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STAYING HEALTHY: HEALTH ISSUES SURROUNDING PROPOSED CHANGES IN CLEAN AIR STANDARDS

HEARING

BEFORE THE

SUBCOMMITTEE ON PUBLIC HEALTH

OF THE

COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS
UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

SECOND

ON

EXAMINING PROPOSED IMPROVEMENTS TO THE NEW SOURCE REVIEW (NSR) PROGRAM UNDER THE CLEAN AIR ACT, WHICH WOULD CHANGE THE REQUIREMENTS OF COMPANIES TO INSTALL STATE-OF-THE-ART POLLUTION CONTROL EQUIPMENT, AND RELATED PROVISIONS OF S. 556, TO AMEND THE CLEAN AIR ACT TO REDUCE EMISSIONS FROM ELECTRIC POWERPLANTS, AND S. 2815, TO AMEND THE CLEAN AIR ACT TO REDUCE AIR POLLUTION THROUGH EXPANSION OF CAP AND TRADE PROGRAMS, AND TO PROVIDE AN ALTERNATIVE REGULATORY CLASSIFICATION FOR UNITS SUBJECT TO THE CAP AND TRADE PROGRAMS

SEPTEMBER 3, 2002

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STAYING HEALTHY: HEALTH ISSUES SURROUNDING PROPOSED CHANGES IN CLEAN AIR STANDARDS

TUESDAY, SEPTEMBER 3, 2002

U.S. SENATE,
SUBCOMMITTEE ON PUBLIC HEALTH, OF THE COMMITTEE ON HEALTH, EDUCATION, LABOR, AND PENSIONS,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:30 p.m., in room SD–430, Dirksen Senate Office Building, Hon. John R. Edwards, presiding.

Present: Senators Edwards and Clinton.

OPENING STATEMENT OF SENATOR EDWARDS

Senator EDWARDS. [presiding]. Good afternoon. I want to welcome everybody to today's Public Health Subcommittee hearing on "Human Health and Proposed Changes to the Clean Air Act."

Today we are going to examine one of the most pressing health issues in our country today. For thousands of Americans, it is literally a question of life or death. For hundreds of thousands more, it is the difference between breathing free and suffering asthma attacks and heart problems.

Since 1977, the new source review provisions of the Clean Air Act have helped Americans breathe easier. For power plants that existed in 1977, new source review created a very simple rule: You can keep running as long as you do not pollute more. But if you expand your plant and increase your pollution levels, you have got to clean up your act so Americans can breathe better.

The Clinton Administration vigorously enforced the new source review provisions. They brought 51 enforcement actions against plants that appeared to have increased emissions without cleaning up.

In these cases, I know that some people may think that this kind of air pollution enforcement is just about visibility in our National Parks. That is an important issue. When EPA Administrator Whitman visited the Great Smoky Mountains National Park on the 4th of July—Senator Frist's State and mine share that park, and he was actually there on that visit—she could barely see 15 miles in a location where in the past, visibility of 75 to 100 miles was typical.

But it is the health impact of pollution that is most extraordinary—the effect on respiratory disease, lung cancer, pediatric asthma, and premature death.

I want to quote some figures from a research firm called Abt Associates. Abt is a highly respected firm that has worked for the EPA, the Centers for Disease Control, and many top private companies. They found that, first, pollution from U.S. power plants causes 30,000 premature deaths—30,000—and over 600,000 asthma attacks every year. By themselves, the 51 power plants charged with violating new source review under the last administration caused over 5,500 premature deaths and over 106,000 asthma attacks each year. If those plants installed the kind of pollution control equipment that new source review requires now, we would save over 4,300 lives and stop over 80,000 asthma attacks.

In my State of North Carolina, pollution is a health crisis. Thanks to Governor Easley, we now have one of the toughest clean air laws in the country. But a recent survey of 20 States showed that our State ranks dead last for clean, smog-free air.

Eighteen hundred people in North Carolina die from breathing smog, soot, and pollution every year. A study by the University of North Carolina School of Public Health found that in most of our counties, three in ten kids have asthma, which is three times more than the national average.

In Asheville, NC, the death rate from lung disease went up 40 percent between 1988 and 1997. So this is literally a life or death matter for our people in North Carolina.

We are here today because the current administration has proposed major changes in new source review. Now, I believe that new source review can and should be reformed to make it less bureaucratic. But the need for reform should not be an excuse so that polluters can send more deadly pollution into the air without cleaning up. That is exactly what is happening here.

Polluters get new leeway for calculating the so-called baseline for measuring pollution. They get a new safe harbor where new source review does not apply at all. And they get a broad new exception from new source review for so-called routine maintenance.

That is what we do know. What is worst is what we do not know. This administration has offered no serious analysis—zero; none—of how the proposal will affect the health of human beings. In their 32-page report on the new source review issued in June, EPA devoted only four pages to environmental protection and human health. The rest of the report was about energy.

I asked about the human health effects of the administration's proposal at the last hearing on this subject. I was told that I would get data and analysis. It never came.

Last month, a bipartisan group of 44 Members of the U.S. Senate sent a letter to EPA Administrator Whitman expressing "serious concerns" about EPA's proposed changes. The letter said, and I quote: "We ask that before finalizing any of these changes, EPA conduct a rigorous analysis of the air pollution and public health impacts of the proposed rule changes."

On Thursday of last week, I received a response from the EPA Administrator. I encourage everyone here to read her letter and look for the rigorous analysis of public health impacts that we

asked for. I encourage you to try to find any analysis of the effects of the proposed changes on public health. You will not find it.

It is outrageous that this administration treats the legitimate concerns of nearly half of the U.S. Senate—Republicans and Democrats—with such open disrespect. It is hard to escape the conclusion that the proposed rule change amount to a gift for oil companies and power companies and a kick in the gut for thousands of people with serious health problems.

I know that some here today will try to say that this committee should not have this hearing. Let me be very clear. This is not just a public health issue. It is a public health crisis. We have tens of thousands of people dying every year from pollution. If that is not a public health issue, I do not know what is.

So we are looking to get straight answers out of this administration to a simple question: What is the impact on public health of the changes that you are proposing? If we do not get those answers, I for one will do my best to keep those changes from becoming law through an appropriations rider on this year's VA–HUD appropriations bill.

Today, this administration has an opportunity to answer the questions of the 44 Senators who wrote their letter fully and fairly. I will be interested in seeing what we get in response.

At this time I will submit for the record a statement from Senator Kennedy.

[The prepared statement of Senator Kennedy follows:]

PREPARED STATEMENT OF SENATOR KENNEDY

Today our committee considers the impact of the sweeping changes proposed by the Administration to the Clean Air Act's New Source Review on the health of all Americans. American families rely on the Environmental Protection Agency to guarantee that the air they breathe is safe and healthy. Today we will learn how proposed changes to the nation's air quality standards may affect the health of millions of Americans.

There is no duty more important to our government than protecting the lives of our citizens. For thousands even millions of Americans, air pollution is a life-and-death situation. That is why today's hearing is so important. I am concerned that the proposed changes may constitute sweeping rollbacks of some of the most important provisions of the Clean Air Act, and will undermine existing regulations that improve air quality and protect the public health. These rollbacks will create new loopholes for our worst industrial polluters, weaken current environmental laws, and increase the threat to public health.

These proposed changes will take their heaviest toll on the most vulnerable among us children and the elderly. Asthma rates for children have doubled in the last twenty years. Long term exposure to air pollution from coal-fired power plants and other sources leads to increases in the risk of death from lung cancer and heart disease, decreased lung function, more frequent emergency care, restricted activity, increased asthma attacks and increased deaths. We should be strengthening the nation's protections against air pollution not weakening them as proposed by the Administration.

It is of great concern to this committee that EPA failed to conduct environmental and health impact analyses on these proposed changes prior to announcing its plans to relax air quality standards for some of the largest polluting industries in this country. Today's hearing will shed light on the effect that these changes will have on the health of the nation. We will have an opportunity to learn more about the real consequences of the proposed changes to these important air quality standards.

I look forward to hearing from our panels on this crucial issue. And also, thank you to Senator Edwards for your leadership on environmental health and for aggressively pursuing tougher environmental health standards that protect all Americans.

Senator EDWARDS. Our first panel of witnesses will begin with Mr. Jeff Holmstead, who is an assistant administrator at the EPA, and he will talk to us about the proposed changes in the Clean Air Act and the effects on human health.

Then, we will hear from Dr. Olden, who is director of the National Institute for Environmental Health Sciences at NIH. Dr. Olden will help us understand the emerging research on air quality and health that his organization has supported.

I want to thank Dr. Olden for joining us today. He is located in North Carolina, and he and I have traveled together fairly regularly on airplanes back and forth between North Carolina and Washington. We are glad to have you here, Dr. Olden.

Mr. Holmstead, we will begin with you.

STATEMENTS OF JEFFREY HOLMSTEAD, ASSISTANT ADMINISTRATOR, OFFICE OF AIR AND RADIATION, U.S. ENVIRONMENTAL PROTECTION AGENCY; AND KENNETH OLDEN, DIRECTOR, NATIONAL INSTITUTE FOR ENVIRONMENTAL HEALTH SCIENCES, NATIONAL INSTITUTES OF HEALTH

Mr. HOLMSTEAD. Good afternoon, Senator Edwards.

Thank you for giving me the chance to talk about the tremendous progress that we have made in protecting public health under the Clean Air Act.

As you know, the Clean Air Act is by far the most comprehensive and complex of the environmental statutes enacted by Congress, and it has created hundreds of programs that collectively have helped us to improve air quality throughout the country.

I know that you have a particular interest in one of these programs, the New Source Review Program, which is often referred to as NSR or the NSR Program. I look forward to answering your questions about this program and explaining how the changes we plan to make to the program will better protect air quality and public health.

I would like to begin by providing some basic background, if I may.

As this chart shows, since Congress passed the first Clean Air Act in 1970, our country has experienced tremendous growth. As you can see here, the population has increased since that time by about 36 percent; VMT, or vehicle miles travelled, has increased by 143 percent; and our economy, measured in terms of gross domestic product, has actually grown by 158 percent. During that same time

period, pollution in the country has been reduced pretty dramatically by almost 30 percent over that same time period.

The emissions reductions achieved under the Clean Air Act have produced significant public health benefits. We estimate that by the year 2010, the 1990 Amendments alone will have prevented tends of thousands of premature deaths, tens of thousands of cases of acute and chronic bronchitis, tens of thousands of respiratory-related and cardiovascular hospital admissions, and millions of lost work days.

We have been able to achieve these successes thanks to American ingenuity and the wide range of tools and authorities available to us under the Clean Air Act. Despite our successes, we are still facing serious air quality challenges, the most important of which is the challenge posed by fine particle pollution, which is the most serious public health threat from air pollution today. We must also continue to reduce ground-level ozone.

To help us meet the new health-based standards we have set for these pollutants, we are implementing new emissions standards for motor vehicles and heavy-duty trucks and buses. We are also working on a rule to reduce emissions from large nonroad equipment. And, most important, as I have said on numerous occasions, we would like to work with Congress to pass the Clear Skies Act which would dramatically reduce emissions from power plants, which are the single most important air pollution problem that we have today.

Along with all of these initiatives, we are also moving forward with long-awaited plans to improve the NSR program. For more than a decade, State and local government leaders, Members of Congress from both parties, and consumer and environmental groups have all acknowledged that NSR as it applies to existing sources does not work as well as it should.

EPA has worked for more than a decade to improve the NSR program for existing sources, and the two sets of reforms that we announced in June are the product of this work. Soon, we will finalize changes originally proposed in 1996, and we will also propose for public comment a second set of changes later this year.

The first set of reforms includes five major improvements to the NSR program. First, we are introducing something called plant-wide applicability limits, commonly referred to as PALs. Under this approach, a facility is given certain flexibility in exchange for agreeing to accept a cap on its plant-wide emissions. Let me give you an example.

Currently, a typical computer chip manufacturing plant makes around 200 equipment and operational changes every year. Under the current NSR program, a plant operator must analyze each one of these changes to determine whether it might trigger NSR. For every proposed change that might trigger NSR, the plant cannot make the change until it goes through a lengthy process which can slow production or prompt plants to forego new opportunities.

We know from some pilot projects that we have conducted that the same plant operating under a PAL operates much more efficiently and, at the same time, reduces pollution.

A second change is called the clean unit provision. Under this provision, a plant with state-of-the-art pollution controls can apply

to be certified as a "clean unit." Changes at a clean unit plant will trigger NSR only if emissions exceed permitted limits. We anticipate that many companies will voluntarily install stringent emission controls in exchange for the regulatory certainty and flexibility that this provision provides.

The third change addresses pollution control and prevention projects. This change will remove existing disincentives that discourage companies from implementing environmentally beneficial technologies. Under the current system, for example, a facility proposing to replace an oil-fired boiler with a much cleaner natural gas boiler must still go through the lengthy process of obtaining an NSR permit. Our new approach will encourage environmentally beneficial projects like this one by allowing them to proceed without going through the NSR process.

Fourth, we are revising the way emissions increases are calculated. Right now, facilities making even modest changes often trigger new source review even though emissions will not actually increase. The change we are finalizing will allow facilities to base emission estimates on how much pollution they actually will emit.

Finally, we will make a related change that establishes a fair method for determining emissions baselines. Our new approach will be much easier to implement than the current approach and should result in a more accurate estimate of baseline emissions.

I know that, Senator, you and others have expressed concern that these changes may allow emissions to increase. Let me just tell you that we simply believe that this is not the case. EPA has been analyzing these changes for more than 8 years. Among other things, we have conducted pilot studies, held hundreds of meetings with concerned groups and citizens, and reviewed literally thousands of public comments. It is because of this work that we believe the changes we are making will have a positive impact on air quality.

You and others have requested that we try to analyze the emissions impact of these changes quantitatively. I want to assure you that we will be responsive to this request. We are working right now to quantify the emissions reductions to the extent possible, and we will provide this analysis as part of the rulemaking record.

Again, thank you for giving me the chance to appear before you today, and I would be happy to answer any questions that you may have.

Senator EDWARDS. Thank you very much, Mr. Holmstead.

[The prepared statement of Mr. Holmstead follows:]

PREPARED STATEMENT OF JEFFREY HOLMSTEAD

I. INTRODUCTION

Mr. Chairman and Members of the Subcommittee, thank you for the opportunity today to testify on improvements eve intend to make to the new source review (NSR) program under the Clean Air Act. I am pleased to be joined by Dr. Ken Olden of the National Institute of Environmental Health Sciences, who will address recent findings from the Federal particulate matter (PM) research program, in which both of our Agencies are prominent. The NSR program is one of many Clean Air Act programs. It allows for industrial growth without compromising our progress towards cleaner air. To accomplish this goal, the NSR program requires companies to install state-of-the-art pollution control equipment when they build a new major emitting facility or when they make a major modification to an existing plant that would result in a significant increase in emissions of a covered pollutant. Based on over 10

years of EPA review of and public comment on the NSR program, the NSR program, as it applies to modifications of existing plants, needs to be modified to work better. As a result, we will soon be finalizing one set of improvements that were first proposed in the Clinton Administration and proposing another set of improvements. The changes that we are finalizing will make the program work better and provide public health and environmental benefits. For the changes that we will be proposing, one of the issues we will take comment on is their impact on public health and the environment.

Since I have not testified in front of this Committee before. I would like to take this opportunity to describe the tremendous public health and environmental benefits of the many programs that comprise the Clean Air Act. I hope that this important background information wi11 also help you put the NSR program in context. The Clean Air Act, particularly the 1990 Amendments that were proposed and then signed into law by President George Herbert Walker Bush, has provided and continues to provide us with significant public health and environmental benefits. Since the 1990 Amendments were enacted, this nation has made great progress in reducing acid rain, meeting health-based air quality standards, protecting the stratospheric ozone layer, and cutting toxic air pollution. Yet we still face major challenges to achieve healthful air, a cleaner environment, and clear skies for all Americans.

In my statement today, I will describe the results we have achieved through Clean Air Act programs enacted to protect public health and environmental quality. I will then discuss the remaining air quality challenges we face today—particularly the need to protect public health by reducing levels of fine particle and ozone pollution. As we move forward to meet these new air quality challenges, it is important to evaluate existing programs and build upon or improve them. One of the key steps our country should take to reduce fine particle and ozone pollution quickly is for Congress to pass Clear Skies legislation— which would build on the successful acid rain cap-and-trade program to reduce SO_2 and NOx emissions from power plants. It is also important to improve the NSR program. EPA's improvements are targeted to fix well known problems with the program, while maintaining the Clean Air Act's fundamental purpose of assuring that major modified sources take necessary measures to address their emissions increases.

II. PROGRESS TOWARD CLEAN AIR

Our progress on cleaning up the air demonstrates that strong economic growth and a cleaner environment can go hand-in-hand. Since the basic structure of today's Clean Air Act was enacted in 1970, we have reduced emissions of six key air pollutants by 30 percent. At the same time, the economy has grown substantially. The Gross Domestic Product increased 160 percent; vehicle miles traveled increased 145 percent; energy consumption increased 45percent; and the U.S. population increased 35percent. This success story was made possible by American ingenuity—spurred in large part by legislation that recognized the importance of a clean environment. Our strong economy has helped us provide cleaner air, which has provided important public health and environmental benefits that far outweigh the costs. For example, lead levels in ambient air are 98 percent lower than in 1970, greatly reducing the number of children with IQs below 70 as a result of dirty air. The benefits from the programs in the 1990 Amendments alone are impressive. A peer-reviewed EPA study estimates that upon full implementation in 2010, the Clean Air Act programs signed into law by former President Bush will avoid tens of thousands of premature deaths, tens of thousands of cases of acute and chronic bronchitis, tens of thousands of respiratory-related and cardiovascular hospital admissions, and millions of lost work days, among other benefits.

To appreciate how far we have come in reducing air pollution, it is instructive to remember where we were before the 1990 amendments. Acid rain essentially was unchecked, causing damage to aquatic life, forests, buildings and monuments, as well as visibility degradation and health risks from sulfate and nitrate particles. There was growing concern about the increasing damage to the stratospheric ozone layer, which, among other things, protects us from skin cancer and cataracts. In 1990, photochemical smog, which can impair lung function, cause chest pain and coughing, and worsen respiratory diseases and asthma, exceeded healthy levels in 98 metropolitan areas. Many cities did not meet the national air quality standards for the pollutant carbon monoxide, which can aggravate angina (heart pain), and also for particulate matter, which is linked to premature death, aggravation of preexisting respiratory ailments, and reductions in lung capacity. The millions of tons of hazardous air pollutants emitted annually in the U.S. were largely unregulated

at the Federal level. Many of these pollutants have the potential to cause cancer or other serious health effects such as nervous system damage.

Since then, the 1990 Amendments have enabled us to substantially reduce each of the major air pollution problems that faced the U.S.:

• Annual sulfur dioxide emissions. which react to form acid rain and contribute to fine particle formation, have been cut by more than 6.7 million tons, and rainfall in the eastern U.S. is as much as 25 percent less acidic.

• Production of the most harmful ozone-depleting chemicals has ceased in the U.S. and—provided the U.S. and the world community maintain the commitment to planned protection efforts—the stratospheric ozone layer is projected to recover by the mid 21st century.

• Ground-level ozone pollution, particulate matter, and carbon monoxide pollution have all been reduced significantly, producing dramatic decreases in the number of areas in nonattaimnent.

• Rules issued since 1990 are expected to reduce toxic air emissions from industry by nearly 1.5 million tons a year—a dozen times the reductions achieved in the previous 20 years. Other rules for vehicles and fuels will reduce toxics by an additional 500,000 tons a year by 2020.

Reducing Acid Rain

The 1990 Amendments created the Acid Rain Program, calling for major reductions in electric generating facilities' emissions of sulfur dioxide (SO_2) and nitrogen oxides (NOx), the primary pollutants that cause acid rain. The Acid Rain Program has been a resounding success, and at a much lower cost than first expected. The centerpiece of the program is an innovative, market-based "cap-and-trade" approach to achieve a nearly 50 percent reduction in SO_2 emissions from 1980 levels.

The results of the program have been dramatic—and unprecedented. Compliance with the Acid Rain Program began in 1995 and is now in its eighth year. From 1995–99, the first phase of the Acid Rain Program, annual SO_2 emissions from the largest, highest-emitting sources dropped by nearly 5 million tons from 1980 levels. These significant reductions were an average of 25 percent below required emission levels, resulting in earlier achievement of human health and environmental benefits.

In 2001, the SO_2 emissions from power generation were more than 6.7 million tons below 1980 levels. NOx emissions have been reduced by 1.5 million tons from 1990 levels by a more traditional rate-based program (about 3 million tons lower than projected growth). Because the NOx component of the program is rate-based, however, there is no guarantee that NOx emissions will stay at these low levels; without a NOx cap, emissions will increase as power generation increases.

These emissions reductions are delivering impressive environmental results. Due to the drop in SO_2 emissions, rainfall acidity in the eastern U.S. has dramatically improved, measuring up to 25 percent less acidic. As a consequence, some sensitive lakes and streams in New England are showing the first signs of recovery. Further, ambient sulfate concentrations have been reduced, leading to improved air quality and public health, with fewer respiratory illnesses such as asthma and chronic bronchitis. Moreover, the air is clearer, particularly in areas where some of our most scenic vistas are found, such as the Shenandoah National Park. These emissions reductions and environmental results have been achieved at a much lower cost than anyone expected. In 1990, EPA projected the full cost of implementation of the SO_2 emission reductions would be about $5.7 billion per year (1997 dollars). In 1994, GAO projected the cost at $2.3 billion per year (1997 dollars). Recent estimates of annualized cost of compliance are in the range of $1 to $1.5 billion per year at full implementation.

The cost-effectiveness of the program is tied to the design features of the innovative cap-and-trade approach. The Acid Rain Program was designed to provide certainty that emissions reductions would be achieved and sustained while at the same time allowing unprecedented flexibility in how to achieve the needed emission reductions. This stimulates the use of a variety of emission reduction options, such as fuel switching, installation of control equipment, use of efficiency measures and renewables, and trading among sources. Because the market system places a monetary value on avoided emissions, compliance has stimulated tremendous technological innovation, including efficiency improvements in control technology.

When the Acid Rain Program was designed in the early 1990s, some were concerned about the potential effect of emissions trading on local air quality. Now, in the eighth year of the program, we know that flexibility under the Acid Rain Program has not adversely affected attainment of air quality standards. Independent analyses of the program demonstrate that trading has not created "hotspots" or increases in localized pollution. In fact, the greatest SO_2 emissions reductions were

achieved in the highest SO_2-emitting States, acid deposition decreased and, consistent with projections, the environmental benefits were delivered in the areas where they were most critically needed.

The environmental integrity of the Acid Rain Program also can be traced to design features of the approach. The program was developed with unprecedented levels of accountability and transparency. Sources must continuously monitor and report all emissions, ensuring accurate and complete emissions information. All data are publicly available on the Internet, providing complete transparency and the public assurance necessary—for program legitimacy. Remarkably, sources have registered nearly 100 percent compliance.

Because of the unprecedented success of the Acid Rain Program, it has served as the model for numerous additional programs to reduce emissions cost-effectively in this country and around the world, including the President's recently proposed Clear Skies Act, which I discuss in some detail below.

Meeting Health-Based Air Quality Standards

Overview

The air in our nation is considerably cleaner than in 1990. Under the Act, EPA has set health-based national ambient air quality standards (NAAQS) for six common pollutants. Nationally, the 2000 average air quality levels were the best in the last 20 years for all six pollutants—lead, nitrogen dioxide, sulfur dioxide, particulate matter, carbon monoxide and ozone.

Since 1990, an unprecedented number of cities have met the health-based national ambient air quality standards. In fact, more than two-thirds of the areas designated as nonattainment following the 1990 amendments now have air quality meeting those standards based on 1998–2000 data, including:

- 41 of the 43 carbon monoxide areas
- 69 of the 85 coarse particulate matter (PM-10) areas
- 71 of the 101 ozone areas (one-hour standard)

While air quality improved, the economy showed robust economic growth, increasing 37 percent between 1990 and 2000.

In 1997, based on updated scientific information, EPA set a new standard for fine particles (PM2.5) and a revised, 8-hour standard for ozone that is more stringent than the one hour standard. We have made great progress working with States to get monitoring systems in place for PM2.5. Many areas across the eastern U.S. and in California appear to have pollution levels exceeding the 1997 standards.

For the other common pollutants, only a few areas remain in nonattainment. The remaining lead and sulfur dioxide nonattainment areas in the country are the result of localized point sources for which action on an individual basis is being taken. Since 1998, all cities have met the air quality standard for nitrogen dioxide.

Ongoing Work To Combat Ozone Pollution

The Clean Air Act gives States the primary responsibility for meeting national air quality standards by developing and implementing State implementation plans (SIPS). EPA assists States by providing guidance, setting national emissions limits for sources such as motor vehicles, and requiring control of upwind sources that contribute to dowmwind problems in other States.

During the past two years we have reached a major milestone in cleaning up smog in many of our nation's largest cities. In the Northeast, Midwest and South, States have completed plans for attaining the 1-hour ozone standard in all of the metropolitan areas that have pollution levels considered serious or severe under the Act.

Interstate transport of ozone and NOx, an ozone precursor, is a major contributor to the ozone nonattainment problems across the eastern U.S. No State can solve this problem on its own.

As a result, EPA has issued two complementary rules—the NOx SIP Call and the Section 126 rule—in a combined Federal/State action to reduce interstate ozone transport. The effect of the two rules together is to require NOx reductions in 19 States and the District of Columbia. EPA anticipates that full implementation of these rules will reduce total ozone-season NOx emissions from power plants and large industrial sources by approximately one million tons by the 2007 ozone season. This is essential for many of the remaining ozone nonattainment areas to meet the one-hour standard, and will greatly reduce the number of areas exceeding the more stringent 8-hour standard.

The NOx SIP Call, which sets emissions budgets for States, and the Section 126 rule, which applies directly to power plants and large industrial sources, both allow for implementation through a market-based cap-and-trade program that allows fa-

cilities to choose the most cost-effective means of reducing their pollution. All of the States subject to the NOx SIP Call plan to use the cap-and-trade approach.

EPA's reliance on existing CAA authorities for addressing ozone transport is working, but three major lawsuits by some States and corporations have delayed implementation. EPA issued the original NOx SIP call rule in 1998. Both the SIP Call and the subsequent Section 126 Rule set a May 2003 compliance date. However, one court ruling delayed the NOx SIP call compliance date until May 31, 2004. A second court ruling stopped the compliance clock for electricity generators subject to the Section 126 Rule while EPA responded to concerns the court raised with heat input (fossil-fuel-use) projections for electricity generators, which EPA used in calculating emissions budgets for the two rules. As a result, the two rules were no longer synchronized.

Administrator Whitman on April 23 signed a rule setting the Section 126 compliance date as May 31, 2004—once again harmonizing the compliance dates. This will facilitate withdrawal of the Federal Section 126 program in States that meet the requirements of the SIP Call Rule, and help to avoid potential overlap of the two programs. The Administrator also signed a notice that explains EPA's decision to retain the original heat input projections. In a separate action, EPA recently issued a proposed "phase II" rule responding to other issues from court decisions on the SIP call and Section 126 rules.

Cutting Transportation Emissions

In general, transportation sources contribute roughly half of the overall pollution in our air. The contribution, however, can vary significantly—from pollutant to pollutant and from city to city. Note that when I refer to transportation sources I mean all highway motor vehicles as well as diverse types of off-road vehicles and engines. They are major sources of four pollutants, contributing 56 percent of the total U.S. emissions of NOx, 77 percent of CO, 47 percent of VOCs, and 25 percent of the PM.

Cleaner Vehicles

Cars being built today are well over 90 percent cleaner than cars built in 1970. This is a result of a series of emission control programs implemented by EPA through nationally applicable regulations. Since the first tailpipe standards took effect in the 1970's, there have been increasingly more stringent standards; most recently Tier 1 in the mid-90's; the National Low Emission Vehicle (NLEV) Program, which is in effect today; and Tier 2 standards set to take effect beginning with the 2004 model year. In the Tier 2 standards and most other national vehicles and fuels rules issued since 1990, EPA has provided compliance flexibility through emissions averaging and trading systems.

Tier 2 will take a major step toward reconciling passenger vehicles with clean air. For the first time it holds SUVs, minivans and pick-up trucks to the same emission requirements as autos. Tier 2 is also fuel neutral, which means that gasoline, diesel and alternative fueled vehicles all must meet the same set of standards. Tier 2 is cost effective and its benefits to public health are large—by 2020, over two million tons of NOx emissions avoided per year, 4,000 premature deaths prevented annually and tens of thousands of respiratory illnesses prevented.

Most large trucks and buses are powered by diesel engines. They can emit high levels of NOx and PM. Although cars were regulated first, diesel truck and bus manufacturers have had to comply with a series of increasingly more stringent standards beginning in the late 1980's. This Administration has affirmed and is supporting a major new program that has recently been established to protect public health and the environment while ensuring that diesel trucks and buses remain a viable and important part of the Nation's economy. Called the Clean Diesel Program, it begins in 2007, when the makers of diesel engines will for the first time install devices like catalytic converters on new trucks and buses to meet the emission performance standards. The environmental benefits of this program will be substantial. When these cleaner vehicles have replaced the current fleet, 2.6 million tons of NOx emissions will be avoided every year, 8,000 premature deaths prevented annually, and 23,000 cases of bronchitis and 360,000 asthma attacks. These health benefits far outweigh the cost to produce the cleaner engines and fuels.

The Clean Diesel Program will reduce emissions only from newly produced engines. But there are millions of older diesel trucks, buses and off-road equipment in use today, many of which spew noxious, black soot from their exhaust pipes. EPA has therefore initiated, in cooperation with manufacturers of diesel emission control systems, a major new voluntary initiative to install cost effective emission control equipment on older diesels. Through this innovative program, the Diesel Retrofit Program, the Agency to date has obtained commitments from businesses and mu-

nicipalities that own fleets of trucks or buses to retrofit 85,000 vehicles with devices that will reduce exhaust emissions.

Of course, motorists share responsibility to maintain their vehicles properly. Inspection and maintenance (I/M) programs, currently operating in 56 metropolitan areas, are meant to identify polluting vehicles and lead to their repair. Today many States are re-structuring their I/M programs to efficiently incorporate the capabilities of so-called "onboard diagnostic (OBD) systems" that use the vehicle's onboard computer to speed the testing process, provide specific information to the technician to help get repairs done correctly, and maintain or improve the air quality benefits of an I/M program.

Cleaner Fuels

Let me now switch from cleaner vehicles to cleaner fuels. The first effort to address an environmental problem linked to fuel was the multi-year effort to phase down and eventually eliminate lead in gasoline. That successful action was followed by other programs to require oil refiners to produce cleaner gasoline. In the late 1980's refiners began to reduce the evaporation rate of gasoline nationwide during the summer months.

The 1990 amendments to the Clean Air Act established several new clean fuel programs. Much of the nation's progress on carbon monoxide can be attributed to the wintertime oxygenated fuels program, which began in 1992 in 30 cities. The 1990 amendments also established the reformulated gasoline (RFG) program, which was designed to serve several goals, including improving air quality and extending the gasoline supply through the use of oxygenates. Today, roughly 35 percent of this country's gasoline consumption is cleaner-burning RFG. The emission reductions which can be attributed to the RFG program are equivalent to taking 16 million cars off the road.

In two of the programs I mentioned earlier, Tier 2 and the 2007 Clean Diesel Program. EPA recognized the efficiencies of addressing vehicles and fuels as a system when establishing an emissions control program. Thus, in addition to setting strict exhaust emission standards for the vehicles and engines, we also required that cleaner, low sulfur gasoline and diesel fuel be available to enable those emission standards to be achieved. Sulfur is similar to lead in that it degrades the effectiveness of a catalytic converter. This lower sulfur gasoline will reduce emissions from all gasoline-powered highway vehicles, not just those meeting the tighter vehicle emissions standards. The Tier 2 and diesel regulations provide sufficient time for refiners to make the necessary modifications to their facilities before the low sulfur fuel is required. EPA has included a number of provisions that provide additional flexibility to refiners, particularly small refiners.

Off-Road Engines

As emissions from highway vehicles are reduced, the potential for reductions from other sources must be evaluated. Therefore. in 1990 Congress gave EPA new authority to set emission limits for off-road engines and equipment. As a result, EPA has adopted emission control programs for the following off-road equipment: locomotives, marine vessels, outboard recreational boats, and small gasoline engines used in lawn and garden equipment.

The next major category of mobile source emissions to be addressed is large diesel engines used in construction, mining, airport and agricultural equipment. Even though modest emission requirements are in place for this equipment, EPA currently estimates that by 2020 the category will contribute over 10 percent of the total NOx emissions inventory in a typical metropolitan area and 8 percent of the PM emissions. We believe taking steps to reduce emissions from these sources can be done cost effectively and provide significant public health and welfare benefits.

We are currently working with industry, State, public health organizations, and other stakeholders in developing a proposal. An important issue for consideration is the potential need to lower the sulfur levels in off-road diesel fuel to enable new exhaust control technology to be utilized on future engines. As we found with highway vehicles, this approach of comprehensively looking at the engines and fuel as a system is appropriate here as well. As an initial baseline for possible control strategies, we are using the standards for both engines and diesel sulfur level that were adopted as part of the highway diesel program. We are also analyzing emission credit trading program options and compliance flexibilities for small businesses, among other things. Additionally, EPA and OMB are working collaboratively on this rule as OMB shares our concern about the health effects of diesel emissions and the need to develop a strong rule to reduce emissions from off-road engines. We believe this collaboration will allow a more expedited rulemaking process. The EPA Administrator will, however, be the decision maker with respect to this rule, and retains

sole authority to make final decisions about the content of the proposed and Final regulations.

EPA is also working to help communities address vehicle emissions on a voluntary, nonregulatory basis. A new business-government partnership, called the Commuter Choice Leadership Initiative, focuses on reducing vehicle emissions and improving the way people get to and from work. EPA and DOT assist participating employers by offering technical assistance, public recognition, training, Web-based tools, and forums for information exchange. To participate, employers make a series of commitments, including ensuring a minimum level of employee participation and offering a series of commuter benefits. In return for offering these benefits, employers can reap the important benefits of helping to attract and retain employees, reduce the demand for limited or expensive parking, and exhibit leadership and corporate citizenship. Almost 300 companies, employing over 750,000 people, have joined the program since it was launched last year.

Protecting the Stratospheric Ozone Layer

EPA's Stratospheric Ozone Protection Program has played a landmark role in addressing one of the most pressing environmental issues of our time—the depletion of the ozone layer. We can say with certainty and pride that our effort in the U.S. to protect the ozone layer is on track toward unqualified success. With the successful worldwide phaseout of ozone depleting substances, EPA estimates that 6.3 million U.S. lives will have been saved from fatal cases of skin cancer between 1990 and 2165, and that up to 300 million cases on non-fatal skin cancer and approximately 30 million incidences of cataracts will have been avoided.

To date, international cooperation to implement the Montreal Protocol on Substances that Deplete the Ozone Layer has led to global reductions in the production and use of ozone depleting substances (ODS), the results of which we can already see. Developed country production of CFCs, methyl chloroform, and carbon tetrachloride essentially ended, except for limited exemptions permitted under the Montreal Protocol, thus avoiding emissions of 400,000 metric tons of ODS. Developing countries as a whole are ahead of schedule in reducing their production, use, and emissions of ODS.

If the world community stays the course, we can expect to see the ozone layer recover in approximately 50 years. The prospect of identifying and solving a global environmental problem of this magnitude, within the span of a single lifetime, is nothing short of amazing. Let me tell you about the success we have had here and abroad.

Here at home, the U.S. is doing its part to ensure the recovery of the ozone layer. Working closely with industry, EPA has used a combination of regulatory, market based (i.e., a cap-and-trade system among manufacturers), and voluntary approaches to phase out the most harmful ozone depleting substances (ODS). And we're doing so more efficiently than either EPA or industry originally anticipated. The ODS phaseout for Class I substances was implemented 4–6 years faster, included 13 more chemicals, and cost 30 percent less than was predicted at the time the 1990 Clean Air Act Amendments were enacted.

The U.S. has not only "taken care of business" at home but has also played a key leadership role internationally. Through the Multilateral Fund set up under Presidents Reagan and Bush, the U.S. has led the effort toward long term agreements to dismantle more than two-thirds of developing country CFC production capacity and eliminate virtually all of developing country halon production capacity. Sales of U.S. technologies, such as recycling, air conditioning, and refrigeration equipment and about $80 million per year of sales of alternatives to ozone depleting substances have played an important role in this worldwide progress. While the final closing of related facilities depends on continued funding, we are confident that through continued U.S. involvement and investment in this area we will be able to fulfill our international obligations and keep recovery of the ozone layer within our sights.

With continued worldwide vigilance, full recovery of the ozone layer is predicted to occur in 50 years. In the near term, however, exposure to UV radiation and the subsequent health effects of increased incidences of skin cancer and cataracts continues to be a very real problem. One American dies every hour from skin cancer and a mere one to two blistering sunburns can double one's chances of developing melanoma later on in life. With this knowledge, EPA created the SunWise Schools Program to teach children and their caregivers about sun safety. EPA expects to reach children in 17,000 U.S. schools by 2005.

We are proud of these achievements, but the job is not yet done. We have important work ahead of us such as the upcoming domestic phase outs of chemicals like methyl bromide (MBr) and hydrochloroflurocarbons (HCFC) while ensuring that sufficient amounts are available for critical and essential uses. The budget includes $10

million in EPA funding to help replenish the multilateral fund. Without a mechanism for facilitating developing country commitments to phaseout ozone depleting substances, we jeopardize recovery of the ozone layer. investments already made by U.S. industry in alternative technologies, and indeed the lives and health of Americans.

Reducing Risks From Air Toxics

Toxic air pollutants are pollutants known or suspected to present a threat of adverse human health effects such as cancer or birth defects, or adverse environmental effects. In order to control emissions of these pollutants, EPA since 1990 has issued 63 pollution standards affecting 105 industrial categories such as chemical plants, dry cleaners, coke ovens, and petroleum refineries. When fully implemented, these standards will eliminate nearly 1.5 million tons of air toxics and 2.5 million tons of particulate matter and smog-causing volatile organic compounds.

By contrast, in the preceding twenty years only seven hazardous air pollutant standards, eliminating 125,000 tons of toxics, had been put in place. In 1990, Congress directed EPA to issue technology- and performance-based standards on a source category basis to ensure that major sources of air toxics are well controlled. In essence these standards create a level playing field by requiring all major sources to achieve the level of control already being achieved by the better performing sources in each category.

The result is that we are reducing the large quantities of toxic air pollutants released into our air, in the aggregate and around industrial sources in populated areas. We will achieve additional reductions as we complete standards for more categories of major pollution sources. This approach is achieving substantial reductions in air toxics, but we recognize that it is not perfect; a drawback is that it focuses on the quantity of emissions while toxic pollutants vary substantially in the risk they pose. Congress gave EPA greater flexibility to target the greatest risks in the second phase of the air toxics program outlined in the 1990 amendments.

We are now in the early stages of implementing this second phase of the air toxics program, targeting particular problems such as elevated risks in urban areas, deposition of air toxics into the Great Lakes, and residual risks from already controlled sources. The underlying goal of this program is to improve air quality at the local, regional, and national levels while minimizing cost and reducing unnecessary burden on States and the regulated community. Achievement of this goal would ultimately result in reduced public risk from exposure to air toxics or other environmental threats.

Virtually all of the transportation-related control programs I discussed earlier reduce toxic emissions as well as emissions of NAAQS pollutants or their precursors. For example, compared to 1990 levels, the programs we have in place today for highway vehicles, including Tier 2 and the 2007 diesel rule, will reduce emissions of four gaseous toxic pollutants by about 350,000 tons by 2020, a 75 percent reduction. Diesel particulate matter (PM) from highway vehicles will be reduced by 220,000 tons over the same time frame, for a 94 percent reduction.

Improving Visibility in our National Parks and Wilderness Areas

Having lived a good portion of my life within sight of the Front Range, within an hour of Rocky Mountain National Park, I have a personal appreciation for the importance of protecting the beautiful vistas of our great land from visibility degradation. Haze, created by fine particles and other pollutants, often degrades visibility across broad regions and obscures views in our best known and most treasured natural areas such as the Grand Canyon, Yosemite, Yellowstone, Mount Rainier, Shenandoah, the Great Smokies, Acadia, and the Everglades. Despite improvements in recent years in some areas, visibility remains significantly impaired. In eastern parks, average visual range has decreased from 90 miles (natural conditions) to 15–25 miles, and on some days, visibility is less than 10 miles. In the West, visual range has decreased from 140 miles to 35–90 miles. Visibility for the worst days in the West is similar to days with the best visibility in the East.

In July 1999, EPA published a long awaited regional haze rule that calls for long-term protection of and improvement in visibility in 156 national parks and wilderness areas across the country. Because haze is a regional problem, EPA has encouraged States and tribes to work together in multi-state planning organizations to develop potential regional strategies for the future. Five of these regional planning organizations are no1A operational. EPA will be working closely with these organizations to provide guidance during this process, just as it did with the many States and tribes involved in the Grand Canyon Visibility Transport Commission.

Over the next several years, States are required to establish goals for improving visibility in each of these 156 areas and adopt emission reduction strategies for the

period extending to 2018. States have flexibility to set these goals based upon certain factors, but as part of the process. they must consider the rate of progress needed to reach natural visibility conditions in 60 years. To assist in evaluating regional strategies and tracking progress over time, we have continued to work with the States and Federal land managers to expand our visibility and fine particle monitoring network to 110 of these areas.

One of these regional planning organizations is the Western Regional Air Partnership, or WRAP. The regional haze rule specifically takes into account the WRAP's efforts to develop and carry out a strategy, for improving visibility in 16 scenic areas in the western U.S. Currently, EPA is proposing to approve, and to incorporate into the regional haze rule, an element of this strategy that addresses stationary sources of sulfur dioxide. The WRAP's innovative approach establishes regional sulfur dioxide emissions targets, gives Western sources the opportunity to meet these targets through voluntary measures, and provides for an enforceable backstop emissions trading program that will ensure that the targets are met if the voluntary measures do not succeed.

EPA is moving forward to carry out the CAA requirements for "best available retrofit technology," or BART, at certain older facilities that have been grandfathered from new source requirements under the Act. These older facilities emit large amounts, in the millions of tons, of visibility-impairing pollutants. For many, cost-effective control measures are available. EPA was disappointed with a May 24, 2002, court ruling by the D.C. Circuit which questioned some of the BART requirements in the 1999 regional haze rule. We are asking for re-hearing of this decision, and we are actively pursuing options in the event that re-hearing is not granted, or if EPA does not prevail upon re-hearing. Implementation of the BART requirement may require us to re-propose the BART requirement, and to re-propose guidelines for States to follow in identifying BART sources and controls. EPA intends to publish whatever rule changes are needed to carry—out this important requirement of the Act.

III. TODAY'S CHALLENGES

As the preceding discussion shows, the Clean Air Act has an impressive track record, showing progress on nearly all fronts addressed by the 1970 Act and its subsequent amendments. Even so, some serious challenges remain. I will discuss the most significant of these challenges, including fine particle and ozone pollution, environmental concerns such as acid and nitrogen deposition, and toxic air pollution.

Reducing Fine Particles and Smog

Two of the greatest air quality challenges facing us today are reducing levels of fine particles and ground-level ozone (smog) to meet the more health protective air quality standards EPA issued in 1997 based on an exhaustive review of new scientific evidence on effects of these pollutants. Fine particles and 8-hour ozone levels appear to be of concern in many areas of California and across broad regions of the eastern U.S.

On March 26, after years of litigation and a favorable Supreme Court decision, the U.S. Court of Appeals for the D.C. Circuit rejected all remaining legal challenges to both standards. The Administration vigorously defended the standards before the court.

As Administrator Whitman said, the court decision "is a significant victory in EPA's ongoing efforts to protect the health of millions of Americans from the dangers of air pollution. EPA now has a clear path to move forward to ensure that all Americans can breathe cleaner air." Now EPA will work in partnership with State, tribal and local governments to implement those standards.

We believe that fine particles pose the greatest public health risks of any regulated air pollutant. Fine particles are associated with tens of thousands of premature deaths per year in people with heart and lung diseases. Fine particles aggravate heart and lung disease, leading to increased hospitalizations, emergency room and doctor visits, use of medication, and many days of missed school and work. Fine particles have also been associated with respiratory symptoms such as couching and wheezing and chronic bronchitis, as well as heart beat irregularities and heart attacks. And tine particles are a year-round problem.

Over the last 5 years, EPA has invested over a quarter billion dollars into research on the health effects of PM and the development of cost-effective implementation strategies to meet the PM standards. In doing this, we have listed carefully to the advice an expert panel of the National Academy of Sciences and have coordinated our approach with Federal and non-Federal partners.

Ozone smog also is a significant health concern, particularly for children and people with asthma and other respiratory diseases who are active outdoors in the sum-

mertime. Ozone can cause increased transient respiratory symptoms, such as coughing and pain when breathing deeply, as well as transient reductions in lung function and inflammation 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.

We are determined to move expeditiously to achieve the health benefits of the standards. However, there is some preliminary work that must be completed before we can designate areas under the new standards, which starts the clock on many implementation requirements.

Before the PM2.5 nonattainment areas can be designated, three years of data are needed to determine whether an area is not attaining the standard. We have 3 years of quality-assured data that will soon be sent to the States. It is difficult to project a precise schedule for designating PM2.5 nonattainment areas, but I have asked my staff to determine how we can move forward expeditiously in light of the public health threat posed by tine particles. The Transportation Equity Act of 1998 requires States and EPA complete the process within two years after three years of monitoring data are available, or no later than December 31, 2005. Based on a preliminary two-year data set from 250 counties, more than 130 areas are expected to violate the annual standard. About 100 of these areas also appear to be not attaining the 8-hour ozone standard, and it will make sense for States to consider both ozone and PM in devising attainment strategies.

As we work with the States on PM2.5 designations, we also will be working with our governmental partners and stakeholders to develop an implementation strategy. In the East, high PM2.5 levels are attributed to regionally high sulfate and nitrate concentrations (primarily from power plants and motor vehicles) combined with local urban emissions of other pollutants. President Bush's proposed Clear Skies Act (discussed in more detail below), which would cut emissions from power generators through a cap-and-trade program, would substantially reduce the number of areas with unhealthy levels of fine particles. Regional strategies and or national rules should be the first step toward addressing sulfates and nitrates, particularly in the East. A number of already-adopted mobile source programs, such as Tier 11 standards for cars and light trucks, reduced sulfur in fuel, and standards for new heavy duty diesel engines, will also help reduce local emissions. However, additional local strategies will need to be developed for certain cities to address their particular mix of emissions sources also contributing to the problem. For example, a diesel engine retrofit program (e.g. for buses) appears to be one obvious local action that cities can take to protect the public from PM2.5 health effects now.

8-Hour Ozone

We are actively working on several fronts to prepare the way for implementation of the 8hour ozone standard. Because the Supreme Court ruled that EPA's original implementation strategy was unlawful, EPA is working with State and stakeholders to develop a new approach that will be adopted through rulemaking. The new approach will be proposed this summer and finalized a year after its proposal. We also are working to complete our response to the May 1999 remand from D.C. Circuit concerning UVB radiation, and anticipate a final rule this year. EPA plans to designate areas for the 8-hour ozone standard no earlier than the end of 2003.

There are over 300 counties measuring exceedances of the 8-hour ozone standard. Existing EPA programs, including national motor vehicle programs and the NOx SIP call, are projected to help many of the new nonattainment areas meet the standard over the next few years. States and localities also will need to do their part to reduce emissions from local pollution sources.

Protecting Our Environment and Resources

The same emissions that form fine particles and ozone, causing public health risks, also contribute to environmental and resource damage. One example is visibility degradation, which I already have discussed.

In addition, modeling results and recent studies of ecological response to emissions reductions under the Acid Rain Program indicate that Title IV is moving us in the right direction, but not far enough. For example, scientists in the Shenandoah National Park discovered the first observed disappearance of a fish population due to acidification. Researchers in that region claim that reductions of sulfate deposition of 70 percent or greater from 1991 levels are necessary to prevent further acidification of Virginia brook trout streams.

A recent assessment of acid deposition and its effects in the northeast by the Hubbard Brook Research Foundation reflects a similar finding. Researchers found no significant improvement in lake and stream water quality in the Adirondack and Catskill Mountains, even following recent decreases in acid rain. The study con-

cluded that full implementation of the 1990 Amendments will not result in substantial recovery in acid-sensitive ecosystems in the northeast. Instead, it concluded that further reductions of SO_2 emissions from power generation are necessary to achieve recovery of aquatic ecosystems in this region.

Recent studies also demonstrate that nitrogen deposition is an increasing concern in many regions of the country. For example, EPA's recently released national coastal condition report found deteriorating water quality in many areas of the eastern U.S. and Gulf Coasts, much of it due to increasing nitrogen pollution. Other researchers have found symptoms of "nitrogen saturation" in forest ecosystems in diverse areas of the country, including the Front Range of the Colorado Rockies, forests in southern California, and forests along the Appalachian Mountain chain of the eastern U.S. As a result, forest soils lose nutrients, forests are less productive, and streams and lakes continue to get more acidic.

Taking into consideration the ongoing concern about acid deposition, President Bush's Clear Skies Act would address these problems by cutting emissions of $S0_2$ and NOx from power generators through a cap-and-trade program. This program is outlined briefly in the next section below.

Air Toxics Challenges

Two important air toxics challenges are elevated risks from the multiple toxic pollutants emitted into urban airsheds, and health risks from mercury, a persistent toxic substance that accumulates in the food chain.

Urban Air Toxics Strategy

Air toxics can pose special threats in urban areas because of the large number of people and the variety of sources of toxic air pollutants. Individually, some of these sources may not emit large amounts of toxic pollutants. However, all of these pollution sources combined can potentially pose significant health threats. Under the Clean Air Act, EPA is required to develop an Integrated Urban Air Toxics Strategy that addresses air toxics in urban areas, looking collectively at emissions from large and small industrial and commercial operations, on-road and off-road vehicles, as well as indoor air sources. We are also concerned about the impact of the toxic emissions on minority and low income communities. which are often located close to industrial and commercial urbanized areas.

We will also assist State, local. and tribal agencies in making their own assessments and decisions on risk strategies by providing them tools, guidance, and training, while continuing to develop national standards. We are also exploring new approaches for identifying flexible, less expensive methods for reducing emissions. In addition, to better understand local risk, we will collect and analyze data from ongoing community projects to provide a centralized information database. We will also continue to participate in projects such as in Cleveland, Ohio. This integrated approach will allow EPA and State, local, and tribal governments the ability to cooperatively address specific risks and administer direct and cost efficient controls in specific "hot spots" or target areas.

Mercury

Mercury is a potent toxin that causes permanent damage to the brain and nervous system, particularly in developing fetuses, depending on the level of ingestion. Most exposure comes through eating contaminated fish. Currently 42 States have advisories warning people to limit or avoid intake of recreationally caught fish due to mercury contamination. Even so, almost 400,000 children are born each year to mothers whose blood mercury levels exceed the reference dose established by EPA, which builds in a margin of safety.

Recent actions to reduce mercury emissions from medical waste incinerators and municipal waste combustors are significantly reducing emissions of mercury. In fact, full implementation and compliance with medical waste incinerator and municipal waste combustor regulations will result in significant mercury emission reductions from these important sources. Power generation is now the largest uncontrolled source of mercury emissions, contributing approximately 35 percent of the total anthropogenic mercury, emissions in this country. As discussed below, President Bush's Clear Skies Initiative would put a cap on mercury emissions from power generators.

IV. FUTURE IMPROVEMENTS

To meet the continuing challenge of providing healthy air efficiently and cost-effectively, EPA is working to improve clean air regulation in several ways. First, as mentioned above. EPA is developing an off-road rule to reduce emissions from heavy equipment, such as construction equipment. Second, EPA and the Administration,

building on the success of the acid rain program, have developed the proposed Clear Skies Act to reduce three key pollutants from power plants by 70 percent. Third, EPA is working on improvements to the NSR program to make the program work more efficiently and provide environmental benefits. I have already discussed the off-road rule earlier in this testimony. I will now summarize the status of our efforts on Clear Skies and New Source Review.

Clear Skies The major legislative initiative we are proposing to help address the nation's remaining clean-air challenges is the Clear Skies Initiative, which would set strict, mandatory caps to drastically reduce emissions of three harmful air pollutants from the electric power sector: sulfur dioxide (SO_2), nitrogen oxide (NOx), and mercury (Hg). Announced by President Bush on February 14th of this year, the proposal was introduced in the Senate as the Clear Skies Act by Senator Bob Smith in late July. Unlike other bills on this issue, the Clear Skies Act is a complete package that could be enacted immediately upon passage by Congress. If enacted, it will be the most significant improvement to the Clean Air Act in more than a decade.

To continue our significant improvement in air quality over the past twenty years, we need to take the next step in reducing SO_2, NOx, and mercury. The power sector is a primary source of these pollutants, contributing 63 percent of SO_2 emissions and 22 percent of NOx emissions in 2000, and 3 percent of man-made mercury emissions in 1999. Clear Skies would reduce emissions by an additional 70 percent from today's levels to dramatically improve air quality, and public health across the nation. Clear Skies would ensure that environmental goals are achieved and sustained over the long term, even while energy use increases.

Implementation of the Clear Skies Act would significantly mitigate our nation's major air pollution related health and environmental problems. SO_2 and NOx emissions react in the atmosphere to form nitrates and sulfates, a substantial fraction of fine particle pollution. These reductions in fine particles would make great strides to prevent incidences of premature mortality, aggravation of respiratory and cardiopulmonary illnesses, and diminished lung function. Americans would experience fewer lost work days, school absences, hospitalizations and emergency room visits. These emission reductions would also improve visibility in national parks and wilderness areas and alleviate damage to ecosystems, fish and other wildlife. NOx is also a key contributor to the formation of ground-level ozone, and the NOx reductions from the Clear Skies Act would contribute significantly to attainment of the National Ambient Air Quality Standards for ozone and provide corresponding public health benefits.

EPA's modeling shows that nationwide reductions of these three harmful pollutants will have striking results. Every part of the country where power plants contribute significantly to air pollution, most notably the Northeast, Southeast, and Midwest, would see vast improvements in air quality. Clear Skies, by dramatically reducing polluting emissions from power generators, would be the most significant improvement to the Clean Air Act since 1990, and one of the most comprehensive and ambitious efforts ever to clean up air pollution from power plants.

Public Health Benefits of Clear Skies

The Clear Skies Act is projected to achieve tremendous public health benefits. Concentrations of fine particles, a major cause of human health impacts from power plants, would decrease by more than 20 percent from current levels in large areas of the East and Midwest. The Clear Skies Act would achieve its fullest measure of benefits in the year 2020, but it would also bring significant early benefits in 2010. Although placing a dollar value on improvements in human health is challenging, our best estimate for the annual benefits from Clear Skies is as follows:

- Total economic benefits in 2010 would be approximately $44 billion—$43 billion in health benefits and $1 billion in visibility benefits. (An alternative estimate, using different assumptions, would result in approximately $5 billion in health benefits in 2010.)
- By 2010, Clear Skies would prevent approximately 6,000 premature deaths annually. (An alternative estimate, using different assumptions, would result in approximately 3,800 premature deaths prevented annually in 2010.)
- Total economic benefits in 2020 would be approximately $96 billion—$93 billion in health benefits and $3 billion in visibility benefits. (An alternative estimate, using different assumptions, would result in approximately $11 billion in health benefits in 2020.)
- By 2020, Clear Skies would prevent approximately 12,000 premature deaths annually. (An alternative estimate, using different assumptions, would result in approximately 7,000 premature deaths prevented annually in 2020.)

These health and visibility benefits, totaling nearly $100 billion annually, far outweigh the estimated $6.5 billion dollar cost of the program. Even under an alter-

native estimate, which values the health and visibility benefits of Clear Skies at approximately $14 billion per year in 2020, the benefits substantially outweigh the costs. Additional health and environmental benefits cannot currently be quantified or monetized due to gaps in scientific capabilities. Nevertheless these benefits, such as reduced human exposure to mercury and fewer acidified lakes, are expected to be significant and to increase the total benefits of the Clear Skies Act.

The Clear Skies Act would help areas populated by tens of millions of people to meet the national requirements for healthy air in 2020. Compared with the situation where existing Clean Air Act regulations are implemented (and no new State or Federal regulations are adopted), Clear Skies would bring more than 50 additional counties—home to approximately 21 million people—into attainment with the annual fine particle standard. Similarly, 8 additional counties, home to 4 million people, would come into attainment with the 8-hour ozone standard.

There would also be substantial environmental benefits under the Clear Skies Act by 2020. Compared to current conditions, the Clear Skies Act would deliver the following benefits (in conjunction with existing Clean Air Act regulations):

• improve visibility in a large portion of the East and Midwest by 2–3 deciviews from current levels (a one deciview change translates to a noticeable change in visibility for most individuals);

• improve visibility by more than 3 deciviews in areas of the southern Appalachian Mountains (e.g. Great Smoky Mountain National Park);

• reduce sulfur deposition (one component of acid deposition) over much of the sensitive eastern U.S. by 30–60 percent;

• reduce nitrogen deposition (the other component of acid deposition) over much of the eastern U.S., including sensitive forests and coastal areas, by 60 percent or more:

• virtually eliminate the problem of chronic acidification in lakes in the Adirondack mountains of northern New York;

• reduce Americans' risk of exposure to mercury by substantially decreasing mercury deposition.

The Clear Skies Act is designed to encourage early emissions reductions. Under the Clear Skies Act, over the next decade we would achieve significant $S0_2$ and NOx emissions reductions that we do not anticipate achieving under the current Clean Air Act. As a result, by 2010, Clear Skies is projected to result annually in 6,000 fewer premature deaths and 8 million fewer days when—Americans suffer from respiratory-related symptoms.

These early reductions would also accelerate the implementation of our national healthbased air quality standards for tine particles and ozone. The Clear Skies Act would result in a substantial number of counties meeting the fine particle and 8-hour ozone standards sooner than they would under the existing Clean Air Act.

Certainty of Environmental Progress

Clear Skies closely follows the approach used in one of America's most effective clean air programs, the 1990 Clean Air Act's Acid Rain Program, which I discussed earlier in this testimony. As a recent article in Fortune Magazine stated, "the success of the SO_2 program has convinced almost everyone that trading can be a useful environmental policy." ("Hog Wild for Pollution Trading: Why Environmental Markets Are Becoming a Very Big Deal", Fortune, September 2, 2002.) The results of the SO_2 cap and trade program have been dramatic—and unprecedented. Compliance began in 1995 and is now in its eighth year. From 1995–99, the first phase of the Acid Rain Program, annual SO_2 emissions from the largest, highest-emitting sources dropped by nearly 5 million tons from 1980 levels. These significant reductions were an average of 25 percent below required emission levels, resulting in earlier achievement of human health and environmental benefits.

Like the Acid Rain Program, the Clear Skies Act would allow sources to trade emissions under each cap. This design has demonstrated its ability to protect environmental integrity while providing a host of positive incentives, including early reductions and development of innovative technologies. The cap on emissions and significant automatic penalties for noncompliance guarantee that environmental goals are achieved and sustained, while stringent emissions monitoring and reporting requirements make flexibility possible. By using this proven, market-based approach, Clear Skies would dramatically reduce air pollution from power plants quickly and cost-effectively, keeping electricity prices affordable and protecting America's health and environment.

New Source Review Improvement

There has been long standing agreement among virtually all interested parties that the NSR program for existing sources can and should be improved. For well

over ten years, representatives of industry, State and local agencies, and environmental groups have worked closely with EPA to find ways to make the program work better. In 1996, EPA proposed rules to amend several key elements of the program. In 1998, EPA sought additional public input on related issues. Since 1996, EPA has had countless discussions with stakeholders and has invested substantial resources in an effort to develop final revisions to the program. Between the 1996 proposal and January 2001, EPA held two public hearings and more than 50 stakeholder meetings. Environmental groups, industry, and State, local and Federal Agency representatives participated in these many discussions.

In 2001, the National Energy Policy Development Group asked EPA to investigate the impact of NSR on investment in new utility and refinery Generation capacity, energy efficiency and environmental protection. During this review, the Agency met with more than 100 groups, held four public meetings around the country, and received more than 130,000 written comments. EPA issued a report to President Bush on June 13 in which we concluded that the NSR program does, in fact, adversely affect or discourage some projects at existing facilities that would maintain or improve reliability, efficiency, and safety of existing energy capacity. This report lends strong support to the decade-long effort to improve the NSR program.

We now believe that it is time to finish the task of improving and reforming the NSR program. At the same time that we submitted our report to the President, we published a set of recommended reforms that we intend to make to the NSR program. These reforms are designed to remove barriers to environmentally beneficial projects, provide incentives for companies to install good controls and reduce actual emissions, provide greater specificity regarding NSR applicability, and streamline and simplify several key NSR provisions. We plan to move ahead with this rulemaking effort in the very near future. We look forward to working with you during this important effort. The proposed improvements are summarized below.

Summary of Improvements

Congress established the New Source Review Program in order to maintain or improve air quality while still providing for economic growth. The recommended reforms announced in June, 2002, will improve the program to ensure that it is meeting these goals. These reforms will:

- Provide greater assurance about which activities are covered by the NSR program;
- Remove barriers to environmentally beneficial projects;
- Provide incentives for industries to improve environmental performance when they make changes to their facilities; and
- Maintain provisions of NSR and other Clean Air Act programs that protect air quality.

The following NSR reforms, all of which were originally proposed in 1996, have been subject to extensive technical review and public comment:

- **Pollution Control and Prevention Projects:** To encourage pollution control and prevention, EPA will create a simplified process for companies that undertake environmentally beneficial projects. NSR can discourage investments in certain pollution control and prevention projects, even if they are environmentally beneficial.
- **Plant-wide Applicability Limits (PALS):** To provide facilities with greater flexibility to modernize their operations without increasing air pollution, a facility would agree to operate within strict site-wide emissions caps called PALS. PALS provide clarity, certainty and superior environmental protection.
- **Clean Unit Provision:** To encourage the installation of state-of-the-art air pollution controls, EPA will give plants that install clean units operational flexibility if they continue to operate within permitted limits. Clean units must have an NSR permit or other regulator limit that requires the use of the best air pollution control technologies.
- **Calculating Emissions Increases and Establishing Actual Emissions Baseline:** Currently, the NSR program estimates emissions increases based upon what a plant would emit if operated 24 hours a day, year-round. This can make it difficult to make certain modest changes in a facility without triggering NSR, even if those changes will not actually increase emissions. This common-sense reform will require an evaluation of how much a facility will actually emit after the proposed change. Also, to more accurately measure actual emissions, account for variations in business cycles, and clarify what may be a more representative period, facilities will be allowed to use any consecutive 24-month period in the previous decade as a baseline, as long as all current control requirements are taken into account.

EPA also intends to propose three new reforms that will go through the full rulemaking process, including public comment, before they are finalized. These include:

• **Routine Maintenance, Repair and Replacement:** To increase environmental protection and promote the implementation of routine repair and replacement projects, EPA will propose a new definition of routine repairs. NSR excludes repairs and maintenance activities that are routine. but a multi-factored case-by-case determination must currently be made regarding what repairs meet that standard. This has deterred some companies from conducting certain repairs because they are not sure whether they would need to go through NSR. EPA is proposing guidelines for particular industries to more clearly establish what activities meet this standard.

• **Debottlenecking:** EPA is proposing a rule to specify how NSR will apply when a company modifies one part of a facility in such a way that throughput in other parts of the facility increases (i.e. implements a "debottlenecking" project). Under the current rules, determining whether NSR applies to such complex projects is difficult and can be time consuming.

• **Aggregation:** Currently, when multiple projects are implemented in a short period of time, a detailed analysis must be performed to determine whether the projects should be treated separately or together (i.e. "aggregated") under NSR. EPA's proposal will establish two criteria that will guide this determination.

An important consideration to keep in mind is that the NSR program is by no means the primary regulatory tool to address air pollution from existing sources. The Clean Air Act provides authority for several other public health-driven and visibility-related control efforts: for example, the National Ambient Air Quality Standards (NAAQS) Program implemented through enforceable State Implementation Plans, the NOx SIP Call, the Acid Rain Program, the Regional Haze Program, the National Emissions Standards for Hazardous Air Pollutants (NESHAP) program, etc. Thus, while NSR was designed by Congress to focus particularly on sources that are newly constructed or that make major modifications. Congress provided numerous other tools for assuring that emissions from existing sources are adequately controlled.

In summary, the NSR reforms will remove the obstacles to environmentally beneficial projects, simplify NSR requirements, encourage emissions reductions, promote pollution prevention, provide incentives for energy efficient improvements, and help assure worker and plant safety. Overall, our reforms will improve the program so that industry will be able to make improvements to their plants that will result in greater environmental protection without needing to go through a lengthy permitting process. Our actions are completely consistent with key provisions of the Clean Air Act designed to protect human health and the environment from the harmful effects of air pollution.

In closing, I want to reemphasize that we are working to refine and extend an integrated approach to dealing with the remaining air quality problems that face this nation. This integrated approach begins with continuing and refining the programs that have proved so successful, such as the NAAQS implemented through enforceable State Implementation Plans, the NOx SIP Call, the Federal Motor Vehicle Control Program, the Acid Rain program, the Regional Haze program, and the National Emissions Standards for Hazardous Air Pollutants. The approach builds on this base by adding new elements, such as the new regulation we are developing to reduce emissions from heavy-duty off-road engines and the Clear Skies Act to reduce emissions from power plants. We are also working to refine existing elements, such as the New Source Review program, to make the program work more efficiently while providing environmental benefits.

Thank you. I would be happy to answer any questions that you may have.

Senator EDWARDS. Dr. Olden?

Mr. OLDEN. Thank you, Senator Edwards.

I too am very pleased to appear before this committee to talk about the important work and research that is supported by the National Institute for Environmental Health Sciences. But today, I will restrict my comments to research related to air pollution and human health as requested.

First, let me take this opportunity to thank the Environmental Protection Agency for many productive collaborations over the years, particularly as it relates to air pollution and human health.

Over the past 35 years, the U.S. has made remarkable progress in improving the quality of the environment, and most of the visi-

ble environmental problems of the 1950's and 1960's have been ameliorated.

Whether current levels of exposure to environmental pollutants is contributing to the high incidence of disease is a matter of considerable concern. The current view is that complex diseases such as cancer, Alzheimer's, Parkinson's, asthma, diabetes, cardiovascular and lung diseases are caused by the complex interaction between one's genetic make-up, one's behavior, and one's environment.

So to develop strategies to prevent or treat such diseases will require an understanding of the complex interaction between genes, the environment, and behavior.

Research on the health effects of air pollution has been a high priority of the National Institute for Environmental Health Sciences since its creation in 1966 as a division of the NIH. It is well-documented that breathing severely or highly polluted air can cause acute health problems and death. For example, the London fog episode in the winter of 1952 caused the death of more than 4,000 people.

But despite remarkable improvements in air quality since the passage of the Clean Air Act in 1970, several recent epidemiologic studies have reported that current levels of air pollution in several cities in the U.S. are associated with increased rates of morbidity and mortality from cardiovascular and pulmonary diseases.

Such studies raise the concern that ambient air still poses a health risk. For example, a paper published by Dr. Pope, who will testify shortly, and his colleagues in March of this year reported that for each microgram per cubic meter of fine particulate air pollution, it was associated with a 4 percent increase in mortality for all diseases, a 6 percent increase in mortality for cardiopulmonary diseases, and an 8 percent increase in mortality from lung cancer.

In other studies described in my written submission, relative risk from 15 to 26 percent has been reported when investigators compare the most polluted versus the least polluted cities. This is the Harvard Six Cities and 24 Cities study.

There have also been recent reports that exposure to ambient air in the State of California is associated with decreased lung growth and function in children. To date, more than 80 epidemiologic studies have been published to show that there is an association between ambient air pollution and adverse health outcomes.

So the link between air pollution and adverse health outcomes is very clear.

We need additional studies, and first of all, we need these studies because the studies described and published to date were independent, smaller studies, and what we need is a large, coordinated, multicenter study employing common protocol, core laboratory facilities for study design and data analysis, and the cohort must be large enough to ensure statistical power, and many or multiple endpoints must be analyzed simultaneously.

Now, epidemiologic studies are important. They provide an important framework around which to construct novel hypotheses, to investigate or identify risk factors. However, epidemiologic studies do not establish a cause and effect relationship.

Epidemiology is a powerful tool to assess population risk, but epidemiologic studies provide little information about biologic mechanisms and do not provide a toxicologic framework to interpret the findings. So there is a need for more research.

You may ask why more research. Well, knowledge provides more options for management. Further laboratory and clinical research is needed to establish plausibility and mechanism for the epidemiologic observations.

Now, research is needed in four to five areas. The first is in the area of mixtures. Air pollution is a mixture containing multiple chemical, physical, and biological agents. The important question is which of the various components of air pollution are responsible for the adverse health effects, and are the adverse health effects observed due to interaction between some of the components in the air mixture.

Exposure is another area where we need research. Historically, exposure has been assessed using indirect surrogates. For example, in epidemiology studies, exposure is usually assessed by self-reporting, but what we need is exposure analysis that is based on direct assessment of exposure, because exposure is dependent on one's unique biology, which we are now beginning to understand, and exposure is also a function of one's personal behavior—for example, do you exercise outdoors in the hot summer months.

Susceptibility is also another important concern. Is there a subpopulation that is susceptible at pollutant levels that are found in ambient air, and if so, how big is this population, and is the susceptibility due to genetics, behavior, age, or stage of development. And there is evidence for all three.

The other area where research is needed is the development of appropriate animal models or test systems. To date, we do not have good test systems to investigate the health effects of air pollutants at ambient levels. The technologies are now in hand, using genomic approaches, to develop such technologies.

The other area of research that is needed is to look at the combined effects of heat and air pollution. Both heat and air pollution affect the same systems, the cardiovascular and respiratory systems. And the question is is there a synergy between the two, and if one's cardiovascular and respiratory systems are already compromised, let us say, by air pollution, will it be exacerbated by hot summer days. This is an issue that is just beginning to be investigated.

This is an especially important concern for summer days in which the air quality is poor, and it is of special concern for children and the elderly.

In summary, we need more and better information to make certain that we are controlling the right things at the right level and with the most efficient and cost-effective technologies.

Thank you very much.

[The prepared statement of Mr. Olden follows:]

PREPARED STATEMENT OF MR. KENNETH OLDEN

Mr. Chairman, I am pleased to appear before this Subcommittee to discuss the human health effects of air pollution that have been discovered by grantees of our Institute. My name is Ken Olden and I am the Director of the National Institute of Environmental Health Sciences (NIEHS) of the National Institutes of Health

(NIH). The NIEHS has some of the longest-term epidemiologic studies on the health effects of air pollution in the country. Much of this research has been instrumental in identifying the more harmful aspects of air pollution and identifying groups who are more susceptible. I would also like to recognize the contributions in this effort of our sister Institutes and agencies both within and outside of the Department of Health and Human Services, especially the National Institute of Allergy and Infectious Diseases, the National Heart, Lung, and Blood Institute, the Centers for Disease Control and Prevention, and the Environmental Protection Agency. The NIEHS has developed a number of strong partnerships and collaborations with these and other agencies (for example, the Inner City Asthma Study and the Children's Environmental Health and Disease Prevention Centers). These collaborative efforts have been instrumental in supporting the research on which I will report today.

Air pollution itself has a number of different components. Ozone, oxides, and sulfur dioxide are common gases found in polluted air. Additionally particulate matter such as soot is a byproduct of combustion that can appear concurrently with gases. Particulate matter comes in a variety of sizes, and the size, as well as other factors (i.e., respiration rate, oral or nasal breathing), affect deposition of particles in the lungs. Particulates are generally measured as microns or micrometers (μm) in diameter. As a point of reference, the human hair is roughly 100 microns in diameter. What we are finding is that particles of 2.5 microns (PM2.5) and smaller may be more harmful than particles greater than PM2.5. Fine particulate pollution is usually a mixture of solid particles and liquid droplets that can include acid condensates as well as sulfates or nitrates. The solid components can include heavy metals such as mercury, cadmium, tin, vanadium or even lead, The health effects of other components of particulate matter and of ozone; on the other hand, have only recently begun to be understood and so will constitute the major part of my testimony.

The earliest epidemiologic work on air pollution found that as air quality deteriorated, the number of hospitals admissions, asthma attacks, and deaths from all causes increased. These admittedly were crude measures of effect, but the evidence was sufficiently compelling to identify air pollution, particularly ozone, sulfur species and fine particulate air pollution, as being associated with these adverse effects. The elderly, asthmatics, and children were identified as particularly vulnerable subpopulations.

Recent studies have refined this earlier work. These newer studies have been able to control for smoking, diet, occupation, and other lifestyle factors that were possible confounders in the earlier studies. Three of the major health effects associated with air pollution are: asthma attacks and other airway sensitivity disorders: lung cancer; and heart attacks. Given the prevalence and health costs of these diseases, it behooves us to try to prevent their occurrence.

I will briefly mention some of these more recent findings. Peters; et al., 2001 (*Circulation, 103:2810–2815*) examined several hundred patients with myocardial infarction (MI) and found that elevated concentrations of fine particles in the air were associated with an elevation in the risk of MIs within a few hours and 1 day after exposure. Further epidemiologic studies in other locations are needed to clarify the importance of this potentially preventable trigger of MI in people. There have been, however; several small studies in people showing that particulate levels can increase biological products that enhance risk for coronary heart disease, which strengthens the possibility that particulates can trigger MIs. These products include C reactive protein (Peters, et al., 2001. *Eur. Heart J., 23:1198–1204*; Seaton, et al., 1999, *Thorax, 54:1027–1032*), plasma viscosity (Peters, et al., 1997, *Lancet, 349:1582–1587*), and blood fibrinogen (Ghio et al., 2000, *Am. J. Respir. Crit. Care Med., 162:981–988*). Further corroboration of the epidemiologic evidence can be found in animal studies of Godleski et al., 2002 (*Res. Rep. Health Eff. Instit., 91:5–88*), in which exposure to concentrated ambient particulate matter resulted in measurable electrocardiogram (EKG) changes.

Pope, et al., 2002 (*JAMA, 287:1132–1141*) recently published the results of a study that followed 500,000 adults over 16 years. This study found that fine particulate and sulfur oxide-related pollution was associated with several fatal diseases. These findings provide evidence that long term exposure to fine particulate air pollution common to many metropolitan areas is an important risk factor for deaths from heart and lung diseases. Interestingly, they also showed a protective effect of education level. There is no real reason to assume that people with lower education have a greater susceptibility to effects of particulate matter. If, however, you accept that education level is a surrogate for income level, then this study also suggests that adverse health effects of air pollution may also exhibit a socioeconomic disparity component.

The studies I have mentioned so far have focused on adults, but children are another vulnerable population that can be affected by air pollution. Asthma is a seri-

ous lung disorder that has been increasing in children. A number of factors seem to be implicated in asthma, particularly exposure to indoor allergens such as mold spores, cockroaches, dust, and second-hand smoke. Other studies are focussing on a possible link of asthma to decreased rates of breast feeding and an increase in childhood obesity. Outdoor air might play a role, too. It has been demonstrated repeatedly in industrialized cities in the U.S. and the world that ozone and other lung irritants can trigger asthma attacks, accounting for the increased hospitalizations observed during episodes of high air pollution, particularly of ozone (Peden, 2002, *Environ. Health. Perspect., 110 (suppl 4):565–568).* New evidence suggests that ozone might actually be involved in causing asthma. A recent study (McConnell, et al., 2002, *Lancet, 359:386–391*) found that children in communities with high average ozone levels who compete in three or more team sports have a three-to-four times higher risk of developing respiratory illness than do non-athletic children. The more sports children participate in, the greater the effect. Most of the children who were diagnosed with asthma had no history of wheezing, suggesting that they may not have previously undiagnosed asthma made worse by ozone. Rather, these children apparently developed new cases of asthma. This study did not exclude the possibility that other pollutants also might play a role in asthma development. These pollutants would include particulates, and active and passive tobacco smoke. Despite these limitations, the results from this study merit further investigation.

Even in children who do not develop serious lung diseases, air pollutants have been shown to adversely affect normal lung development. Children followed from ages 10 to 14 years were found to have a 10 percent lower lung function growth rate if they lived in polluted areas compared to less polluted areas (Gauderman, et al., 2000; *Am. J. Respir. Crit. Care Med.,*. 162:1383–1390). These studies indicate that high levels of air pollution might be robbing our children of optimal lung growth and development. The effects of these early decrements in function, factored over their lifetimes, are of serious concern.

Air pollution can also act synergistically with other adverse environmental conditions. For example, heat waves cause increased mortality in human populations. If a heat wave occurs in the presence of poor air quality, the effect is enhanced. The synergy between high temperatures and poor air quality has been observed around the world, including Japan (Piver et al., 1999, *Env. Health Perspec., 107:911–916*), Belgium (Sartor, et al., 1995, *Environ. Res., 70:105–113*), and Greece (Katsouyanni, et al., 1993, *Arch. Env. Health*, 48:235–242). These results give another layer of complexity to understanding the human health effects of air pollution. In fact, dissecting the health consequences of air pollution must account for the types of pollutants, the accompanying exposure conditions, the age of individuals, and the health and genetic susceptibilities of these individuals.

To achieve a greater control of exposure conditions than is possible with human subjects, Federally-supported scientists are taking advantage of animal models. The NIEHS Inhalation Toxicology Branch and our intramural and extramural scientists are working with rodent models of lung injury/inflammation/dysfunction to examine the effects of exposure to particulates and ozone. Some of these studies include investigations with knockout and transgenic mice that can begin to examine the interrelationships between environmental exposures and genetics. These and other state-of-the-art studies enhance and expand upon the associations found in human epidemiologic studies.

Health effects of air pollution will continue to be an important component of the Federal environmental health research portfolio. In my testimony I have highlighted some of the more important findings recently made by researchers supported by the Federal Government. I would be happy to answer any questions you might have.

Senator EDWARDS. Thank you very much, Dr. Olden.

Mr. Holmstead, let me ask you a few questions if I could.

Mr. HOLMSTEAD. Certainly.

Senator EDWARDS. At the time you testified at the hearing before the Judiciary and Environment Committees, where I was present, and as you indicated earlier, you and I had a discussion about a number of things, I asked you whether you had done a serious analysis of the effects on human health of these proposed changes in new source review, and you indicated—I do not remember your exact words—but your answer was to the effect that that is something that can be done.

Then, in the letter that I and 43 other Senators wrote to you, we asked you essentially the same question—can you tell us what analysis has been conducted, what sort of serious, rigorous analysis has been conducted of the effect that these proposed changes will have on human health, on kids with asthma, on senior citizens with serious heart and respiratory problems.

In the responsive letter that I got, I did not see the answer to that question, so let me ask you for a third time, sine these are changes that you are proposing that would not go through the Congress, that would become law as soon as they were finalized and could affect literally millions of Americans all over the country and their health.

Have you at this point done a serious, rigorous analysis of the effects on human health of these proposed changes?

Mr. HOLMSTEAD. Yes, we have.

Senator EDWARDS. OK. Can you tell me—do we have that somewhere in writing?

Mr. HOLMSTEAD. This analysis really appears in a number of places. Beginning back in—as you know, there are two sets of changes, as you mentioned, changes that are, as we say "going final on" because they have already been proposed.

Senator EDWARDS. Right.

Mr. HOLMSTEAD. When these——

Senator EDWARDS. Those that have already gone through the comment and rulemaking process.

Mr. HOLMSTEAD. Right, right.

When those were proposed back in 1996, the Agency conducted an analysis called an "RIA," a regulatory impact analysis, and at that point, the Agency——

Senator EDWARDS. What year did you say? I'm sorry.

Mr. HOLMSTEAD [continuing]. Nineteen ninety-six—the Agency did an analysis of these proposed changes and concluded that they were environmentally neutral. And I can read from the analysis here. It says: "The proposed changes in the NSR reform package"—this is from the 1996 RIA—"are environmentally neutral. Air quality management requirements as defined by the NAAQS are unchanged by this rulemaking, and therefore, the environment will not be impacted as a result of these changes."

Now, since then, our agency has done quite a bit of additional analysis, and we believe that at least three of the——

Senator EDWARDS. Can I interrupt you just to ask—those proposed changes that you are talking about are the Clinton Administration's?

Mr. HOLMSTEAD. That is correct, yes.

Senator EDWARDS. Those were not enacted into law, as I understand it.

Mr. HOLMSTEAD. No, no, but those are the changes that we are now—we do not say "enacted," we say "finalized" as final regulations.

Senator EDWARDS. But they have the effect and force of law once they become finalized.

Mr. HOLMSTEAD. Right. They become regulations that are law until they may be changed, but they do not require an act of Congress; they could be changed administratively.

But again, we are finalizing many of those proposed changes, and that is what you refer to——

Senator EDWARDS. Is it your testimony that the changes you are proposing, the entire set of changes that you are proposing that you have identified for us today, are identical, that is, the same as those that were analyzed—and by the way, Ms. Browner is here, as you know, and she will be able to respond specifically on this question—but is it your testimony that the changes that were analyzed by the Clinton Administration are identical to the changes you are now proposing, including the change in the definition on routine maintenance?

Mr. HOLMSTEAD. Remember, we are not changing the definition for routine maintenance. That has nothing to do with this final rulemaking package. In addition to the five——

Senator EDWARDS. That is something that you are proposing, is it not?

Mr. HOLMSTEAD. Right, but that is not something that we are finalizing

Senator EDWARDS. Right; I understand.

Mr. HOLMSTEAD. So we are finalizing these five changes, which are—I will not say that they are identical, but they are substantially similar. In fact, under the Administrative Procedures Act, they have to be essentially the same as what was proposed. There are a few differences. For instance, back in 1996, on the baseline issue, the Clinton Administration under Administrator Browner proposed that the baseline would be the highest year in the past 10 years. There was concern that by having just 1 year, that could lead to unrepresentatively high emissions, and so, instead of having a one-in-ten baseline which was proposed, we are finalizing a two-in-ten baseline. We are making a few other changes that are sort of along the same order of magnitude, but essentially the same.

So what I am testifying is that the changes that we are finalizing are substantially the same as those that were proposed back in 1996. And again, in 1996, the Agency analyzed these changes and found that they would be environmentally neutral. Since that time, we have conducted additional analysis, and we are quite confident that several of the changes that we are making will actually be positive for the environment.

Senator EDWARDS. Where is this additional analysis that you are talking about? Where is that?

Mr. HOLMSTEAD. All of that will be in the rulemaking record. For instance, I think we have already provided the Congress with our analysis of PALs in terms of a draft report which we will finalize before it is in the final—but that is already in the rulemaking record; that is publicly available.

We have done a pilot project on this one reform which we refer to as "plant-wide applicability limits," and we have discovered that every one of our pilot projects where a plant has taken a PAL limit, they have actually reduced their emissions more than they otherwise would have under the New Source Review Program.

So all of this analysis is available. Additional analyses will be available at the time we finalize these rules.

Senator EDWARDS. As part of the RIA that you just made reference to by the Clinton Administration, did they conclude that the proposed revisions—which they, I will point out again, did not adopt—to major NSR applicability criteria would exclude an estimated 50 percent of sources, that is, half of those that would otherwise be subject to new source review?

Mr. HOLMSTEAD. I do not know if that is the exact number, but I think it is important for everyone to recognize——

Senator EDWARDS. I am happy to hear your explanation, but can you tell me first whether that is true. Did they conclude that if the change, which they did not adopt, were in fact to become final that 50 percent of the plants that would otherwise be subject to new source review would not?

Mr. HOLMSTEAD. Again I do not know if 50 percent is the exact number——

Senator EDWARDS. So how many—can you tell me—I am sorry——

Mr. HOLMSTEAD. I just wanted to confirm with my staff that it was 50 percent.

Senator EDWARDS. Can you tell me how many under your proposed changes, how many would not be subjected to new source review?

Mr. HOLMSTEAD. I assume that it would be roughly the same, but again, I think it is important to remember that the Clinton Administration, when they analyzed these changes when they proposed them in 1996, said that 50 percent fewer plants would actually go through NSR, but that that did not mean that there would be any negative environmental consequences.

There is no necessary connection between how many plants go through NSR and how emissions are reduced. In fact, there are many ways now, when people increase their emissions so they can avoid triggering NSR—and this actually happens a lot; it is one of the things that we are most concerned about. Right now under the NSR program, any facility that is considered to be a major source has a very strong incentive to keep their emissions high, because that is the only way they can avoid NSR in the future.

For instance, there are many manufacturing plants in the country right now that have big boilers—that is how they produce power and steam for their plants—that operate on natural gas, which is a very clean fuel and which we encourage. Most of those boilers also have provisions in their permit which allow them to run on a backup fuel like diesel fuel for 30 days a year. We would rather they did not do that, because diesel fuel is much more polluting, and in many cases, they would rather not do that because it can be more expensive. But under the current NSR program, they have to run that boiler 30 days a year or they lose the ability to do that in the future.

So we can tell you many examples of cases where, in order to avoid NSR now, people keep their emissions high, and those are the sorts of disincentives that we are trying to eliminate in this program, and that is why many of the changes that we are—or, at least several of the changes—that we are finalizing, which were proposed in 1996, we now believe will actually improve the environ-

ment, will decrease emissions compared to what they would otherwise be.

Senator EDWARDS. Can you tell me where the empirical analysis of any kind is that shows what the effect of the 50 percent, approximately, of these plants that would no longer be subject to new source review, what effect that would have on children with asthma, what effect it would have on senior citizens who have respiratory problems? Have you done any kind of analysis of that?

Mr. HOLMSTEAD. Yes.

Senator EDWARDS. And where is that?

Mr. HOLMSTEAD. Again, the analysis is very simple. What we can say is that there will be fewer emissions under these rules than there would otherwise have been. So for children with asthma, their lives will be better off; for people who suffer from respiratory illnesses, they will be better off because pollution will be reduced. And again, as I say, I refer back to the——

Senator EDWARDS. We appreciate your saying that, but can you point me to the empirical information that you are basing those statements on? If it exists, we would like to know it, but I want to see specifically what you are referring to.

Mr. HOLMSTEAD. We have provided some of that, and all of it will be provided——

Senator EDWARDS. Where?

Mr. HOLMSTEAD. Well, again, I am happy to refer you to the 1996 RIA. I am also happy to refer you to——

Senator EDWARDS. Does the 1996 RIA look at the effect on human health?

Mr. HOLMSTEAD. Yes, it does. It says the package will be environmentally neutral, meaning that it will not increase emissions. That is what the administration said back in 1996.

The major changes that we are making—one of them, as I referred to before, is plant-wide applicability limits. In our docket, there is a report of all of the plants that we have studied that have PALs, and again, that report quantifies the emissions reductions that we have achieved from those plants.

Now, I will tell you that as part of the rulemaking record, we are going to try to extrapolate from the plants that we have studied to the universe of plants that might take advantage of the PAL program.

Senator EDWARDS. I want to give Senator Clinton a chance to ask questions since she has arrived, but can I ask you one last question on this subject, and then I may have others when she is finished.

Mr. HOLMSTEAD. Certainly, yes.

Senator EDWARDS. Can you tell me what quantification you have made of the impact on pollution levels as a result of changing the baseline calculation? In other words, instead of having 2 years or some other appropriate period, going to a 10-year period during which any 2 years could be chosen—have you quantified that effect?

Mr. HOLMSTEAD. We are trying right now to see if there is a way that we can quantify that, and we have people working on that right now. Again, I would refer you back to the 1996 proposal where—and what the Agency analyzed at that point was not a two-in-ten but a one-in-ten, meaning that you could have a higher base-

line. And the Agency's conclusion in 1996 was that that was environmentally neutral because of various other provisions in the Clean Air Act.

Senator EDWARDS. I will just say, Mr. Holmstead—and Ms. Browner will be testifying, and she of course was there and very intimately involved in all this—but from my discussions with her, I think we are going to hear a very different perspective on the similarities and differences between your approach and their approach. But we will hear about that——

Mr. HOLMSTEAD. I look forward to hearing that, but again, I——

Senator EDWARDS. I hope you will stay for her testimony if you can.

Mr. HOLMSTEAD. I will certainly be interested to hear what she has to say. And again, I just want to make it clear that what I am referring to is the rulemaking record and the public documents, and again, I think we have provided those to you already; if not, we will certainly provide them for the record.

Senator EDWARDS. Senator Clinton?

OPENING STATEMENT OF SENATOR CLINTON

Senator CLINTON. Thank you, Senator Edwards, for calling today's hearing. This is obviously a critically important issue, the connection between human health and changes to the Clean Air Act. And I think that what we are focusing on today is the administration's announcement that it intends to make a number of changes to the part of the Clean Air Act commonly referred to as "new source review."

I want to thank the witnesses who are here. I have had the pleasure of having Dr. Olden before me, and I respect greatly the work that he does, and I thank you for coming as well, Mr. Holmstead.

I particularly want to thank Carol Browner for the work that she did for 8 years and the progress that was made under her leadership, and also Dr. George Thurston of NYU Medical School, who has been part of the groundbreaking research that has really demonstrated clearly the linkage between pollutants in the air we breath and the quality of our health. In fact, Dr. Thurston testified before this committee earlier this year with respect to health-tracking legislation that I have introduced with Senator Reid of Nevada, and I hope we will be able to mark that up later this month.

Obviously, we now know something that we could not prove in 1996. Many of us intuited it, we believed it, but there was not the hard and fast proof that Dr. Thurston and other scientists have now provided to us, and that is that there is a linkage between pollution and our health.

What does that mean? Well, I think it means that we have a higher level of responsibility than we did in 1996 when we worked on the basis of the best information available. But that is what is so wonderful about science, that it provides additional information. Sometimes it debunks beliefs. Sometimes it takes what we think and feel and puts it into hard statistical analysis.

We now know without doubt, based on these recent studies, some of which go back many years, even pre-1996, but which have come to fruition in the recent months, that there is a correlation between

increases in air pollution and increases in hospital admissions, asthma attacks, heart attacks, lung cancer, and even premature death.

Now, I think that that is stunning. And here we are, faced with this evidence, and to many of us, the administration seems to be rushing to implement new rules without adequate attention being paid to these research findings.

Recent epidemiological studies show that human exposure to air pollution increases the risk for heart disease. Exposure to ozone pollution may not only trigger asthma attacks but actually cause asthma in children.

So the biological, epidemiological proof that air pollution not only contributes to but also causes disease is finally one that we cannot ignore except at our peril.

So the logical thing to do, it seems to me, if we care about our health is to take steps to curb pollution from power plants and from other sources, and that is why we are here today, because Senator Edwards, myself, and others in the Senate, as well as many representatives of medical and academic communities, are concerned about the impacts of that administration's proposals both with respect to new source review and multipollutant legislation will have on human health and the environment.

I think all of us are willing to entertain certain reforms in the NSR program. That has to go along with scientific advances—but only in the context of significantly improving our air by curbing emissions.

What the administration is doing by rushing to go final on a number of these changes to NSR is to end-run the process. And, to make it worse, from our experience to date, the administration cannot definitively tell us what impact these changes to the NSR program will have on air pollution or on human health.

Many of us are also concerned about the administration's 4-P proposal that we also believe falls short.

And what I am having a hard time understanding, Mr. Holmstead, is that despite these health studies, despite the fact that they have been published in peer-reviewed scientific and medical journals since 1996 when the original proposals were made, the administration is still going forward.

I believe there is time for us to take a step back and really consider what it is that we are trying to accomplish. Although the administration announced more than 2 months ago its intention to make changes, nothing has been published in the Federal Register to date.

So I would like to take this opportunity to urge the administration to reconsider its position, and at the very least, the administration should allow the opportunity for comment on the final changes it intends to make so that those changes may be informed by recent scientific findings regarding the public health impacts of air pollution.

As I came in and Senator Edwards was questioning you, Mr. Holmstead, I believe I heard you say that the evidence that you had would be published with the final rule. Well, that really does not do it very much good, does it? You were going to do this final rule regardless of the evidence, and now you are going to stick in

evidence to somehow support the final rule. It sounds a little bit Alice-in-Wonderland-ish to me.

So let me ask you, Mr. Holmstead, what is the harm of allowing additional time for comment on this rule package that you intend to make final? It is apparent that you do not have the analysis that Senator Edwards has asked for. It is obvious now that much has changed since 1996. Every time you go back and say, "Well, this is what it said in 1996," you are in effect trying to turn the clock back on scientific research that has been proven in the last months to make the linkage between pollution and health that the original rule was attempting to try to address but did not have the scientific basis on which to make that rule change.

So what is the harm of waiting, Mr. Holmstead?

Mr. HOLMSTEAD. Let me first just agree with you that we know more now than we knew in 1996 about the health impacts of air pollution. And many of the studies that you refer to and that Senator Edwards referred to were studies that were sponsored by EPA. We do understand more, as Dr. Olden and Dr. Thurston and others will talk about, about the health impacts of air pollution and in particular the health impacts of fine particles and, as you and I have discussed, by far the single most significant contributor to fine particle pollution is power plants.

So I absolutely agree with you, I absolutely agree with Senator Edwards, and I can say on behalf of the administration that we agree that the most important thing that we can do to improve air quality is to reduce emissions from power plants. And maybe we can even talk a little more about that. And I think what North Carolina has done in particular is very commendable and a very aggressive approach that we laud and support and applaud at EPA.

You asked me about the harm in continuing to wait. The harm is that we will continue to have a program that artificially encourages companies to keep their pollution high. And nothing about that conclusion has changed since 1996. The basic conclusion in 1996 was that these proposals would not impact air pollution levels one way or the other.

The NSR program includes many different pieces, and we are only addressing a small portion of that overall program, so nothing since 1996 really changes that conclusion.

We do know that today, there are plants that—again, for reasons that I am happy to talk about—have a very strong incentive to keep their emissions high, because the way the program currently works, that is the only way they have flexibility into the future. And we want to remove those disincentives. We want to make the program work in a way that actually gives people the right incentives to install pollution controls, to undertake pollution prevention projects, to use innovative ways to reduce their emissions. And right now, companies that do that are actually penalized under the NSR program, and we really do want to remove those disincentives.

Senator CLINTON. Well, Mr. Holmstead, the problem with that—and I do not disagree with the process that you are describing, but what is bothersome is that you cannot at this time tell us that the final proposal will not increase pollution.

Mr. HOLMSTEAD. Yes, I can.

Senator CLINTON. But you asserted you cannot prove it. You do not provide any kind of analysis about what the likely effects of these proposed changes would be.

Now, I fully agree with the goals that you are setting for us. We all agree with the goals. I fully understand the anomalies within the Clean Air Act that sometimes make it not work as well as we would want it to, and that is why I said that many of us would support appropriate changes.

But you know, this is the second time you have appeared before us, and I think you can sense some of our frustration because we share the goal, but you are not giving us a process that has any credibility attached to it that we can therefore say with these final rules that this is a step forward. And that is why I ask for the administration to perhaps take a deep breath and provide some additional time for comment. Perhaps through that, the administration might alter or refine its approach to new source review. But you have to believe it is a little disconcerting to recognize that this was a campaign promise by the President made regardless of what the scientific evidence was as a way of demonstrating support for those who frankly find compliance burdensome and onerous.

So you have got to recognize that it raises some red flags to many of us. And I would just hope that in good faith, the administration would want to hear from some of the experts and determine after a limited period of additional comment whether there might not be a better way to proceed.

Thank you, Senator Edwards.

Senator EDWARDS. Thank you very much, Senator Clinton.

Mr. Holmstead, let me just follow up on a couple of those things, plus the things you said to me earlier. We have 30,000 people a year dying and over 600,000 asthma attacks as a result of this pollution, and you are proposing changing the regulations that has a force of law, as you well know——

Mr. HOLMSTEAD. Right.

Senator EDWARDS [continuing]. And when we ask you for the third time today where is your empirical evaluation of what kind of impact that is going to have on the health of the American people, your response is primarily, if I am hearing you correctly, to rely on an analysis done by a different administration in 1996, 6 years ago—and you conceded just a minute ago that there have been significant changes during that 6-year period—and second, I am afraid I would respectfully disagree with you that this is the same set of proposals. I do not believe they are the same set of proposals.

For example, the PALs proposal that the Clinton Administration proposed would have required plant owners to install new technologies and to reduce emissions in order to meet the new PALs proposed regulation. Yours does not.

The Clinton provision on the clean unit exemption, which you also made reference to, applied prospectively. In other words, if you are taking advantage of new technologies, this clean unit exemption, it applies going forward, the notion being to create an incentive for these companies to install new technologies, all of which makes a great deal of sense in the abstract—I mean, we want them

to take advantage of these new technologies, and we want to create incentives for them to do them.

Yours, on the other hand, instead of only applying prospectively, applies 15 years retroactively. So that if I understand it correctly, that means that if they did something 14 years ago, they can take advantage of this provision even if they have not done anything in the last decade.

It just seems to me that at the end of the day, the proposals are not the same, number one—it is not the same set of proposals; there are significant differences between the proposals, and I assume Ms. Browner will have some testimony about that. But in addition to that, they are 6 years old. And when we are talking about the lives of thousands of people in this country and the health of kids with asthma, at least before we allow this thing to become final and change the law of the land, it at least deserves a serious look, which I think is what Senator Clinton is suggesting, a serious, up-to-date look at the impact of these specific proposals on human health.

Do you really believe that that is too much to ask?

Mr. HOLMSTEAD. Obviously, we take very seriously the impacts of anything that we will do on human health. And I cannot tell you how many hours I spend every week with Agency scientists, with outside scientists, trying to understand more about the health impacts of air pollution. And I, quite frankly, have been a little taken aback at how much we now know. However, none of this more recent science changes in any way what the Agency proposed back in 1996 because of the basic conclusion that those proposals were not going to have a negative impact on air quality. And as I say, this is something that has been, not only since 1996 when they were formally proposed, but since that time, there have been numerous public hearings, there have been public meetings, there has been an extensive process by which we have continued to gather information. And as I say, the rulemaking record contains extensive analyses that document our conclusions that these are the right thing to do for the environment.

Now, the thing that you have asked us to do, which we are trying to do right now, is to try to quantify those. We can do analysis in many different ways. We do not always do quantitative analysis. But at your request, we are trying to do that analysis right now. Some of that, as I say, is ongoing. All of that will be provided to you, and we will give the Congress plenty of time to look at that quantitative analysis.

Senator EDWARDS. And will you agree as you sit here today that before any action is taken to finalize the rule that you will provide that quantitative analysis to us and give us some time to digest it and respond to it?

Mr. HOLMSTEAD. As I think you know, the Clean Air Act, the Administrative Procedures Act both contain provisions that tell us exactly how we have to provide information for people to look at, provide for public participation. There are other statutes that talk about congressional review. We will satisfy all of those requirements with respect to allowing for public participation, public comment, congressional review. We will absolutely comply with all of those requirements.

Senator EDWARDS. OK. That sounded like "No" to me. Was that a "No"?

Mr. HOLMSTEAD. No. I am telling you that there are well-established laws and procedures in place right now——

Senator EDWARDS. We know—let us talk a little practically if we can—we know that some of these, as you indicated earlier, some of these proposals are ready to be finalized and some of them are just in the proposal stage.

Mr. HOLMSTEAD. Right.

Senator EDWARDS. Some of them are past comment and have gone through the whole rulemaking process.

Mr. HOLMSTEAD. Right.

Senator EDWARDS. I am asking you whether this quantitative analysis about, for example, calculating the baseline, which I think is in the group that is ready for being finalized——

Mr. HOLMSTEAD. That is correct.

Senator EDWARDS [continuing]. Are you going to provide us that information and give us time to look at it before you finalize the rules? It is a pretty simple question.

Mr. HOLMSTEAD. That will be in the rulemaking docket. We will provide that at the time the rule is published as a final rule. At that point, the rule is not yet effective, and under the Congressional Review Act, you will have all of that information and have the opportunity to review it and decide whether this is something that you as a committee or you as a Congress want to have to deal with. But Congress will have all of that information before it needs to make a decision under the Congressional Review Act.

Senator EDWARDS. But your answer is you will not commit today to provide us that information before you publish the rule in final form; is that correct?

Mr. HOLMSTEAD. That is correct, yes.

Senator EDWARDS. OK. Let me tell you why all of this is of concern to me. I will give you a couple of examples. One is you have attempted to justify your PALs proposal by relying on some data that came out of Delaware and saying that the Delaware—for example, today, you compared the analysis done during the Clinton Administration to your proposal and said we can depend on that because the proposals are the same. They are not. You have done the same thing with respect to a Delaware prototype on PALs, the use of PALs. And Delaware, as I understand it—I have not seen it—but I understand they have written to you and said "This is wrong. Do not use your PALs program to justify what you are doing, because they are not the same. What we are doing is much more rigorous, much more environment-friendly, than what you are proposing."

And within your own department, there was a draft done of a Clear Skies proposal—it is actually very similar to Senator Jeffords bill here in the Senate, but it was done within the EPA—that would have prevented 19,000 premature deaths per year. You all changed it—"you all" being the administration—changed it so that that number went down to 12,000 premature deaths by the year 2020, so 7,000 lives difference between the proposal that was written within the EPA itself and the final version that came out from the administration.

I think we have reason, justifiable reason, to be concerned about these things, because my reading of these proposals taken on the whole—and we have not talked about, for example, the routine maintenance provision, where you extraordinarily expanded, in my view, the definition of what constitutes routine maintenance and as a result would in large part gut the new source review. And at the same time, there are 51 enforcement actions going on right now that depend on existing law for what constitutes routine maintenance, because the defense in almost all of those cases is: What we did was routine maintenance.

Well, you are about to significantly change and in my view expand the definition of what constitutes routine maintenance, which undermines the new source review, also has, or at least appears to have, some effect on what is happening with the pending litigation.

The only request I have for you is we have now asked three different times, and I do think that as serious an issue as this is—this is about a lot of people's lives—and I take you at your word that this is something that you take seriously. What I would request in the process of taking it seriously is that before you publish a final rule, and as we go forward with the proposed change, for example, on routine maintenance, that you take a serious empirical look at the effect on human health so that we have that information before the law of the land is changed. Unfortunately, I did not hear that commitment from you here today, and we will act accordingly. But I think this is a serious issue, not just between the Senate and the administration—I think it is a serious issue for the lives of people all over this country—and I would again request that the administration respond by providing that information.

Thank you, Mr. Holmstead.

Mr. HOLMSTEAD. Thank you.

Senator EDWARDS. Thank you, Dr. Olden.

Mr. OLDEN. Thank you.

Senator EDWARDS. Let me say welcome to our second panel of witnesses.

We are joined by Carol Browner, who was the administrator of the Environmental Protection Agency and an extraordinary advocate for environmental protection and protection of human health during her time in the administration. We thank you so much for being here, and thank you for all the great work that you have done, and I hope we will have an opportunity to talk about some of the testimony that Mr. Holmstead gave earlier in the hearing.

We will also hear from a scientist and a physician, Dr. George Thurston, who is on the faculty of the Medical School of New York University. Among his other accomplishments, he coauthored a groundbreaking study that was published in March, I believe, of this year, in the Journal of the American Medical Association, which definitively links lung cancer and heart disease death to air pollution. We appreciate very much you being here, Dr. Thurston, to provide your expertise.

Finally, Dr. Clay Ballantine, who is from Asheville, in western North Carolina, the mountains of North Carolina, where we have had very serious problems, which I think Dr. Ballantine will talk about, with air pollution, which has had a very negative effect on the health of folks who live in western North Carolina. Dr.

Ballantine has been very actively involved in this issue, so, Dr. Ballantine, thank you for taking the time to be here. It is important to have your perspective.

Ms. Browner?

STATEMENTS OF CAROL M. BROWNER, PARTNER, THE ALBRIGHT GROUP, LLC, AND FORMER ADMINISTRATOR, U.S. ENVIRONMENTAL PROTECTION AGENCY; GEORGE THURSTON, ASSOCIATE PROFESSOR OF ENVIRONMENTAL MEDICINE, NEW YORK UNIVERSITY SCHOOL OF MEDICINE, NEW YORK, NY; AND DR. CLAY BALLANTINE, ASHEVILLE, NC

Ms. BROWNER. Thank you, Mr. Chairman, and I want to thank you for holding this extremely important hearing.

The promise of the Clean Air Act is clean, fresh air and a healthy environment for all. The means for achieving this promise are, first, protective, scientifically-based public health standards; second, regulatory programs that require industry to do their fair share in an equitable and common sense manner; third, vigorous enforcement of the law; and fourth, public right to know and citizen oversight.

These are the very same principles that are the foundation for all of our environmental progress in this country, whether it be clean air, clean water, toxic waste cleanup.

For 8 years, I had the honor of serving the American people as the administrator of the U.S. Environmental Protection Agency. Through our work with the career public service employees of the EPA, we made significant progress in implementing the 1990 Clean Air Act. We adopted the toughest ever scientific-based air pollution standards for ozone and fine particles and won a historic U.S. Supreme Court battle, 9-nothing, over those standards.

We set new tailpipe and fuel standards for cars and trucks, including the first ever clean diesel requirements. Starting in 2004, new cars and SUVs will be 75 to 95 percent cleaner than today because of our work.

For heavy-duty diesel trucks and buses, our standards will reduce particulate pollution by 90 percent and smog-forming nitrogen oxides by 95 percent.

We enforced the law against those who violated air pollution standards, collecting the largest penalties while securing real pollution reductions.

The diesel engine settlement we negotiated included 1.3 million tons a year in nitrogen oxide reductions.

All of this work is improving and will continue to improve air quality across our country.

The current administration's recent announcement of final and proposed changes to the New Source Review Program abandons the promise of the Clean Air Act—steady air quality improvements.

Some have suggested that the administration's announced changes are changes that the Clinton Administration supported. Nothing could be further from the truth. Fundamental to everything we did was a commitment to ongoing air quality improvements. There is no guarantee, and more important, there is no evidence or disclosure demonstrating that the current administration's

announced changes will make the air cleaner. In fact, the changes will allow the air to become dirtier.

The administration owes the American people a full analysis of the public health and air quality consequences of their changes, not just an explanation of the flexibilities they are giving industry.

As you well know, new source review requires existing facilities, old facilities, to install modern pollution control equipment only when they make a major modification and increase their pollution by more than 40 tons for the most commonly-found pollutants—NOx, SOx, and volatile organic compounds. Not every change to a facility triggers a requirement to install pollution controls.

Older facilities continue to be a huge pollution problem for this Nation. Seventy to 80 percent of all power plant emissions come from facilities that were built before 1977. Compared to modern or updated power plants, old plants emit four to 10 times more pollution for every megawatt produced.

The health effects are significant. Many scientific experts estimate that 30,000 Americans die prematurely each year from fine particle pollution. Asthma attacks are on the rise particularly among our children. As Senator Clinton noted, the link between dirty air and real adverse health effects has only grown stronger in the last several years.

Throughout the Clinton Administration, EPA worked with States, with businesses, environmentalists, and public health experts to find agreement on how to improve public health protections. As part of that commitment, in 1996 and 1998, we sought comment on a broad range of ideas on how best to enhance clean air and improve the New Source Review Program. Our guiding principle, first and foremost—cleaner air.

Unfortunately, no consensus could be reached that both improved the program and guaranteed public health improvements. To have adopted changes without broad agreement among all of the stakeholders would simply have created confusion, increased litigation, and left the States with even more pollution problems to solve.

Now, obviously, we can all agree that giving industry flexibility in choosing the precise path they follow to meet environmental standards makes sense, but it only makes sense if it is done with safeguards and verified pollution improvements that are enforced. Unfortunately, we have not seen an analysis by this administration that their changes do in fact meet this test. In many instances, their changes appear to be nothing but loopholes that fly in the face of common sense and come at the expense of the public's health.

In terms of the final changes announced by the administration, the administration claims that these are changes we supported. They are not. Simply taking comment on an idea should not be viewed as support of an idea. Taking comment on ideas is good government.

The real test of what we supported should come by looking at everything we did over the course of our 8-year tenure—not just the 1996 Federal Register Notice, but also the 1998 Notice on new source review and the January 19, 2001 memo on new source review stating our final positions on a number of key issues.

I would like to note that Mr. Holmstead in his testimony focuses exclusively on the 1996 Federal Register Notice. I would also like to note that since that Federal Register Notice, the two most important ever public health air pollution standards were adopted in this country—fine particles and ozone. Obviously, the 1996 analysis did not take into account those crucial ambient air quality standards. Any rule that goes forward today should take into account those two standards, which are on the books and have been upheld by the U.S. Supreme Court.

Mr. Chairman, if I might speak to the five final changes. First, baseline emissions. New source review requires pollution controls only for major modifications that increase air emissions significantly. Therefore, it is important to calculate a facility's baseline emissions.

The administration's changes would allow a facility to use as their baseline any two consecutive years from the last 10 years. In other words, a facility could select as its baseline years with higher emissions than they are actually emitting today. They could then increase their emissions by more than 40 tons compared to what they emit today and not be covered by new source review and a requirement to install modern pollution control.

We did not adopt this change to the baseline emissions calculation because we recognized, as any sensible person would, that it could lead to more pollution in the air.

Second, plant-wide applicability limits or PALs. These provide a mechanism for providing flexibility, regulatory certain to industry, and improved air quality for the public—but only if the PALs emission cap declines over time or the facilities are required to install pollution controls.

I would ask the committee to look at the 1998 Federal Register Notice, where we did propose options for PALs. We even undertook pilot projects to understand how PALs work. You referenced the one in Delaware. Again, we did not finalize a PALs rule that weakens the program, as this administration is doing.

In the January 19, 2001 memorandum, we conditioned our support for the concept of a PAL on the requirement that facility owners that use PALs commit to install best controls before they get this flexibility and certainty, thereby ensuring environmental benefits.

Third, enforceable permits. Citizen participation in ensuring enforcement of our environmental laws has been an important part of the progress we have made in cleaning our air, our water, and our land. It is a check and balance that Congress has seen fit to include in numerous laws. It should not be undermined, particularly at this time of heightened public concern regarding corporate practices.

The administration's changes to the current permitting structure of the New Source Review Program eliminate a system of enforceable pollution limits and public transparency.

Under the current rules, all sectors other than power plans may avoid triggering new source review by electing to set an enforceable emission limit in a permit, a permit that includes operational conditions and restrictions so that the public and the State agencies

know exactly what the facility is allowed to do, and to ensure that the pollution remains below that which would trigger NSR.

The administration's announced changes eliminate the very features of the current law that require a permit and guarantee public transparency. In its place, a "catch me if you can" approach that relies upon facilities to set their own limits, keep their own records, and then turn themselves in to the regulators if they exceed their limits.

Again, the administration suggests that these are changes that we would have adopted. We did look at this issue both in 1996 and 1998. In 1998, we specifically reaffirmed our commitment to maintaining the existing enforceable permit system for nonpower plants, and we suggested that perhaps we would lift the exemption on power plants. To say we support what this administration is adopting is simply not accurate.

Fourth, clean unit exemptions. The clean unit exemption is a mechanism that can encourage the installation of best emission controls on uncontrolled or poorly-controlled sources even when the facility might otherwise not have to do so.

We did support a clean version of this concept, and Mr. Chairman, you got it just right—it was prospective; it was not retroactive. It was for 10 years; it was not for 15 years. Under this administration's change, a facility could engage in major modifications, significantly increase their pollution today, and avoid the requirement to install pollution controls simply because they may have installed something 12 years ago—hardly an incentive to further clean our air.

Finally, State preemption. Many of our Nation's environmental laws recognize the rights of individual States to set more stringent pollution standards. Your own State has just taken advantage of this right. No two States are the same. Their histories are different. How they want to handle a challenge can be different.

The Clean Air Act places tremendous responsibility on the States to do their part to ensure clean air. Maintaining the State's right to set tougher requirements than national standards is paramount to ongoing progress toward clean air.

The administration's changes do serious damage to the right of States to set tougher requirements and thus meet their obligations. Any State that decides not to adopt the administration's changes to the New Source Review Act will be required to legally justify their decision to maintain their current programs. You are essentially putting the States willing to do more to protect their air in a no-win situation. They will have to re-defend programs on the books, delivering real clean air benefits, to the very administration the States believe is undermining the current program. In fact, the State Association of Professional Air Quality Administrators has raised significant objections to these changes. These are the people on a day-to-day basis who do the work in each and every one of our States for cleaner air.

We proposed to allow States the option of adopting our changes; we did not require them to adopt our changes.

Finally, Mr. Chairman, if I might turn to the proposed changes which the administration announced on June 13. If adopted as currently described, these proposed changes may effectively end the

New Source Review Program. I think of greatest concern—and you mentioned it yourself—are the proposed changes in the definitions of routine maintenance. As currently set forth, this change may undercut pending enforcement cases filed by the Department of Justice and the EPA.

Some of these cases have already been settled and are reaping real public health benefits. These are the very same cases that the Justice Department has just completed another review of and found to be appropriate under the Clean Air Act. In 1999, the Clinton Administration filed cases against facilities. At the heart of these cases was the recognition that facilities were engaged in much more than mere routine maintenance. What they claimed was routine maintenance was in fact major modifications that increased air pollution.

By changing the definition of routine maintenance to include virtually everything, one begins to wonder what is left of new source review. Under the language the administration has now said it will propose, a facility could completely rebuild an old boiler with new parts, extend the life of the plant by another 30, 35, 40 years, and increase its pollution by tens of thousands of tons and still not be required to install new pollution control devices.

In conclusion, Mr. Chairman, flexibility combined with ongoing air pollution reductions obviously makes sense. The administration owes the American people a public analysis of the pollution effects of their actions, clear proof of the public health benefits the public will receive—not just an explanation of the flexibilities they are providing industry, but clear proof of the public health benefits. If they can demonstrate real pollution reductions, then show them; if not, drop the changes.

The Clean Air Act is very clear. It requires clean air for all Americans. But more important, the public's health demands it.

Thank you.

Senator EDWARDS. Thank you very much, Ms. Browner.

[The prepared statement of Ms. Browner follows:]

PREPARED STATEMENT OF CAROL BROWNER

Mr. Chairman, Members of the Committee, thank you for the opportunity to appear before you today.

The promise of the Clean Air Act is clean, fresh air and a healthy environment for all Americans. The means for achieving this promise are first, protective, scientifically based public health standards; second, regulatory programs that require industry to do their fair share to meet the requirements in an equitable and common sense manner; third, vigorous enforcement of the law and fourth, public right to know and citizen oversight. These same principles are the foundation of all our environmental progress: clean water, clean air, and toxic waste cleanup.

For eight years I had the honor of serving the American people as the Administrator of the Environmental Protection Agency. Through our work with the career public servants at EPA we made significant progress in implementing the 1990 Clean Air Act.

We adopted the toughest ever scientific based air pollution standards for ozone and fine particles and won an historic Supreme Court battle 9–0.

We set new tailpipe and fuel standards for cars and trucks, including the first ever clean diesel requirements. Starting in 2004, new cars and SUVs will be 77 to 95 percent cleaner than they are today. When fully implemented, this rule alone will provide the same benefits as removing 164 million of today's cars from the road. For heavy-duty diesel trucks and busses, the new standards we adopted will reduce particulate pollution by 90 percent and smog forming nitrogen oxides by 95 percent compared to today's trucks and buses.

We enforced the law against those who violated air pollution standards collecting the largest penalties ever while securing real pollution reductions. The diesel engine settlement we negotiated included 1.3 million tons a year in nitrogen oxide reductions.

All of this work is improving, and will continue to improve, air quality across the country.

The current Administration's recent announcement of final and proposed changes to the New Source Review Program abandons the promise of the Clean Air Act—steady air quality improvements. Some have suggested that the Administration's announced chances are changes the Clinton Administration supported. Nothing could be further from the truth.

Fundamental to everything we did was a commitment to ongoing air quality improvements. There is no guarantee, and more importantly, no evidence or disclosure demonstrating that the Administration's announced final or proposed changes will make the air cleaner. In fact they will allow the air to become dirtier.

The Administration owes the American people a full analysis of the public health and air quality consequences of their announced final changes. Not just an explanation of the flexibilities they are giving industry.

A key provision of the Clean Air Act since 1977 has been new source review. It is an important and reasonable means of achieving pollution reductions. A recognition that older plants, if and when they modernize and increase their emissions, should be held to the same pollution standards as new plants. New source review thus tailors the technology requirements for individual facilities to the public-health based ambient air quality standards—providing a backstop that a facility will not exacerbate pollution problems—and also guarantees that facilities will employ state of the art pollution controls when they are built or rebuilt.

Thus, new source review requires existing power plants, refineries and other industrial facilities to install modern pollution control equipment only when they make a "major modification" to their facility AND increase their emissions of the most commonly found air pollutants, NOx, SOx and VOCs. Pollutants that contribute to significant public health and environmental problems from premature death to a worsening of asthma attacks, to acid rain.

Not every change to a facility triggers a requirement to install pollution control equipment. EPA regulations provide exemptions from new source review for routine maintenance, repairs, increases in hours of operation or production rates. For example, if a facility wants to improve its energy efficiency—it is not required to install pollution control devices under the new source review program UNLESS it engages in major modifications AND increases its pollution by more than significant amounts.

Requiring old facilities to install modern air pollution controls when they upgrade their operations and increase their pollution—controls that new facilities are required to install—only makes sense.

Older facilities that do not meet modern air pollution standards continue to be a huge pollution problem for this nation. Seventy to eighty percent of all power plant emissions come from facilities that were built before 1977. Compared to the modern or updated power plants, old plants emit four to ten times more pollution for every megawatt produced creating dramatic adverse health consequences.

And the health effects from air pollution are significant. Many scientific experts estimate that 30,000 Americans die prematurely each year from fine particle pollution. Asthma attacks are on the rise, particularly among our children.

Installation of modern pollution controls on old, dirty smokestacks means significantly less pollution in the public's air and real health improvements.

Throughout the Clinton Administration EPA worked with States, businesses, environmentalists and public health experts to find agreement on how to improve public health protections in common sense, cost effective ways. As part of that commitment, in 1996 and 1998 we sought comment on a broad range of ideas on how best to enhance public health and improve the new source review program. In keeping with Congress's commitment to the American people and its mandate to the EPA, our guiding principle was first and foremost cleaner air. Unfortunately, no consensus could be reached that improved the program and guaranteed public health improvements.

To have adopted changes without broad agreement among all of the stakeholders would have simply created confusion, increased litigation and left the States with even more pollution problems to solve. To have adopted changes that did not guarantee ongoing pollution reductions would have threatened the promise of the Clean Air Act.

Obviously giving industry flexibility in choosing the precise path they follow to meet environmental standards can make sense, but only if it is done with safe-

guards and verified pollution improvements that are enforced. Unfortunately we have not seen the analysis that demonstrates that the announced new source review changes supported by this Administration do, in fact, meet this test. And, in many instances they appear to be nothing but loopholes that fly in the face of common sense and come at the expense of the public's health.

ANNOUNCED FINAL CHANGES

The following reviews the Administration's choices for specific aspects of New Source Review. In each instance they have chosen the most extreme approach under consideration.

Baseline Emissions

Under the current new source review program major modifications at a facility require baseline emissions to be calculated based on the average of the most recent two years of emissions, or another "*more* representative period." Since new source review requires pollution controls only for major modifications that increase air pollution emissions by significant amounts (e.g., 40 tons in the case of NOx, SOx and VOCs), it is important to know a facility's "baseline" emissions. The baseline is used to determine whether there has in fact been a significant emissions increase that triggers new source review. The Administration's changes would allow a facility to use as their baseline any two consecutive years from the last ten years thus allowing selection of higher pollution levels for the baseline than the two most recent years. By selecting as its baseline years, years with higher emissions than the most recent two years, a facility could increase its current pollution emissions by more than 40 tons and still not be required to install pollution control equipment.

The Administration has noted that the Clinton Administration took comment on a proposal to alloy baseline emissions to be based upon any 12 consecutive months in the previous 10 years. But crucially, we did not adopt that proposal because we recognized that it would in fact lead to more pollution in the air, not less. It would have allowed facilities to significantly increase pollution above today's levels without cleaning up.

Plantwide Applicability Limits (PALS)

Plant wide applicability limits—"PALS"—allow, on a plant wide basis, for emissions increases to be offset with contemporaneous emissions decreases to ensure that there is no "net" emissions increase. PALS can be a useful mechanism for providing flexibility and regulatory certainty to industry, and improved air quality and enhanced information for the public but only if the PAL'S emission caps decline over time or facilities is required to install pollution controls over time. In 1998, we proposed various options for PALS to ensure that PALS reflected actual emissions levels and strengthened the environmental protections provided by the current program. We even undertook pilot projects with States to test out various approaches to PALS, such as the Daimler-Chrysler PAL with the State of Delaware, which ensured state-of-the-art pollution control technology and lower emissions per unit than would otherwise be attained.

Again, we did not finalize a rule which would have weakened the existing new source review program as this Administration's PALS program will. In a January 19, 2001 memorandum signed by the Assistant Administrator for Air, we conditioned our support for the concept of a PAL on the requirement that "facility owners that use PALS must commit to install best controls over time to gain this flexibility and certainty" thus ensuring environmental benefits. In 1998 we also discussed approaches to shrinking the PAL cap overtime. It is wrong to say we would have accepted PALS without a guarantee of required, ongoing pollution reductions.

The Administration's PALS approach abandons the environmental benefits that we supported. This Administration's PAL is all about flexibility and regulatory relief for industry, without the enhanced environmental protections that we supported in order to protect air quality and public health.

Enforceability of Emissions Increase—Permit Limits

The Administration's changes to the current permitting structure of the new source review program eliminate a system of enforceable limits and public transparency and instead create a system that will be difficult if not impossible for the public and State regulatory agencies to oversee and enforce.

Under the current rules governing all industrial sectors other than power plants, to avoid triggering new source review a facility may elect not to exceed an enforceable emission limits based on its own projection of the future actual emissions resulting from a modification. These permits reflect the operational conditions and restrictions that a facility has agreed to meet in order to ensure that its pollution lev-

els will remain below the pollution thresholds that would otherwise trigger the new source review program. These permits require monitoring, record keeping, and public reporting of emissions to ensure that actual emissions are in line with the facility's projections.

Through the current program a facility knows exactly what it can and cannot do. The facility sets its own limits and agrees to operate within those limits. If the increase in emissions are less than 40 tons for NOx, SOx and VOCs new source review is not triggered.

Through the current program the public knows exactly what a facility can and cannot do. The public is protected through a State review of changes in emissions and the transparency that comes from monitoring, record keeping, reporting and, importantly, the benefit of being able to enforce permit conditions if the source does not operate in accordance with its own projections.

The Administration's announced changes eliminate the requirement for non-utilities to obtain enforceable pollution limits through permits for pollution increases resulting from modifications. Rather than having enforceable permits with operating conditions that can be monitored, reported and examined by government inspectors in an ongoing fashion, the Administration eliminates these safeguards. In its place: a catch-me-if-you-can approach that relies upon facilities to set their own limits, keep their own records and turn themselves in to regulators if they exceed their own limits.

These changes eliminate the very features of the current law that provide transparency to the public—monitoring, record keeping, and reporting. Worse, the very minimal records that would be required may be shielded from the public because facilities are only required to keep them on site. While records submitted to regulators are available to the public through State or Federal freedom of information laws, records maintained on site at companies may not be available to the public.

Again, the Administration suggests that these are changes we would have adopted. As part of the many ideas on which we took comment in 1996, there was discussion of these permitting issues. We did not finalize any of those ideas. More significantly, in 1998, when we again took comment on a range. of ideas to change the new source review program, we reaffirmed our commitment to maintaining the existing enforceable permit system for non-power plants AND indicated that we were considering removing the exemption for power plants.

Eliminating the opportunity for the public's access to information undermines the ability of citizens to fully engage in the process of protecting their air. Eliminating meaningful, workable opportunities for enforcement by the public and regulators undermines our rule of law, harms the competitive interests of companies that play by the rules and damages public confidence that our air is getting cleaner. Citizen participation in ensuring enforcement of our environmental laws has been an important part of the progress we have made in cleaning our air, water and land. A check and balance Congress has seen fit to include in numerous laws. It should not be undermined. Particularly at this time of heightened public concern regarding corporate practices.

Clean Unit Exemption

The Clean Unit Exemption is a mechanism to encourage the installation of best emissions controls on uncontrolled or poorly controlled sources even when the facility is not otherwise required to do so. We supported this concept to provide an incentive for facilities to install the best emission controls on old, dirty units, by providing certainty that most future modification at such units would not trigger new source review for up to ten years—a prospective safe harbor. But only so long as they continued to operate the new controls according to their new permit limits, which would be lower than they had been. The goal was to prompt the installation of best emissions controls on uncontrolled or poorly controlled sources, in order to better control air pollution and protect public health.

In contrast, the Administration's clean unit exemption would also operate retroactively, allowing a "safe harbor" for 15 years based upon controls that were installed as far back as 1990. In other words a facility could engage in major modifications, significantly increase their pollution today and avoid the requirement to install pollution controls, simply because they had installed some controls 12 years ago. A retroactive exemption of this sort is not an incentive for future clean up.

The Administration again claims that their change is a change we supported. Again, in the 1996 Federal Register Notice a clean unit mechanism idea was set forth. It was never adopted. We did support a prospective exemption period of ten years, not a retroactive exemption with a safe harbor period of fifteen years. Moreover, a 15-year exemption period would ignore significant improvements in numer-

ous cycles of vastly more effective technology, and deprive the public of the air quality benefits that come from improved capacities to significantly reduce emissions.

Any retroactive application of the clean unit mechanism does not hold true to the guarantee of steady, ongoing progress. The effect of the Administration's change will be dirtier air than the current program allows.

State Preemption

Many environmental laws recognize the rights of individual States to set more stringent pollution standards than those set nationally. No two States are the same, their history varies, the challenges they face and how then decide to proceed may vary. The Clean Air Act places tremendous responsibility on States to meet public health air pollution standards particularly for the most commonly found pollutants such as NOx and SOx. Maintaining their right to set tougher requirements than the national standards is paramount.

The Administration's changes do serious damage to the rights of States to set tougher requirements and thus meet their obligation to the law and the public for cleaner air. Any State that wants to decide not to adopt the Administration's changes will be required to legally justify their decision to maintain their current programs.

In stark contrast, we proposed to allow States the option of adopting, or not adopting, any changes we might make to the new source review regulations recognizing their right to tailor their programs to meet the air quality concerns of their States. Because we recognized that States might not view our planned changes to the new source review program as appropriate for their air quality objectives, we proposed to make these changes permissive alternatives for States to consider.

The Administration's approach has prompted a strongly worded message of alarm from the associations of State and local professional, career air pollution officials, urging Administrator Whitman to make adoption by individual States of changes to the new source review program optional.

In a letter of July 15, 2002, regarding the Administration's announced changes the State and Territorial Air Pollution Program Administrators and the Association of Local Air Pollution Control Officials wrote, "we strongly urge that you reconsider this approach and instead offer these reforms as options for States and localities." They noted that in the 1996 Federal Register notice regarding new source review, we expressly stated that any changes to the program be optional, not mandatory, for the States.

In response to the current Administration's announcement of final changes, these associations, representatives of those in the States that do the day-to-day work of cleaning our air, issued a statement in which they said: "In January our associations sent a letter to the Governor [Whitman] expressing our trepidation that the specific reforms being pursued by EPA would weaken the NSR program by allowing an unacceptably large number of sources that are currently subject to NSR to escape air pollution controls. Nothing in EPA's announcement today indicates that the agency has revised its NSR reform plans to address our concerns."

The Administration has effectively placed the States willing to do more to protect their air in a no-win situation. They must re-defend programs already on the books and delivering real air quality benefits, to the very Administration that the States believe to be undermining the current program. While the Administration claims their changes are good for the industry and the environment, the State associations clearly disagree with the Administration's contention that these changes are good for clean air. Any State with its own program will have to prove to the Administration that their existing program is at least as "effective" as the Administrations changed program. But what is the test the Administration will apply in reviewing an existing State program—cleaner air or industry flexibility?'

ANNOUNCED PROPOSED CHANGES

In addition to finalizing the changes described above, the Administration also announced on June 13th, its intentions to propose another set of changes to the new source review program. If adopted as currently presented these proposed changes may effectively end the new source review program and the cleaner air benefits guaranteed by the program.

Of greatest concern may be the proposed changes in the definitions of routine maintenance. As currently set forth this change may undercut the pending enforcement cases filed the by the Department of Justice and the EPA. Some of which have already been settled reaping important public health benefits. These are enforcement cases that the Justice Department has also recently reviewed and found to be in keeping with the Clean Air Act.

One of the most important tools that Congress gave EPA is the power to enforce against those who ignore the law—an environmental cop on the beat. Enforcement is important not only to catch the polluters but also to maintain the steady progress and to ensure basic fairness and a level playing field. It is grossly unfair to those in industry who do comply with the law to be forced to compete with those who do not make the similar investments.

In 1999 the Clinton Administration filed cases against power generating, refining and manufacturing facilities. At the heart of these cases is a recognition that facilities were engaged in much more than mere routine maintenance. What companies claimed were mere routine maintenances. are in fact major modifications that increased air pollution emissions, thereby requiring the installation of pollution controls.

Under language that the Administration has now said it will propose in terms of changes to the definition of routine maintenance a facility could completely rebuild an old boiler with new parts, extend the life of the plant by another 30–35–40 years AND increase its pollution by tens of thousands of tons BUT NOT be required to install new pollution control devices.

Application of the new source review requirements to facility modifications is a two-step process: first an analysis of the changes to the facility and second the amount of pollution increase. By altering the definition of routine maintenance to include virtually everything a facility might do, regardless of its enormous increased emissions—the second test of pollution increase will never be triggered. The result of the proposed change to the definition of routine maintenance—more pollution for a very long time.

CONCLUSION

Flexibility combined with ongoing air pollution reductions obviously makes sense. The administration owes the American people a public analysis of the pollution effects of their actions—clear proof of the health benefits the public will receive—and not just an explanation of the flexibilities they are providing industry, but clear proof of the health benefits the public will receive. If in fact they can demonstrate real pollution reductions—then show them. If not, don't do it. The law requires cleaner air. But more importantly, the public's health demands it.

Senator EDWARDS. Dr. Thurston?

Mr. THURSTON. Good afternoon, Mr. Chairman. Thank you for that kind introduction.

I did want to clarify one thing. Although I am on the faculty at the NYU School of Medicine, I am not a physician. I am a researcher. I have my doctorate from Harvard School of Public Health, and my scientific research, as you noted, involves investigations of the human health effects of air pollution.

I am also director of the NIEHS' Community Outreach and Education Program at NYU, and one of the goals of that program is to provide an impartial scientific resource on environmental health issues to decisionmakers like yourself, and that is my purpose in testifying to you today.

Over the past few decades, as you and Senator Clinton have noted, medical researchers examining air pollution and public health, including myself, have shown that air pollution is associated with a host of adverse human health effects, including asthma attacks, heart attacks, hospital admissions, adverse birth outcomes, and premature death.

One of the pollutants most carefully studied in the last decade is particulate matter, or PM. Fine particles, such as those that result from power plant emissions, can bypass the defensive mechanisms of the lung and become lodged deep in the lung, where it can cause a variety of human health problems.

The State of the science on particulate matter and health has undergone thorough review, as reflected in the recently-released Draft 3 of the U.S. EPA's criteria document for particulate matter. Since

the PM2.5 standard was set in 1997, hundreds of new published studies taken together robustly confirm the relationship between PM, fine particle pollution, and severe adverse health effects.

In addition, this new research has eliminated many of the concerns that were raised in the past regarding the causality of PM health effects relationship and has provided plausible biological mechanisms for the serious impacts that have been found to be associated with particulate matter exposure.

East of the Mississippi, sulfates are the dominant fine particle species, and these particles are mostly from coal-fired power plants. Moreover, power plants currently emit two-thirds of the sulfate-forming sulfur dioxide in the U.S. Older, pre-1980 coal-fired power plants contribute about half of all electricity generation in the U.S. but produce nearly all of the sulfur dioxide and nitrogen oxide emissions from the entire national power industry.

Therefore, to reduce particulate matter in the Eastern half of the U.S., major reductions in pollution emissions from older fossil fuel power plants are essential.

Recent policy analyses have quantified some of the potential health benefits of cleaning up SO_2, sulfur oxides, and nitrogen oxides emissions from presently uncontrolled grandfathered power plants that we have been discussing here today. These analyses generally rely on the methodology prescribed by the U.S. EPA's Science Advisory Board for quantifying the benefits of air regulatory actions in regulatory impact analyses that we have discussed, RIAs, and the prospective and retrospective studies of benefits of the Clean Air Act.

For example, the EPA using this methodology estimated that the attainment of the National Ambient Air Quality Standards, or NAAQS, for fine particulate matter would avoid over 15,000 premature deaths per year and hundreds of thousands of asthma attacks.

This type of analysis uses risk assessment methods to attribute mortality and morbidity impacts to groups of pollution sources like power plants. It rests on the idea that if a pollutant has a health effect at current levels, then an incremental reduction will have an incremental public health benefit.

Applying this analytical tool to current issues in policy debate over power plants yields important information for decisionmakers when considering policy changes. For example, the Bush Administration recently introduced its Clear Skies initiative, the multipollutant power plant legislation, in Congress, and the EPA conducted a benefits analysis using the SAB methodology. Based on this work, the EPA concluded that Clear Skies would avoid some 6,000 premature deaths annually in 2010 and 12,000 premature deaths in 2020.

However, before the White House announced the Clear Skies proposal, EPA staff had previously recommended a much stronger measure with tighter, faster caps, known as the "Straw" proposal. You can see in my testimony as Attachment A for a side-by-side comparison of the competing proposals.

The EPA also had developed a comparable benefits analysis for that Straw proposal that contained estimates for a test case that is very similar to the present Environment and Public Works pro-

posal, S. 556, finding that these proposed air pollution reductions would avoid some 19,000 premature deaths per year.

In summary, comparing the public benefits of these two programs demonstrates that Clear Skies would mean approximately 13,000 unnecessary, avoidable premature deaths in 2010. After 2018, Clear Skies would still yield 7,000 fewer avoided deaths per year as compared to the Straw proposal that is similar to the Environment and Public Works proposal, the Clean Power Act.

These are 7,000 American lives needlessly lost prematurely each year when the technology exists today to avoid every one of them.

A similar analysis helps define the stakes involved in rolling back the New Source Review Program that we have been discussing under the Clean Air Act. New source review represents a core program under the Act guaranteeing continuous improvement in air quality over time. However, the Bush Administration is moving to finalize rules that apparently will significantly weaken the program as it applies to over 17,000 pollution sources nationwide.

Congress in 1977 for the first time created comprehensive emissions standards for new power plants and other industrial sources of pollution. It made these provisions prospective, grandfathering plants in existence at that time. However, Congress did not intend to exempt these older plants from modern pollution standards forever. In other words, Congress, in creating the new source review, adopted the approach urged time and time again by industry itself to synchronize pollution control investments with the schedule of normal capital improvements in the company's business schedule. So it only makes common sense and assures that power plants will not be able to extend their grandfather status indefinitely.

However, according to the EPA, the Justice Department, and a host of State attorneys general, including mine in New York, that is exactly what many power plant owners have been trying to do. In fact, 51 plants have been charged with violating the NSR by making investments that should have triggered the installation of modern pollution controls.

So, what are the public health consequences if these power plants are not brought up to modern standards? A recent analysis calculated the health impacts from full enforcement of NSR at those plants. As noted in the table in my written testimony, requiring modern pollution controls at the 51 plants would avoid between 4,300 and 7,000 premature deaths per year and between 80,000 and 120,000 asthma attacks.

The benefits of enforcing the New Source Review Program across the board would be much greater. This is what is at stake in the debate over the future of new source review and its applicability to power plants.

Thus, the evidence is clear and has been confirmed independently that fine particle air pollution, and especially those particles emitted by coal-fired power plants, are adversely affecting the lives and health of Americans.

I would like to at the same time emphasize the importance of controlling carbon dioxide from such power plants along with the precursor gases for PM and ozone. If we are to continue to use coal as a major source of electrical energy production while at the same time addressing our growing CO_2 emission problem, technology for

the removal and sequestering of that CO_2 will also need to be developed and applied to these coal-fired power plants. The Bush Clear Skies proposal fails to address CO_2 reductions.

In conclusion, it is important for committee members to realize that, first, time and again, health researchers have found that power plant pollution is associated with severe health impacts, including asthma attacks and premature death.

Second, the Bush Administration's Clear Skies legislation would do too little, too late, to solve this public health problem. Deeper and faster pollution cuts such as those embodied in the Clean Power Act, S. 556, are needed.

And third, the Bush Administration's announced rollbacks of the New Source Review Program will undercut the efficacy of the Clean Air Act, and no weakening of Clean Air Act's protection of public health should be tolerated.

The Bush Administration's current proposals would result in the public unnecessarily continuing to bear preventable, diminished quality of life and health care costs we must presently pay because of the adverse side effects of needless air pollution from uncontrolled fossil fuel power plants.

Thank you for the opportunity to testify on this important issue.

Senator EDWARDS. Thank you very much, Mr. Thurston.

[The prepared statement of Mr. Thurston can be found in additional material]

Senator EDWARDS. Dr. Ballantine?

Dr. BALLENTINE. Thank you, Senator.

It is indeed an honor to be here today with Dr. Thurston and Ms. Browner; it is truly an honor to be up here.

I am an internal medicine hospitalist, and I practice in Asheville, NC. We sit right in the middle of all these grandfathered power plants. Depending on which way the wind blows, we are downwind from somebody's emissions at all times.

I am basically speaking to you from the front lines. This is something that I see every day, what I am going to talk about today. We are losing the battle against lung diseases. It is the only top killer in our country where the death rates are still rising, and air pollution plays a part in this.

In my part of North Carolina, we have the healthiest region in every category of death except in lung diseases, and there, we actually lead the State as having the worst regional mortality.

Unfortunately, it sounds like the loopholes and back-pedaling involved in the Clear Skies initiate are going to make this worse.

The medical verdict is in. Dr. Thurston's study is a major landmark study about the effects of particulates on human health. But it is only one snowball in an avalanche of medical data about the health effects of air pollution. These effects span from the cradle to the grave—impaired fertility, birth defects, impaired lung growth, asthma, allergies, pneumonia, bronchitis, emphysema, lung cancer, heart attacks, strokes, and premature death have all been tied to air pollution exposure.

Up to 4 percent of all U.S. deaths are due to air pollution exposure. Just breathing in North Carolina is like living with a smoker. We have a 1- to 3-year decrease in our life expectancy. In North

Carolina, 50 percent of our ozone and 80 percent of our particulates come from coal-fired power plants.

The Southern Appalachian Mountains Initiative (SAMI) study mapped pollutants and how they flowed across borders and where they came from for the 7-State region in the Southeastern U.S. The SAMI data shows conclusively that we get smog from all of our neighboring States, and we do the same thing to them under the current setup. But in Western North Carolina, the Tennessee Valley Authority power plants are a major contributor to the air pollutant loads that we have to deal with. Tennessee gets cheap electricity. Western North Carolina gets death, disease, acid rain, and asthma. And we do get asthma. Up to one-third to one-half of all the asthma in North Carolina has been attributed to air pollution exposure. Some studies that we have seen say that we have a quarter of a million asthma attacks every summer extra just due to the air pollution exposure—2,000 hospitalizations every summer from the same exposure.

Asthma is the 800-pound gorilla of children's health care. It is an epidemic. We are diagnosing 10 percent of our kids in North Carolina and most other States across the country as having asthma. School surveys done in every middle school in North Carolina show that in fact significant repetitive asthma symptoms are happening to 25 to 30 percent of our children.

Asthma is the number one chronic illness in children. It is the number one health care cost for children, number one for health expenditures and hospital costs. It is also number one for lost school days and lost revenue to the school systems.

If President Bush is serious about leaving no child behind in the American education system, we need to get clean air in order for these kids to make it to school. This backpedaling and compromise in the Clean Air Act is only going to worsen this situation. The costs themselves are staggering. For these same 7th and 8th graders alone, in North Carolina alone, for hospitalization alone, we are spending $15 million a year. If you throw in the other children's age groups, the cost of doctor visits, medications, lost wages to the parents who have to stay home to nurse their children through their illnesses, we lose $100 million a year in North Carolina to asthma. This is not an investment in anybody's future.

Fifty percent of our children in Western North Carolina are on Medicaid. This asthma expense is a State budget buster. The State of North Carolina is having trouble making ends meet right now at the State level. Programs have been slashed right, left, and center. There are significant savings in the health expenditures if we act to preserve clean air.

At the county level, our Buncombe County Health Department spends close to half a million dollars a year on asthma care alone. It is the largest item in the budget, and it represents about 15 percent of their annual budget.

Our clinics and the medical specialists who take care of people with respiratory diseases have seen a one-third increase in the volume of patients this summer due to the bad air. Asheville again this year, like most North Carolina cities, is in nonattainment for both ozone and particulates. We are a small city, yet we have air pollution levels that rival the major urban areas of the Eastern

U.S. Over the entire Southern U.S., there are 33 million people paying $20 billion a year in excess health care costs because of air pollution.

To understand this you really have to look at normal lung function. As children grow up, their lung capacity increases as part of normal growth until they hit about age 20, and then, like a lot of other things in life, from there on, it is downhill. This is normal lung aging.

There are studies now that are showing decreases in lung capacity development in children who grow up in dirty air. These dirty air levels are just like what we have in North Carolina. These children are compromising their maximum lung potential, and they are capping it off.

We are not going to find the next Lance Armstrong among these children. And if you continue to live in air pollution, your decline in lung function happens faster. We are raising a generation of children at risk for a huge burden of premature lung disease.

In North Carolina, we passed the Clean Smokestacks Act. It will bring about a 75 percent reduction in sulfates and nitrogen oxides, and one of the key component of this Act was that the credits were signed over to the people of North Carolina so they cannot be sold by the utilities to our surrounding States just to send it all back to us.

The cost benefits are that we will pay $200 million a year in excess power bills, and we will get $1.2 billion in health care savings. We are not paying for our electricity completely. We are paying for it as we go. We pay for it in higher health care costs, which lead to higher insurance premiums. We pay more Federal taxes to cover the Medicare, State taxes to cover the Medicaid, and county taxes to cover the health departments. This is a massive cost shifting, and Clear Skies is clearly going to make this worse. It is a huge public health problem, and we feel the impact in Western North Carolina.

Coal-fired power plants have caused a level of death and disease in this country that no foreign power has been able to achieve on our native soil. We have taken steps in North Carolina to clean up our air, but we are going to have it all come washing back into our State unless the provisions of the Clean Air Act remain intact to force the other States to clean up.

On behalf of the patients that I see, the elderly, and most of all, our children, I urge you to please clean up our air now. We cannot afford not to do this.

Thank you.

[The prepared statement of Dr. Ballantine follows:]

PREPARED STATEMENT OF CLAY BALLANTINE, M.D.

Good afternoon, and thank you for the chance to address you about this topic. My name is Dr. Clay Ballantine and I practice internal medicine in Asheville, NC. I take care of adults with general medical diseases including cancer, heart and lung diseases. What I am going to talk about today, I see every day.

The top three killers in the U.S. are cardiovascular diseases, cancer, and lung disease. All three of these are worsened by air pollution exposure. Through scientific advances, we are gaining ground on the first two, but we are losing the battle against lung diseases. The death rate from lung disease is still rising despite these advances and despite reduced cigarette use. Recognizing the large and compelling body of medical evidence proving the links between air pollution and bad health,

the North Carolina Medical Society unanimously, passed a resolution urging our elected officials and regulatory agencies to act now to eliminate air pollution. I urge other State medical societies to look at this problem and make a stand for the health of the respective populations they serve.

The President's Clear Skies Initiative will weaken the Clean Air Act and potentially worsen air pollution. This will have a huge impact on the health of our country and my home State. The economic and human health costs will be overwhelming. We cannot afford even our current levels of air pollution.

The spectrum of negative health impacts spans from the cradle to the grave. Lower fertility, birth defects, impaired lung development, increased asthma, pneumonia, bronchitis, emphysema, heart attacks, strokes, lung cancer and premature death have all been tied to air pollution exposure. The medical journals are full of studies proving this. While research can count deaths and hospitalizations. the effects of air pollution reach far deeper into peoples' lives than we will ever be able to see in studies. Bad air takes away peoples' health, their money, their recreation, their options and their loved ones. We cannot quantify those losses.

To understand air pollution effects, you need to know that normal lung capacity increases as we grow until about age twenty. Then lung function gradually decreases as part of normal aging. Air pollution exposure in children damages developing lungs. These children do not reach their full lung potential. With aging they will cross the threshold of inadequate lung function earlier in life. It is no longer safe for our children to play outside. Even otherwise healthy adults have more rapid declines in lung function if they live with air pollution. This is a huge burden of premature lung disease we are visiting on our children. We have not begun to pay these costs for our current pollution.

Half of North Carolina's ground-level ozone comes from coal-fired power plants. Breathing ozone-polluted air is like inhaling bleach. It irritates and inflames lung linings, similar to the way sunburn damages skin. Ozone sets off airway spasms. We now know it CAUSES asthma, as well as worsening existing asthma. It damages immune system infection fighting responses, leading to more pneumonia, bronchitis, and sinusitis. This irritation also heightens responses to allergens, worsening allergy attacks. EPA data shows that the Southeast Region has the worst increases in ozone exposure in the nation over the last 10 rears.

Coal-fired power plants generate about 80 percent of North Carolina's particulate pollution. Particulates irritate the lungs themselves, but also set off diffuse inflammation of the entire cardiovascular system. High particulate levels cause increased asthma, heart attacks, lung cancer, strokes, and premature death. They are implicated in up to four percent of all U.S. deaths. Living in an area with particulate levels like Asheville's is like living with a smoker. The drop in life expectancy is about 1 to 3 years. Asheville ranks 6th highest in the nation for excess per capita death rates from coal-fired power plant pollution, losing almost 100 extra lives a year.

The Southern Appalachian Mountain Initiative data showed that all our regional States are bad neighbors with respect to air pollution. Smog spreads into North Carolina from all of our neighbors. Our emissions do not respect State lines either. Air pollution is a truly regional and national problem. Asheville is a small city but our air quality is as bad almost any major urban area. We are almost always downwind from some surrounding pollution source. Tennessee and the Tennessee Valley Authority power plants contribute a significant percentage to our air pollution. They get cheap electricity and we get ozone, disease, death, and acid rain.

Asthma is the 800-pound gorilla of children's health care and it has reached epidemic proportions. Every age group has seen over 50 percent increases in asthma rates over the past 20 years and most age groups have gone up by over 100 percent. Asthma is the number one chronic disease among our children. It is number one for hospitalizations, for overall health-care costs, and for lost school days and lost revenue to our school systems. The national diagnosis rate for asthma is about 10 percent. This is similar in North Carolina, but statewide surveys show 25–30 percent of our children have significant asthma symptoms. These state asthma symptom numbers are continuing to rise in spite of a possible leveling off at the national level.

EPA studies show that one third to one half of the asthma in North Carolina is due to air pollution. Every summer in North Carolina, air pollution causes an extra 20,000 asthma attacks, 6,300 ER visits and 1,900 hospital admissions. Asthma costs are staggering.

For North Carolina 7th and 8th graders alone, for hospital and ER costs alone, we spend over 15 million dollars every year. Include the other children's age groups, add the costs of medications and doctor's office visits, and add the lost wages from parents who miss work to care for sick children, and we lose over 100 million dollars

every year to children's asthma. This is not an investment in our children's future. About half of the children in North Carolina are on Medicaid. Our Buncombe County Health Department spends close to one half million dollars, almost 15 percent of it's annual budget a year on asthma alone. There are 99 other counties in North Carolina. This is a State and county budget-buster.

The majority of people in the Southeast Region, 33 million people, live in unhealthy air. We pay over $20 billion every year in air pollution related health costs. The EPA analysis of the Southern Appalachian Mountain Initiative data projected health benefits to the Southeast Region from stringent particulate air pollution control ranging from $36 billion to $68 billion per year.

Generating electricity is costing us many times over. The greatest amount of this extra illness falls on the children and elderly that we protect with State and Federal programs. We pay more in Federal taxes for Medicare, more in State taxes for Medicaid, and local taxes for our county and city health departments. Overall health care costs and insurance premiums are higher as well. Our school systems lose revenue due to the increased absences.

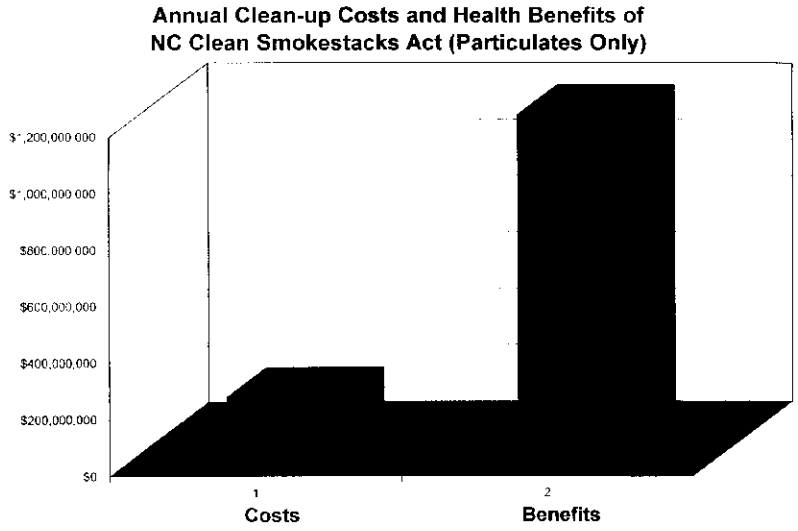
The Great Smoky Mountains National Park is in our back yard. It has the worst air of any national park. This year, the park is on a pace to break its own record for the most bad air days of any park ever. The Clear Skies Initiative protection rollbacks will not be enough to save the park and its air. The last similar initiative involving cap and trade strategies actually worsened the air in the Great Smokies and our part of North Carolina. Under Clear Skies, the clean will get cleaner faster and the dirty will stay dirty longer. Because we are surrounded by these older power plants, this may further delay our achieving clean air.

The resolution of the problems will take a multi-faceted approach. With passage of our State's North Carolina Clean Smokestacks Act, we have taken a major step to clean up our air and to reduce our impact on our neighbors. North Carolina challenges other States to do the same. The executive branch and EPA are only slowly getting the job done as it is but there is progress. But one of the reasons the parties came to the table to work out this historic compromise was the strength of the existing Clean Air Act provisions. That incentive will be compromised if the Clear Skies Initiative is put into place.

The Clean Smokestacks Act works because we found a way to help the utilities pay for the clean-up. The average household will see an effective increase of $1 to $5 per month on electric bills. Surveys showed near unanimous support for this extra cost to achieve clean air. With $200 million in annual costs for the clean-up, we will save $1.2 billion every year in health costs. Our State budget needs these sayings.

In the current scheme, it is cheaper for utilities to lobby for weakening standards and to delay through court cases than it is to pay for the pollution reducing equipment. The technology is available to achieve even more significant reductions in pollution than are mandated in the original Clean Air Act. Given better economic incentives and assistance, the utilities in North Carolina have proven to be good corporate citizens. We need to do this at the Federal and State levels. If the clean air standards are weakened with the Clear Skies Initiative, we may well see a round of State versus utility, State versus State and State versus Federal lawsuits that will rival the magnitude of the tobacco quagmire. This is the least efficient way to solve the problem.

On behalf of our children, our elderly and the patients I see, I urge you to not only preserve the integrity of the Clean Air Act, but to move now to stronger legislation to clean up our air. There is no better investment in our nation's future.


Annual Clean-up Costs and Health Benefits of
NC Clean Smokestacks Act (Particulates Only)
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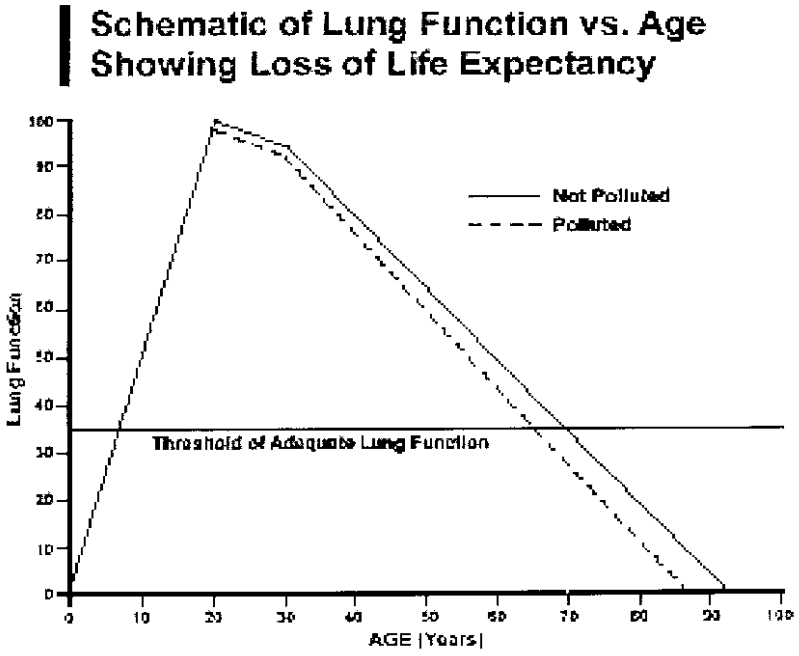
Schematic of Lung Function vs. Age
Showing Loss of Life Expectancy
Not Polluted
Polluted
Threshold of Adequate Lung Function
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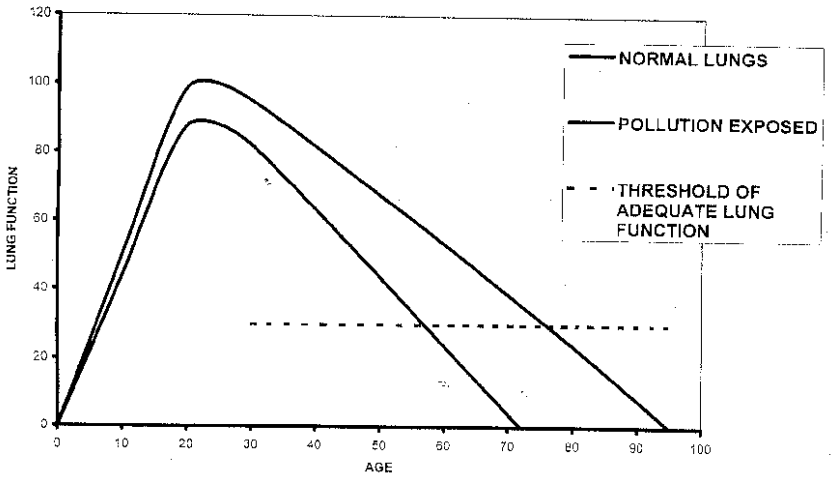
AGE (Years)

LUNG FUNCTION WITH AGING



Senator EDWARDS. Thank you very much, Dr. Ballantine.

Let me ask you, since you just finished, about one thing that I know you were involved in, because I think you were active in the effort to pass Clean Smokestacks, North Carolina's State legislation, which Ms. Browner made reference to.

Can you tell us a little bit about what you learned from that process and your activity and your involvement in that?

Dr. BALLENTINE. There are really four major points to that. No. 1, it was the strength of the provisions of the Clean Air Act that brought the parties to the table. We were going to have to comply with the Clean Air Act, and that is what stimulated the entire discussion and the compromising that went on.

No. 2 is that we could not get the Smokestacks Act passed as just an environmental issue. Even the tourism impacts, the forestry impacts were not enough to get it passed. It was only when we pointed out the health economics of the issue that the overwhelming support came, and we got the Act passed and signed.

No. 3, it is very difficult to regulate utilities into compliance. There is too much money at stake. They are too powerful, and it is a lot cheaper for them to lobby for loopholes and fight it in court than it is to actually clean it up. Basically, what we did was we paid them to clean it up. They preserve their solvency and their profit streams, and we reap the health benefits.

Surveys that we did at the time showed that the $1 to $5 per household per month that it was going to take to do this was easily within people's reach, and they were eager to pay it in order to get clean air.

Finally, we were aware that if we did not get the Clean Smokestacks Act through and clean up the air, we were in a position where this was going to degenerate into a set of lawsuits that would dwarf the tobacco debacle. There will be States suing other States, States suing the Feds, and States suing individual utilities

to recoup their health care costs. And this is the least efficient way to solve the problem.

Senator EDWARDS. Thank you very much, Dr. Ballantine.

Mr. Thurston, let me ask you a question if I can. Can you comment on the ability of scientists to evaluate the human health impact of the kinds of changes that are being proposed here?

Mr. THURSTON. Well, I think there is a definite methodology that is used based on published literature. In other words, scientific knowledge is continually changing as we learn more and more, and certainly in the case of fine particles, we have learned a great deal in the last 5 to 10 years such that that would need to be updated and reconsidered, such as the result that you mentioned about the study that I was principal investigator on where we found a definite connection between exposures to ambient air pollution and lung cancer, such that living in a U.S. city, the risk of lung cancer is roughly comparable to a nonsmoker living with a smoker. Certainly that information needs to be added into the process and evaluated.

But there is definitely a method that is out there that is based on the science that allows us to estimate what is the number of adverse impacts. Now, of course, we are always stuck looking under the lamppost. There are health effects out there that we have not assessed. So I would say that if anything, the way the process works, it is much easier to estimate the cost of cleanup than it is to actually get the full benefits of the cleanup. We are always missing some of those.

In the pyramid of effects, we do not really know everything. Senator Clinton was talking about trying to get a bill where people would keep inventories of adverse health effects and to be able to assess what health effects are out there. The fact is we do not have national health care in the U.S., so we really do not know a lot of times what the adverse health effects are because we do not have the data to find it out.

But with that caveat that we are probably underestimating the adverse health effects of pollution, yes, we can; for the outcomes that we have studies, we are able to estimate what the benefits if you are cleaning up would be and then estimate the impact of different proposals and then compare them.

Is that responsive to your question?

Senator EDWARDS. That is exactly what I was asking. Thank you.

Ms. Browner, you were here for Mr. Holmstead's testimony, were you not?

Ms. BROWNER. Yes, I was.

Senator EDWARDS. And unfortunately, he is not here now. But can you tell me—you heard his testimony that your regulatory impact analysis that was done back in 1996 supports the idea that these proposed changes that he and the administration and the EPA have in fact will not increase pollution. Do you agree with that?

Ms. BROWNER. I do not agree with how he has characterized what we did in 1996 or in fact his characterization that we support the changes that they are not adopting.

In 1996, we took comment on a whole array of ideas. They have picked a set of those, and they have even changed some of the ones

that they have picked. The regulatory analysis went to the whole array; it did not simply go to the ones that they are now picking.

But far more important, Mr. Chairman, we did not adopt those. We heard from people, and what we heard caused us to have concern. So we went back, and we thought, and we met with people, and we analyzed, and we made another proposal in 1998, and we heard from people again.

So I do not think it is fair to simply take one moment in time or one piece of one moment in time and say that that is what we supported. We did not support the changes in 1996 in the way that they are adopting them. We did not adopt them. That is the evidence.

Senator EDWARDS. And from your review of all the materials, has there been a serious analysis done by the EPA of the effects on human health of these proposed changes in the law—the proposed changes in the law and the changes that they are about to finalize.

Ms. BROWNER. Well, I think for the final changes, I have certainly not seen one, and I think that as both you and Senator Clinton noted, to rely on something dating back now 6 years ago when a lot has changed in terms of the science and in terms of the air pollution standards that industry and States have to now meet does not really fly.

I think that the—well, I think it is completely fair for the Congress and the American people to ask the current administration to take those things which they want to finalize and do an analysis before the Administrator signs it—not after the Administrator signs it and it comes to Congress—before the Administrator signs it.

Senator EDWARDS. From your review of the proposals that are being made by the administration, compared with the proposals that you all considered both in 1996 and in 1998—and in the memo, I think——

Ms. BROWNER. And the memo of 2001, which is really the final word.

Senator EDWARDS [continued].——which followed all that—does it appear to you that this proposal which they are pursuing at this point—because it does to me—appears to be friendlier to polluters and dangerous for people's human health, based upon what we can see?

Ms. BROWNER. It is hard for me to see in their proposal which they want to sign now any clear indication that there will be significant and real public health improvements. It is very hard to see that.

It is much easier to see that there will be real opportunities for the air to get dirtier.

Senator EDWARDS. But can those things be analyzed?

Ms. BROWNER. Yes.

Senator EDWARDS. Is that the kind of information that we could get and look at?

Ms. BROWNER. EPA has done far more complex analysis than the one you are asking for. It is eminently doable, absolutely eminently doable.

Senator EDWARDS. Dr. Ballantine, one last question for you. You mentioned to me when I spoke to you earlier the effect on your

lung capacity of hiking in the mountains in North Carolina now. I wonder if you could tell folks about that?

Dr. BALLENTINE. It is unfortunate that the Senators from New Hampshire and Vermont are not here right now. There was a study done in Mount Washington I think by the Harvard School of Public Health many years ago that showed that hikers who went up there were exposed to air pollution, and they had lung function changes, 5 to 7 percent decreases in their lung function just after a 2-hour hike in the mountains.

Right now, the Great Smoky Mountains National Park has the filthiest air that any National Park has ever recorded, and currently, they are on a pace to break their own record. This year, they are already well ahead of where they were last year, and it is likely that this will turn out to be their banner year for horrible air.

The study that they are doing there, up at Klingman's Dome, is a hiker study—healthy people going for a walk in the mountains for a couple of hours and coming back. One of the key factors about this—the data is not back on it yet, but one of the key factors is that the air pollution levels in the Smokies today, in spite of all these improvements in air quality, are running twice the levels that were seen in the Mount Washington study several years ago. And we will wait for Susan Smith and the others involved with this from the University of Tennessee to publish their data later, but I think it is fairly safe to assume that we are going to see that there are definite, at least transient, changes in people's lung function. If you extrapolate that out over multiple times of having that problem, you are going to end up with a chronic lung problem.

Senator EDWARDS. Thank you very much, Dr. Ballantine.

Ms. Browner, thank you.

Ms. BROWNER. Thank you.

Dr. Thurston, thank you.

Did you have something else you wanted to add?

Ms. BROWNER. I would just ask that my written testimony be included in the record.

Senator EDWARDS. Yes, it will be.

Let me just say that I believe these changes, these proposals, are wrong, and I think they are a gift for polluters and result in dirty air for our kids and for seniors who have trouble breathing. I think there has been basically zero serious analysis of the effects that these changes will have on human health. They are relying on a 6-year-old study which was a study of a different set of proposals. During that 6 years, the science has changed, as a number of the witnesses have testified to today.

Ms. Browner, who was the person responsible for the proposals in the Clinton Administration and for the studies that were conducted, has testified that they do not support the changes that are being proposed.

Basically, what the administration is saying to us is "Trust us." Well, I am not willing to trust the administration with the health of our children. I think we need to take a serious look at what impact these changes and these proposals will have on the health of all Americans.

They do a number of things in these proposals. They let polluters play games with baselines by choosing their own period for determining what the baseline is and how that affects whether they are in fact increasing pollution. In their Clean Unit exemption, they make it 15 years retroactive, which means that, as Ms. Browner just testified, a polluter could have done something 12 years ago and used that as the basis for having this exemption be available to them.

They have made a massive change in their proposed routine maintenance exception, which would essentially eliminate, in my judgment, new source review, because it makes almost everything exempt from new source review.

So these are serious issues. They are not in any way academic or abstract. As Dr. Ballantine and others have testified, this affects the health of our kids, it affects the health of senior citizens, and my intention is to do everything in my power to stop it, since we got no indication from the administration today that they would provide this information to us before actually publishing the final rule. And that intention includes, if necessary, adding a rider to the VA–HUD appropriations bill.

I appreciate very much the witnesses' testimony today. I think this is an enormously important issue for the American people.

This hearing is adjourned.

ADDITONAL MATERIAL

[PREPARED STATEMENT OF MR. THURSTON]

Good Morning Mr. Chairman and Members of the Committee: For the record, I am George D. Thurston, a tenured Associate Professor of Environmental Medicine at the New York University (NYU) School of Medicine. My scientific research involves investigations of the human health effects of air pollution. I am also the Director of the National Institute of Environmental Health Sciences' (NIEHS) Community Outreach and Education Program at NYU. A goal of this program is to provide an impartial scientific resource on environmental health issues to decision-makers, and that is my purpose in testifying to you here today.

Despite progress over the last decade, Americans are still suffering from the adverse health effects of air pollution. And now, with calls for more electrical energy from fossil-fuel combustion sources, such as coal-fired power plants, we may face a greater health burden on our children, older adults, and even healthy Americans. The adverse health consequences of breathing air pollution caused by emissions from utility power plants are severe and well documented in the published medical and scientific literature. Over the past few decades, medical researchers examining air pollution and public health, including myself, have shown that air pollution is associated with a host of serious adverse human health effects, including: asthma attacks, heart attacks, hospital admissions, adverse birth outcomes, and premature death. Indeed, recent studies from all over the world indicate that pollutants from power plants can have dire consequences to the health of children.

One of the air pollutants most carefully studied in the last decade is particulate matter (PM). Fine particles, such as those that result from power plants emissions, can bypass the defensive mechanisms of the lung, and become lodged deep in the lung where they can cause a variety of health problems. Indeed, the latest evidence indicates that short-term exposures cannot only cause respiratory damage, but also cardiac effects, including heart attacks. Moreover, long-term exposure to fine particles increases the risk of cardiac, respiratory and lung cancer death and has been estimated to take years from the life expectancy of people living in the most polluted cities, relative to those living in cleaner cities (Brunekreef, 1997).

The state of the science on particulate matter and health has undergone thorough review as reflected in the in the recently released Draft 3 of the U.S. EPA Criteria Document for Particulate Matter—of which I am a contributing author. Since the PM2.5 standard was set in 1997, the hundreds of new published studies, taken together, robustly confirm the relationship between PM2.5 pollution and severe adverse human health effects. In addition, the new research has eliminated many of the concerns that were raised in the past regarding the causality of the PM-health effects relationship, and has provided plausible biological mechanisms for the serious impacts associated with PM exposure.

PM air pollution is composed of two major components: primary particles, or "soot" and "ash", emitted directly into the atmosphere by pollution sources, and; "secondary particles" formed in the atmosphere from gaseous pollutants such as sulfur dioxide (SO_2), and nitrogen oxides (NO_X). Sulfur dioxide emissions from coal plants contribute the most to secondary particle formation. Sulfur dioxide is chemically converted in the atmosphere after it is released from a smokestack to become a "sulfate" particle. Sulfates include sulfuric acid particles that not only form acid rain but, when inhaled, can reach deep into the human lung.

In the area of the United States east of the Mississippi, sulfates are the dominant fine particles species and these particles are mostly from coal-fired powered plants.. Moreover, power plants currently emit two thirds of the sulfate-forming sulfur dioxide in the U.S. Older, pre-1980 coal-fired power plants, contribute about half of all electricity generation in the U.S., but produce nearly all the sulfur dioxide (SO_2) and nitrogen oxide (NOx) emissions from the entire national power industry. Therefore, to reduce particulate matter in the eastern half of the U.S., major reductions in pollution emissions from older fossil-fuel power plants are needed.

The hazards of particulate matter have become particularly clear in the past decade's Research. Two of the largest landmark studies on particulate matter and death, the Harvard Six Cities Study, published in 1993, followed by the American Cancer Society

(ACS) Study in 1995, demonstrated greater risk of premature death from particulate matter in more polluted cities, as compared to cities with cleaner air (Dockery et al, 1993; Pope et al, 1995). Fine particles, especially sulfates, were most strongly associated with excess mortality in polluted cities. The ACS study examined half a million people in over 150 metropolitan areas throughout the United States and found a 17 percent greater risk of mortality between the city with the least sulfate and particulate matter and the city with the highest levels of this particulate pollution. The results of these studies were challenged by industry, resulting in an independent reanalysis by the Health Effects Institute (HEI)—funded by industry and EPA. HEI confirmed the associations found by the original investigators. Furthermore, a recent National Institute of Environmental Health Sciences (NIEHS)-funded extension of the ACS study (Pope et al, 2002), of which I was Principal Investigator, strengthens the original conclusions of the ACS study and, importantly, now links increased risk of lung cancer to long term exposure to particulate matter and sulfate air pollution.

Recent epidemiological and toxicological evidence also suggests that the particles resulting from fossil-fuel utility power plant air emissions, including those from coal-fired power plants, are among the most toxic in our air. Many studies in the published literature have indicated that sulfate particles, which are predominantly formed from coal-fired power plant SO_2 emissions, are more strongly associated with human mortality than other components of PM. Also, my own published analysis of U.S. mortality and PM by source category found that coal combustion-related particles were more strongly associated with variations in annual mortality rates across U.S. cities than were other components of PM (Ozkaynak and Thurston, 1987). More recently, an analysis by Laden and co-authors (2000) at Harvard University of PM sources and daily pollution confirms that coal combustion particles, along with automobile pollution, were among the PM components that most affected daily variations in mortality. In addition, toxicological studies have indicated that particles resulting from fossil-fuel combustion contain metals that are very toxic to cells in the lung. Therefore, both the toxicological and epidemiological evidence available indicate that pollution from fossil-fuel power plants are of great human health concern.

The conclusion that power plant particle pollution is one of the more toxic types of particles that we breathe is supported by the facts that combustion particles have different sizes, physiochemical characteristics, and deposit in different parts of the lung than other more "natural" particles, such as wind-blown soil. Therefore, these particles can defeat the body's natural defenses, and may have a far greater adverse effect on health. In particular, these power plant particles are enriched in toxic metals, such as arsenic and cadmium, as well as in transition metals, such as iron and vanadium, that can cause damaging oxidative stress in lung cells (e.g., Costa et al, 1997; Dreher et al, 1997, and; Lay et al, 1999). This may also be especially true in the case of power plant particles because of the co-presence of acidic sulfates, such as sulfuric acid, that can make these transition metals even more bio-available and potent to damage the lung (e.g., Chen et al. 1990, Gavett et al., 1997). Moreover, power plant PM is composed of very small particles that bypass the natural defenses of the lung, and therefore can penetrate deep into the lung where they are not easily cleared, and can therefore reside there for long times, potentially causing significant damage to the lung and to the human body. Thus, power plant air pollution is cause for special concern, and adds urgency to the need for reductions in the amounts of this pollution emitted into our air.

Recent policy analyses have quantified some of the potential health benefits of cleaning-up SO_2 and NOx emissions from presently uncontrolled "grandfathered" power plants. These analyses generally rely on methodology prescribed by U.S. EPA's Science Advisory Board for quantifying the benefits of air regulatory actions in Regulatory Impact Analyses (RIAs) and in the prospective and retrospective studies of benefits of the Clean Air Act. For example, EPA using this methodology estimated that attainment of the National Ambient Air Quality Standard (NAAQS) for fine particulate matter (PM2.5) would avoid over 15,000 premature deaths per year and hundreds of thousands of asthma attacks.

This type of analysis uses risk assessment methods to attribute mortality and morbidity impacts to groups of pollution sources like power plants. It rests on the idea that if a

pollutant has health effects at current levels (above any threshold), then an incremental reduction will have an incremental public health benefit. The methodology typically involves modeling the economic response of the electric power system to the imposition of costs of pollution reduction, modeling the air quality concentration changes from the pollution controls, and relating those air quality changes to changes in human exposure and expected changes in specific health effects across the population, based on the risk factors found in the scientific literature.

Applying this analytic tool to current issues in the policy debate over power plants yields important information for decisionmakers when considering policy changes such as the design of multi-pollutant power plant legislation or the fate of the New Source Review program under the Clean Air Act.

For example, the Bush Administration recently introduced its "Clear Skies" Initiative multipollutant power plant legislation in Congress, and the EPA conducted a benefits analysis using the SAB methodology (www.epa.gov/clearskies). Based on this work, the EPA concluded that "Clear Skies" would avoid some 6,000 premature deaths annually in 2010 and 12,000 premature deaths in 2020. However, before the White House announced the Clear Skies proposal, EPA staff had previously recommended a much stronger measure with tighter, faster caps, known as the "Straw" proposal. See my testimony's Attachment A for a side-by-side comparison of the competing proposals.

Interestingly, the EPA "Straw" proposal closely tracks the levels of reductions contained in the Clean Power Act (S.556) that recently passed out of the Environment and Public Works Committee.

The EPA also had developed a comparable benefits analysis for the "Straw" proposal that contained estimates for a "Test Case" that is very similar to the present EPW proposal (S556), finding that these proposed air pollution reductions would avoid some 19,000

premature deaths per year. [1]. This analysis of the "Straw" proposal was made public in response to information requests from the Senate Environment and Public Works Committee and the House Subcommittee on Clean Air..

In summary, comparing the public health benefits of these two programs demonstrates that "Clear Skies" would mean approximately 13,000 unnecessary and avoidable premature deaths in 2010. After 2018, "Clear Skies" would still yield 7,000 fewer avoided deaths per year compared to the "Straw" proposal or the Clean Power Act. These are 7,000 American lives needlessly lost each year when the technology exists today to avoid every one of them.

A similar analysis helps define the stakes involved in rolling back the New Source Review program under the Clean Air Act. New Source Review represents a core program under the Act, guaranteeing continuous improvement in air quality over time. However, the Bush Administration is moving to finalize rules that some have asserted will significantly weaken the program as it applies to over 17,000 pollution sources nationwide.

Congress in 1977 for the first time created comprehensive emissions standards for new power plants and other industrial sources of pollution. It made these provisions prospective, "grandfathering" plants in existence at the time. However, Congress did not intend to exempt these older plants from modern pollution standards forever. Rather than requiring plants to install modern controls all at once, Congress believed it critical to require pollution control upgrades whenever a plant made major capital improvements to its production capacity that would extend its useful life. In other words, Congress in creating New Source Review adopted the approach, urged time and again by industry, to synchronize pollution control investments with the schedule of normal capital

[1] EPA modeled a case (called Test Case 2) that differs slightly from the "Straw" proposal i.e., EPA modeled a 2.25 million ton SO2 cap and a 5 ton mercury cap). See: http://www.cleatf.org/publications/other-epa_straw_proposal.html

improvements in the company's business cycle. This only makes common sense and ensures that power plants will not be able to extend their grandfather status indefinitely.

However, according to EPA, the Justice Department, and a host of state Attorneys General, that is exactly what many power plant owners have been trying to do. In fact, 51 plants have been charged with violating NSR by making investments that should have triggered installation of modern pollution controls. According to the allegations in the cases, the plants were virtually rebuilt from the inside out. Moreover, under NSR, eventually every power plant in the U.S. will have to face a "moment of truth": whether to make life-extending capital investments that trigger the requirement of pollution upgrades, or retire. This is exactly what Congress intended. Congress did not intend to allow plants to be overhauled without installing modern pollution controls.

What are the public health consequences if these power plants are not brought up to modern standards? A recent analysis by Abt Associates, EPA's consultant for quantifying the benefits of its air regulatory programs studied the benefits of modernizing power plant controls. Based on those findings, the Clean Air Task Force, a Boston-based environmental policy group, calculated the health impacts from the 51 plants charged with NSR violations and the benefits resulting from full enforcement of NSR at those plants[2], as shown in the below in Figure 1.

Deaths	*Avoidable Deaths*	*Asthma Attacks*	*Avoidable Asthma Attacks*
5,500-9000	4,300-7000	107,000-170,000	80,000-120,000

Figure 1. Estimates of the health impacts of 51 powerplants charged with NSR violations, and the health benefits to be gained per year from applying NSR to these 51 plants. (The Clean Air Task Force, Power to Kill, 2001)

Requiring modern pollution controls at the 51 plants would avoid between 4,300 and 7,000 premature deaths per year and between 80,000 and 120,000 asthma attacks. This

[2] http://www.cleanair.org/publications/reports/PowerToKill.pdf

represents the benefits of cleaning up only 51 of the nation's over 500 power plants. The benefits of enforcing the New Source Review program across-the-board would be much greater. This is what is at stake in the debate over the future of New Source Review and its applicability to power plants.

Thus, the evidence is clear, and has been confirmed independently: Fine particle air pollution, and especially those particles emitted by coal-fired power plants, are adversely affecting the lives and health of Americans. The importance of these particulate matter-health effects relationships is made clear by the fact that virtually every American is directly impacted by this pollution.

Finally, I would like to emphasize the importance of controlling Carbon Dioxide (CO_2) from such power plants, along with the precursor gases for PM and ozone. We now know that CO_2 concentrations in the atmosphere can adversely affect our climate, and utility power plants are a major source of that CO_2. In addition, coal as an energy source emits far more CO_2 than other sources providing the same energy. My colleagues and I in a study recently found that a co-benefit of the adoption of readily available technologies to lessen CO_2 emissions can avoid many tens of thousands of premature deaths from particulate matter worldwide (Cifuentes et al. 2001.) If we are to continue to use coal as a major source of electrical energy production, while at the same time addressing our growing CO_2 emission problem, technology for the removal and sequestering of CO_2 will also need to be developed and applied to these coal-fired power plants. The Bush "Clear Skies" proposal fails to address CO_2 reductions.

In conclusion, it is important for committee members to realize that: (1) time and again health researchers have found that power plant pollution is associated with severe health impacts including asthma attacks and premature death; (2) the Bush Administration's "Clear Skies" legislation would do too little, too late to solve this public health problem. Deeper and faster pollution cuts such as those embodied in the Clean Power Act (S556) are needed; and, (3) the Bush Administration's announced rollbacks of the New Source Review program will undercut the efficacy of the Clean Air Act, and no weakening of the

Clean Air Act's protection of public health should be tolerated. The Bush Administration's current proposals would result in the public unnecessarily continuing to bear preventable diminished quality of life and the health care costs we presently must pay because of the adverse health effects of needless air pollution from uncontrolled fossil-fuel power plants.

Thank you for the opportunity to testify on this important issue

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Attachment A. Comparison of Three Competing Proposals to Control Power Plant Air Pollution

(Source: Clean Air Task Force, 2002)

Comparison of Approaches to Power Plant Air Pollution				
Pollutant	**Current**	**Bush Administration "Clear Skies"**	**EPA Staff "Straw" Proposal (September 2001)**	**Clean Power Act (S.556)**
CO_2	586 million metric tons carbon equivalent (mmtce)	--	--	480 mmtce by 2007
NO_x	5 million tons	2.1 million tons by 2008 *potential* 1.7 million tons by 2018	1.87 million tons by 2008 1.25 million tons by 2012	1.66 million tons by 2007
SO_2	11 million tons	4.5 million tons by 2010 *potential* 3 million tons by 2018	2 million tons by 2010 (modeled as a 2.25 ton cap)	2.25 million tons by 2007
Mercury	48 tons	26 tons by 2010 (46 percent reduction nationwide) 15 tons by 2018 (69 percent reduction nationwide) Unlimited trading	24 tons by 2008 7.5 tons by 2012 (Facility-specific 70 percent reductions with pollution trading allowed beyond that reduction.) modeled as a 5 ton cap	5 tons by 2007 (90 percent reduction per plant to protect local health and environments) No pollution trading

[Whereupon, at 4:19 p.m., the subcommittee was adjourned.]

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