIP Credits for Emission Reductions from Electric Sector Energy Efficiency and Renewable Energy Measures” -- provides a readily available procedure to quantify and validate emission reductions from specific energy efficiency and renewable energy measures and have these reductions applied to State Implementation Plans.
- 2004 – “SIP Credit for Truck and Locomotive Idling Reductions” – offers guidance on using technologies to reduce air emissions from locomotives and trucks while idling, or replacing the need to idle.
- 2005 -- “Guidance on Incorporating Bundled Measures in a SIP” -- provides provisional pollution reduction credits to states up-front from a group, or “bundle,” of pollution control measures or strategies considered in the aggregate.
- 2005 -- “Emissions Inventory Guidance for Implementation of Ozone and Particulate Matter National Ambient Air Quality Standards (NAAQS) and Regional Haze Regulations” – helps states develop their emissions inventories.
- 2005 – “Guidance for Creating Annual On-Road Mobile Source Emission Inventories for PM_{2.5} Nonattainment Areas for Use in SIPs and Conformity” -- describes how state and local agencies should prepare annual inventories for PM_{2.5} SIPs or regional conformity analyses.
- 2005 – “Guidance for Quantifying and Using Emission Reductions from Best Workplaces for CommutersSM Programs in State Implementation Plans and Transportation Conformity Determinations” – describes how state and local agencies can gain emission credit for commuter benefit programs like Best Workplaces for CommutersSM.

Technical and Analytical Tools

EPA is working closely with states to provide them with technical support for their modeling analyses, emissions inventory development, evaluation of costs for various control strategies, updated regional modeling, and air quality analyses. These technical and analytical tools will help states characterize their air quality problems and use the state-of-the-art methods to craft solutions.

- Reviewing a menu of control options for fine particles
- Developing a fast, flexible, and transparent tool for estimating health and environmental benefits of air quality improvements via the peer-reviewed BenMAP model
- Providing grants for state organizations to develop and distribute information about control strategies
- Improving and automating emissions inventory quality assurance tool to reduce staff effort at the state level, while improving the quality and reliability of the resulting emissions data
- Collaborating with the Department of Energy to improve the Community Multi-Scale Air Quality Model (CMAQ) that will help states develop their State Implementation Plans. States and Regional Planning Organizations can use the peer-reviewed “community” CMAQ model to evaluate regional and local emission reduction strategies for meeting ozone, PM_{2.5} and regional haze goals
- Issuing guidance on the use of models and other analyses in attainment demonstrations for the 8-hour ozone NAAQS. This document provides important guidance to EPA Regional, State, and Tribal air quality management authorities and the general public on how to prepare 8-hour ozone attainment demonstrations using air quality models and other relevant technical analyses.
- Conducting regional air quality modeling analyses to help inform state and local agencies about contributions from upwind air pollution sources and the likely consequences of programs to reduce emissions from those sources.
- Collaborating with equipment manufacturers to develop, test, and improve measurement instruments, including continuous monitors, to assist states in obtaining better measurements and greater insight into the sources of air pollution.
- Developing the MOVES model for highway vehicles, a next generation model that can be used to estimate emission inventories and make county level projections through 2050.

Training and Support for Pilot Projects

- Partnering with stakeholders to promote woodstove changeouts and other innovative programs with big local benefits in some areas
- Sponsoring meetings, workshops and conferences for state and local officials to share best practices.
- Collaborating with local and state officials to evaluate the effectiveness of control strategies in real-world settings
- Working in the Clean Energy-Environment State Partnership - voluntary partnership between states and EPA to assess clean energy potential and determine strategies for implementing policies that reduce emissions, save energy, strengthen state economies, and protect public health. Partners commit to working across key state agencies to ultimately develop a clean energy-environment action plan; EPA provides tools, resources, and access to experts to ensure states have the best information available as they decide steps and policies.
- Establishing and funding the Community Modeling and Analysis Center to support community-based air quality modeling. This Center provides model codes and documentation, on-line help desk, training courses, and workshops/conferences that help states in conducting air quality modeling for their ozone, PM, and regional haze State Implementation Plans.