S. HRG. 107–956

ENVIRONMENTAL ENFORCEMENT

HEARING

BEFORE THE

SUBCOMMITTEE ON SUPERFUND, TOXICS, RISK, AND WASTE MANAGEMENT

OF THE

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED SEVENTH CONGRESS

SECOND SESSION

MARCH 12, 2002

Printed for the use of the Committee on Environment and Public Works

U.S. GOVERNMENT PRINTING OFFICE
83–689 PDF WASHINGTON : 2003

For sale by the Superintendent of Documents, U.S. Government Printing Office
Internet: bookstore.gpo.gov Phone: toll free (866) 512–1800; DC area (202) 512–1800
Fax: (202) 512–2250 Mail: Stop SSOP, Washington, DC 20402–0001

COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS

ONE HUNDRED SEVENTH CONGRESS
SECOND SESSION

JAMES M. JEFFORDS, Vermont, *Chairman*

MAX BAUCUS, Montana	BOB SMITH, New Hampshire
HARRY REID, Nevada	JOHN W. WARNER, Virginia
BOB GRAHAM, Florida	JAMES M. INHOFE, Oklahoma
JOSEPH I. LIEBERMAN, Connecticut	CHRISTOPHER S. BOND, Missouri
BARBARA BOXER, California	GEORGE V. VOINOVICH, Ohio
RON WYDEN, Oregon	MICHAEL D. CRAPO, Idaho
THOMAS R. CARPER, Delaware	LINCOLN CHAFEE, Rhode Island
HILLARY RODHAM CLINTON, New York	ARLEN SPECTER, Pennsylvania
JON S. CORZINE, New Jersey	BEN NIGHTHORSE CAMPBELL, Colorado

KEN CONNOLLY, *Democratic Staff Director*
DAVE CONOVER, *Republican Staff Director*

SUBCOMMITTEE ON SUPERFUND, TOXICS, RISK, AND WASTE MANAGEMENT

BARBARA BOXER, California, *Chairman*

MAX BAUCUS, Montana	LINCOLN CHAFEE, Rhode Island
RON WYDEN, Oregon	JOHN W. WARNER, Virginia
THOMAS R. CARPER, Delaware	JAMES M. INHOFE, Oklahoma
HILLARY RODHAM CLINTON, New York	MICHAEL D. CRAPO, Idaho
JON S. CORZINE, New Jersey	ARLEN SPECTER, Pennsylvania

C O N T E N T S

ENVIRONMENTAL ENFORCEMENT

TUESDAY, MARCH 12, 2002

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON SUPERFUND, TOXICS, RISK, AND WASTE MANAGEMENT,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:03 a.m. in room 406, Senate Dirksen Building, Hon. Barbara Boxer (chairman of the subcommittee) presiding.

Present: Senators Boxer, Inhofe and Corzine.

OPENING STATEMENT OF HON. BARBARA BOXER, U.S. SENATOR FROM THE STATE OF CALIFORNIA

Senator BOXER. I will call the committee to order.

I would ask all of you on the first panel to please take your seats here, because what we are going to try to do is a very seamless hearing. We have only one panel. Senator Inhofe and I will make our opening statements. If any other colleagues come, they will do that as well.

What we are going to try to do because we are really looking at one basic issue—the issue of enforcement—and I think we may be able to complete this before the vote is completed on the floor, which I understand is going to start at 11 a.m., which is helpful, from 10:45 a.m., I think.

So anyway, it looks like we should be able to move quickly and get all the information we need.

Today, the Superfund, Toxics, Risk and Waste Control Subcommittee will hear about the state of environmental enforcement at the EPA and what might be in the works for environmental enforcement in the future.

I want to make it very clear that we invited Administrator Whitman to be here, or anyone that she would send, and they declined.

I am also very grateful to Senator Chafee, who is the ranking member of the subcommittee, for his support on holding this hearing.

The body of scientific evidence supporting the need for quick and effective action to reduce our communities' exposure to pollution continues to grow. Given the central role enforcement plays in public health protection, any change in policy on environmental enforcement requires close scrutiny. I think what I am about to say now is key to the whole debate. There are a number of ways environmental protections can be rolled back. One very straightforward way is to change the law. The process of changing the law is a pub-

lic process. Stakeholders make their case. Issues go through committee. Votes are taken. When efforts are made to change a law, the process is transparent.

However, there is a more subtle way that environmental protections can be rolled back. Cuts in personnel and cuts in pollution control targets can also result in less environmental enforcement. The difference is that this approach is not so public. No vote is taken on the change of plans. There is much less transparency. It is harder to hold those responsible for the rollbacks accountable. Is it any wonder which course this Administration is following? Not to me.

We are here today to shine a bright light on what is happening to environmental enforcement at the EPA and what the Bush administration plan seems to be for the future of environmental enforcement.

EPA's own documents paint a disturbing picture about the Administration's plans for environmental enforcement. First, let's take a look at environmental enforcement resources. This chart comes from EPA's own operating plan and budget request. This is from an internal document that EPA has so far refused to share with us. We have gotten it through other sources. This document shows that between fiscal year 2001 and 2003, there is an 18 percent cut in the staff resources that can be devoted to inspections, and an 11 percent cut in civil enforcement.

Let us also take a look at EPA's projections for accomplishments in environmental enforcement from 2001 to 2003. Again, using EPA's own budget numbers, there are substantial declines in enforcement. This Administration's plan is to significantly reduce inspections, and the blue is 1901, the red is 1902 and the yellow is 1903. So the plan is to significantly reduce inspections, civil investigations, and voluntary disclosures.

There is even a plan to reduce the amount of pollution taken out of our air, our water and our soil. This Administration's approach to rolling back environmental protection through hidden plans to undermine enforcement may not be as transparent as changing the law, but it is just as dangerous for the American people.

Again, I am very sorry that EPA is not here today, but we will certainly accommodate them if they would like to have an opportunity to answer what I am saying today and what other colleagues might say, and of course we stand ready to continue this hearing at that time.

We are very fortunate today to have Eric Schaeffer here to discuss EPA enforcement with us. Until quite recently, Mr. Schaeffer was the Director of Regulatory Enforcement at the EPA. It is my understanding he came to the Federal Government with the other George Bush. Is that correct, Mr. Schaeffer? He was responsible for a wide range of enforcement areas, including air, water, pesticides, toxics, and hazardous waste. He resigned from EPA and has expressed great concern about the future of enforcement.

At this time, I would like to submit his letter of resignation for the record, and I of course welcome him. Without objection, we will do that.

[The referenced document follows:]

CHRISTINE WHITMAN, *Administrator,*
U.S. Environmental Protection Agency,
Washington, DC.

DEAR MS. WHITMAN: I resign today from the Environmental Protection Agency after 12 years of service, the last 5 as Director of the Office of Regulatory Enforcement. I am grateful for the opportunities I have been given, and leave with a deep admiration for the men and women of EPA who dedicate their lives to protecting the environment and the public health. Their faith in the Agency's mission is an inspiring example to those who still believe that government should stand for the public interest.

But I cannot leave without sharing my frustration about the fate of our enforcement actions against power companies that have violated the Clean Air Act. Between November 1999 and December 2000, EPA filed lawsuits against nine power companies for expanding their plants, without obtaining New Source Review permits and the up to date pollution controls required by law. The companies named in our lawsuits emit an incredible 5.0 million tons of sulfur dioxide every year (a quarter of the emissions in the entire country) as well as 2 million tons of nitrogen oxide.

As the scale of pollution from these coal-fired smokestacks is immense, so is the damage to public health. Data supplied to the Senate Environment Committee by EPA last year estimate the annual health bill from 7 million tons of SO_2 and NO_2: more than 10,800 premature deaths; at least 5,400 incidents of chronic bronchitis; more than 5,100 hospital emergency visits; and over 1.5 million lost work days. Add to that severe damage to our natural resources, as acid rain attacks soils and plants, and deposits nitrogen in the Chesapeake Bay and other critical bodies of water.

Fifteen months ago, it looked as though our lawsuits were going to shrink these dismal statistics, when EPA publicly announced agreements with Cinergy and Vepco to reduce SOx and NOx emissions by a combined 750,000 tons per year. Settlements already lodged with two other companies—TECO and PSE&G—will eventually take another quarter million tons of NOx and SOx out of the air annually. If we get similar results from the nine companies with filed complaints, we are on track to reduce both pollutants by a combined 4.8 million tons per year. And that does not count the hundreds of thousands of additional tons that can be obtained from other companies with whom we have been negotiating.

Yet today, we seem about the snatch defeat from the jaws of victory. We are in the 9th month of a "90-day review" to reexamine the law, and fighting a White House that seems determined to weaken the rules we are trying to enforce. It is hard to know which is worse, the endless delay or the repeated leaks by energy industry lobbyists of draft rule changes that would undermine lawsuits already filed. At their heart, these proposals would turn narrow exemptions into larger loopholes that would allow old "grandfathered" plants to be continually rebuilt (and emissions to increase) without modern pollution controls.

Our negotiating position is weakened further by the Administration's budget proposal to cut the civil enforcement program by more than 200 staff positions below the 2001 level. Already, we are unable to fill key staff positions, not only in air enforcement, but in other critical programs, and the proposed budget cuts would leave us desperately short of the resources needed to deal with the large, sophisticated corporate defendants we face. And it is completely unrealistic to expect underfunded state environmental programs, facing their own budget cuts, to take up the slack.

It is no longer possible to pretend that the ongoing debate with the White House and Department of Energy is not effecting our ability to negotiate settlements. Cinergy and Vepco have refused to sign the consent decrees they agreed to 15 months ago, hedging their bets while waiting for the Administration's Clean Air Act reform proposals. Other companies with whom we were close to settlement have walked away from the table. The momentum we obtained with agreements announced earlier has stopped, and we have filed no new lawsuits against utility companies since this Administration took office. We obviously cannot settle cases with defendants who think we are still rewriting the law.

The arguments against sustaining our enforcement actions don't hold up to scrutiny.

Were the complaints filed by the U.S. Government based on conflicting or changing interpretations? The Justice Department doesn't think so. Its review of our enforcement actions found EPA's interpretation of the law to be reasonable and consistent. While the Justice Department has gamely insisted it will continue to prosecute existing cases, the confusion over where EPA is going with New Source Review has made settlement almost impossible, and protracted litigation inevitable.

What about the energy crisis? It stubbornly refuses to materialize, as experts predict a glut of power plants in some areas of the United States. In any case, our settlements are flexible enough to provide for cleaner air while protecting consumers from rate shock.

The relative costs and benefits? EPA's regulatory impact analyses, reviewed by OMB, quantify health and environmental benefits of $7,300 per ton of SO_2 reduced at a cost of less than $1,000 per ton. These cases should be supported by anyone who thinks cost-benefit analysis is a serious tool for decisionmaking, not a political game.

Is the law too complicated to understand? Most of the projects our cases targeted involved big expansion projects that pushed emission increases many times over the limits allowed by law.

Should we try to fix the problem by passing a new law? Assuming the Administration's bill survives a legislative odyssey in today's evenly divided Congress, it will send us right back where we started with new rules to write, which will then be delayed by industry challenges, and with fewer emissions reductions than we can get by enforcing today's law.

I believe you share the concerns I have expressed, and wish you well in your efforts to persuade the Administration to put our enforcement actions back on course. Teddy Roosevelt, a Republican and our greatest environmental President, said, "Compliance with the law is demanded as a right, not asked as a favor." By showing that powerful utility interests are not exempt from that principle, you will prove to EPA's staff that their faith in the Agency's mission is not in vain. And you will leave the American public with an environmental victory that will be felt for generations to come.

Sincerely,

ERIC V. SCHAEFFER, *Director,*
OFFICE OF REGULATORY ENFORCEMENT.

Senator BOXER. We will also hear from Dr. Barry Johnson. He is an experienced scientist and will share some of the latest research on the impacts of pollution on the public. We will hear from Mr. Scott Segal, a partner in a law firm that defends environmental enforcement cases.

Now, we are going to continue with our opening statements. It is my pleasure to introduce Senator Inhofe, and of course to welcome Senator Corzine, who will immediately follow Senator Inhofe.

Senator Inhofe, welcome.

OPENING STATEMENT OF HON. JAMES M. INHOFE, U.S. SENATOR FROM THE STATE OF OKLAHOMA

Senator INHOFE. Thank you, Madam Chairman.

I will share with them the bad news and good news I gave to you on the train over from the Capitol. The bad news is I have a 1-hour opening statement, but the good news I have about a 3-minute voice.

[Laughter.]

Senator BOXER. Well, we will be happy to put the entire statement into the record.

Senator INHOFE. In a report entitled, U.S. Downstream: The EPA Takes Another Bite Out of America's Fuel Supply, Merrill Lynch concluded that EPA's clean air regulations, "will clearly have the impact of reducing existing U.S. refinery capacity." The reduction in refining capacity predicted by Merrill Lynch is the result of poorly thought out and implemented regulations. The solution to the high prices is not found in the cheap political gimmicks like releasing oil from the Strategic Petroleum Reserve. Rather, the solution relies on a national energy policy, including highly effective, but streamlined environmental regulations.

I have to say, Madam Chairman, that what I am saying now is not a partisan thing because we tried way back during the Reagan administration, at that time I was working in the House, I believe you were too, to get them to have a national energy policy, and they did not do it. I thought surely when George the First came in from the oil fields, he would want to have one, and he did not want one either. The Clinton administration did not.

But now we have an Administration that is really willing to work out something that is a national energy policy, the cornerstone of which is going to lessen our dependence upon foreign countries for our ability to have energy. I sometimes on the Senate floor talk about this 57 percent dependency that we have on foreign countries, and the most rapidly increasing contributor to that is the country of Iraq. So, the bottom line is it is ludicrous that we should be dependent upon Iraq for our ability to fight a war against Iraq.

It is a very serious thing, Madam Chairman. I think that when well thought out and reflecting consensus, environmental regulations can certainly provide benefits to the American people. But when regulations are placed into effect without adequate thought, they are likely to do more harm than good. Poorly designed environmental regulations are and will continue to be a large contributor to our energy policy and our energy problems.

Now, we have an Administration that has said we are going to have an energy policy. That takes into consideration all these things that we are talking about this morning.

So we as a Nation need to re-think the manner in which we approach regulation. We all need to keep an open mind during the debates on various regulatory reform initiatives. I was very disheartened to hear that these were, "sneak attacks on the environment." In fact, it is just the opposite. If we re-think regulation, we can be in a better position in the future. We could find ourselves in a place where we can have far greater environmental protection and more reliable and diverse energy sources.

I had a chart that I was wanting to show at this point, and I guess they did not show up with it, but it was on price spikes and how much the American people have to pay for increased fuel. So I would like to have that entered at this point in the record, even though I do not have it here.

Senator BOXER. Without objection, so ordered.

Senator INHOFE. Congress and the executive branch must do a better job of understanding how these various layers of regulations impact sectors of the economy and of industry. For example, refineries, who are currently working at 100 percent capacity, are going to be simultaneously hit with a number of regulations in the next few years, such as the tier two and sulfur diesel rules. Now is the time to work together on these and other regulations to not only achieve the environmental goals, but also ensure no disruption in fuel supply, which would cause price spikes as we showed several times to this committee.

There is no better example of a poorly designed regulation than New Source Review. I can remember when I was chairing the Clean Air Subcommittee—Senator Corzine, before the Democrats became the majority, we had a hearing in the State of Ohio. We had people testifying and one came in with a 12-inch pipe that had

to be changed. That particular pipe set off the New Source Review, a very expensive process. This is at a time when we are already at 100 percent refinery capacity.

As many of you know, last year Senator Breaux and I sent the original letter to Vice President Cheney in his capacity as Chairman of the National Energy Policy Development Group, the EPA's New Source Review enforcement, flawed and confusing policies will continue to interfere with our Nation's ability to meet our energy and fuel supply needs.

We strongly urged that the Administration take into account these concerns in developing its national energy policy. New Source Review is a 20-page regulation which needs more than 4,000 pages of guidance documents to explain it. I have to say, Madam Chairman, that I consider this to be a violation. This took place without hearings, without input into these 4,000 pages of documents to explain 20 pages, and nobody still seems to understand it.

In addition to no hearings being confusing, I think that New Source Review is a classic example of regulation through guidance in violation of the Administrative Procedures Act. I would like to ask that the letter that was sent by Senator John Breaux and myself be entered into the record following my remarks.

Senator BOXER. Without objection, so ordered.

Senator INHOFE. From my tenure as Chairman of the Senate's Clean Air Subcommittee, I knew that New Source Review was a major issue for the energy sector. However, as a result of my letter, a number of companies from all over the country have contacted me to discuss their experience with the New Source Review program.

What is worse is that under the New Source Review enforcement initiative, I saw examples of massive information requests from the Federal Government to companies which were, at the very least, dubious and more likely illegal. There were examples of information requests submitted to companies by the EPA employees without any official authorization. In some cases, EPA employees were driving around just handing these requests out like fliers. There were other information requests in the form of photocopied documents with the name of one facility scratched out, and the name of another facility penciled in.

There were also requests which were addressed to one facility, but referred to operating units of another facility halfway across the country. In other cases, attachments were cited, but not provided. These attachments are absolutely essential for companies to comply with such a request. They cannot comply with the request without the attachments.

Additionally, there were requests for information that had already been produced by companies. While the EPA sent me a lengthy response to my questions on these cases of abuse of power, EPA bureaucrats never produced their homemade information requests. I would like to submit my letter following the Breaux letter for the record, making the request to the EPA.

Senator BOXER. Without objection, so ordered.

Senator INHOFE. I fully support the strong enforcement of our Nation's clean air laws, but I will not stand by to watch some Federal employees use these tactics to serve their agendas, nor should

the White House. As a former businessman, I personally dealt with similar behavior from my government, and that was one of my motivating factors to seek public office. I had to ask myself—I was out building companies and hiring people and expanding the tax base—doing all these things. Yet the chief obstacles that we continuously had came from the Federal Government.

Now, many of the environmentalist community and Mr. Schaeffer call this review a sneak attack on clean air laws, and claim that politics have entered the enforcement of our laws. They know better. I know that Mr. Schaeffer has now left. He has resigned and he has taken a position with a liberal think tank that funds the NRDC and other companies like that. Mr. Schaeffer, I think this shows what your personal agenda was and probably was not consistent with that of the current Administration.

President Bush cannot be expected to place layer after layer of regulations without any consideration of their energy implications. This is important. The extremist environmental community does not have to answer to the American people when energy prices go through the roof. They should have to, but they do not have to. They do not have to worry about the national security implications of greater dependency on foreign energy sources. But the President and we in the Congress do have to worry about that. There should be no time in our Nation's history when we should be more aware of the problems that are out there in relationship to our dependency on foreign sources for our ability to fight a war than today, since we are out in the middle of two major wars.

As a Senator and grandfather, I want to ensure the cleanest environment for our Nation. However, I am convinced that environmental regulations can be harmonized with energy policy. I hope we will be able to accomplish that, Madam Chairman.

Senator BOXER. Thank you so much. In the interests of collegiality, I really do have this very good throat lozenge for you.

Senator INHOFE. Oh, thank you. You notice she waited until after my statement to give it to me.

[Laughter.]

Senator BOXER. I waited until you yielded back the rest of your time, but we are really glad that you are here presenting your view.

I want to make sure that I can hold the record open in time to put into it the California experience in this last energy crisis where we did build a number of power plants and we used the new rules and we were able to do that without any deterioration in air quality. So without objection, I am going to keep the record open for that. I am going to say to my colleague, I agree that we should enforce these laws, and it is just going to be awful difficult to do it when you see these cuts in staff levels, which is not the issue you addressed. You really addressed the underlying laws, but I wanted to point out this is something I hope we can perhaps work together on because it is discouraging to see this. The internal documents show that we are really going to cut in half the amount of pollutants taken out of the air. Pollution reduction will be essentially cut in half, and that is very troublesome to this Senator, in any case.

Senator Corzine, we welcome you. Please feel free to make an opening statement.

OPENING STATEMENT OF HON. JON S. CORZINE, U.S. SENATOR FROM THE STATE OF NEW JERSEY

Senator CORZINE. Thank you, Madam Chairman.

That cut of half of the pollutants in the air is also troubling to me.

I appreciate your holding a hearing on the enforcement of our Nation's environmental laws, and I welcome the witnesses and appreciate your spending the time with us.

I think we all recognize that there has been great progress over the last three decades in cleaning up our environment. For example, Mr. Segal's testimony discusses the great strides we have made in improving air quality since the 1970's. Carbon monoxide levels are down 28 percent; sulfur dioxide levels down 39 percent. These types of gains really cannot be minimized, and there is more ahead if we do the right things. I hope we do not snatch defeat from the jaws of victory, as our witness Mr. Schaeffer wrote in his letter, because many problems really do continue.

In my State of New Jersey, every county has violations of the ozone standard. Many of those are a function, by the way, of power plants in States to the west and south where we are downwind from. In addition, New Jersey has 111 sites on the Superfund national priorities list, the most in any State in the Nation, and 5 more sites proposed for listing. Believe me, my constituents ask what we are doing about that and whether we are making progress on cleaning up and moving forward in enforcing polluter-pay principles.

These are examples of the types of environmental problems that can only be addressed effectively by a strong Federal enforcement effort. You do not have to look beyond today's Wall Street Journal to see that we are not getting the job done on enforcement. Today's Journal contains a story on a draft EPA inspector general study that is reported to show that only 63 percent of the 19,025 major sources of air pollution in this country have the permits that they were required to obtain in 1997. Madam Chairman, I would ask that the Wall Street Journal article be submitted to the record.

Senator BOXER. Without objection, so ordered.

Senator CORZINE. I am disturbed by the approach that the current Administration is taking on enforcement as outlined by the Chairman. Again, the President's budget proposes EPA enforcement cuts. Congress not only rejected similar cuts that were proposed last year, but rather directed EPA to hire more enforcement personnel to get back to fiscal year 2001 levels. It did not happen. Instead, the President has again proposed enforcement cuts—cuts that would take EPA personnel levels to approximately 200 positions below fiscal year 2001 levels.

We have an Administration that is de-emphasizing enforcement in their budget. It is how they do business. EPA's operating plan shows that the Administration plans for 14,000 facility inspections in fiscal year 2003, as opposed to the more than 20,000 inspections completed annually in fiscal year 2000 and fiscal year 1999. Similar decreases are planned for civil investigations. I think the Chairman has outlined that.

As Mr. Schaeffer's testimony points out, there are real environmental consequences from reducing enforcement. I think his res-

ignation from the EPA over enforcement of the New Source Review provisions of the Clean Air Act shows that the Administration is giving favor to polluters over people when it comes to enforcement.

You know, in New Jersey we have actually had several of our power companies, two different ones, actually cleanup plants and meet New Source Review standards. They paid the price, but I think they feel that they will get both economic benefit and they certainly will provide the public with a better state of our air quality in New Jersey, and we are proud of them for their efforts.

I hope we can move forward. One of the unfortunate aspects of the enforcement of New Source Review is that we will not be seeing that happen in other places if we do not get moving.

I would respectfully point out to Administrator Whitman, while she has been advising or has public said she advises companies not to settle with the government with regard to New Source Review, I would hope that she would stand back from being a power plant attorney and work on fulfilling the responsibilities of enforcing the law at EPA.

I hope that we can have a good discussion of this. I think it is important that these issues are aired. I think that there are some legitimate concerns about the detail of some of the regulation, but that in no way, in my mind, pushes this away from actually dealing with New Source Review and cleaning up our air. We need the enforcement facilities to do it. I appreciate the witnesses today.

Thank you, Madam Chairman.

Senator BOXER. Thank you so much, Senator.

Now, I am going to ask Mr. Schaeffer to give his opening statement. At this time, he is a consultant to the Rockefeller Family Fund. He is the former Director of the Office of Regulatory Enforcement, the U.S. EPA.

I have to say, Mr. Schaeffer, by the way, my own personal view when I saw your letter, I was very moved because I thought this was a painful thing for you to have to do. I just want to commend you for saying what is in your heart and putting it on paper and being willing to come here today. I am very grateful.

Please, let's begin with you.

STATEMENT OF ERIC SCHAEFFER, CONSULTANT, ROCKEFELLER FAMILY FUND

Mr. SCHAEFFER. Thank you, Madam Chair, and Senators.

I appreciate the opportunity to testify today. I am grateful for your attention to what I think is an important issue.

If I could, as to leaving because I disagreed with the Administration's environmental enforcement policy, I plead guilty to that. I think that is laid out in my letter. As to my personal or private agenda, I feel compelled to say that I have worked for Republicans, I have worked for Democrats. Last year, I got the John Marshall Award from Attorney General Ashcroft for my work on refineries. I was very proud of that. So this is just not a partisan issue for me and I hope it will not become one.

If I could just briefly summarize my statement. I know you have others you want to hear from. I am going to make three points. First, the budget cuts are real and they are happening. They have happened and they are happening in the 2003 proposal. There

seems to be confusion about that, and I appreciate your efforts to clear that up.

Second, that is going to affect our ability to protect the environment through enforcement actions. These cuts are not free. There is not a free lunch here. This is going to affect our ability to do our job.

Finally, this is not a problem we can dump on the States, as has been suggested. I think you may hear that directly from the States themselves.

Just going first to the issue of what about these budget cuts, I think you have laid both the environmental impacts and the reductions in personnel out. I will just add two points to that. One is these are real reductions in people. They are accomplished by not replacing experts as they leave the Agency, no matter how valuable their expertise is. I think that in time it will be accomplished by shifting people to other functions.

I take issue with the suggestion that these are somehow being absorbed by eliminating phantom employees who never existed. I can tell you that is not true. I invite you to look at that very closely. Any collection of accountants, the General Accounting Office or the IG I think can confirm for you. I would just ask, if you had committee staff leaving and were not replacing them, would you consider that a reduction? I think you probably would feel that after a while, and that is the same thing that is happening to us.

The second point I want to make is we also have a contract budget. It is very important to us. It provides all the inspections for the Mobile Source Program. We do not have enough Federal employees to do those inspections. It provides us with lab and field work for cases. It helps to pay for expert witnesses. It helps us to manage documents. We are in desperate need of those resources.

I must say, I came from a private law firm, like the one Mr. Segal is from, and we are very envious of the resources they have when we get to litigation. We are very short in the government. We need those contract dollars. They are cut 20 percent between 2001 and 2003. If you look at the 2003 contract budget for enforcement, it is less than half what it was about 5 or 6 years ago. Again, that is easily confirmed, so we are really getting shorted when it comes to resources.

Now, you might say that is a good thing. We do not need Federal environmental enforcement. I would disagree, but you should have the facts to decide whether you think that is a good thing. You should know what is happening and I am glad you are looking at it.

I have listed in my statement some issues I brought to management a couple of years ago about what a shrinking enforcement budget was doing to us. I am not going to read them all. They are in the testimony. I will just pick a couple of examples. We were unable to respond in the way we wanted to to desperate pleas for help from Region 9, investigating the MTBE problem in Santa Monica—as bad a problem as you will ever find environmentally. We gave them a little bit of contract support, not nearly what they needed and asked for.

We had the same problem with the Southdown Quarry in New Jersey. In that case, we had tremolite asbestos, an investigation

the State desperately wanted help with. We were just not able to provide the funds that were requested. We provided a little help, but not nearly what was asked for. I invite you to look at that.

I am not saying the Agency did not patch together a solution. We tried to do our best, but we were not able to respond in the way we wanted to.

You might say, and I have heard some say, it does not matter. We can rely on self-policing. We can rely on self-auditing. Companies are better than they were 25 years ago. They have internalized environmental values. Enforcement is adversarial. It is outmoded. We do not need it anymore.

I guess I would start by saying, we would not get compliance without the hard work of most companies who spend a lot of resources to try to stay in compliance with the law. There would be no Clean Air Act. There were would be no Clean Water Act without those efforts.

So we appreciate them. We have made it easier, I think much easier for companies to find those problems, step forward and identify them, and fix them. We have an audit program that virtually eliminates penalties for companies that take that step. It was developed through the American Bar Association, with lots of input from defense counsel. We have even had the Washington Legal Foundation say it works pretty well. I have that framed somewhere since they hardly ever agree with us on anything.

If you think that we can rely just on self-policing and do away with enforcement entirely, I think Enron is a good example of what can go wrong when you turn the job of compliance completely over to companies and you rely on a system of self-regulation. I do not think we have come that far.

What does this all mean for the environment? You have the Administration's projections I think unabashedly saying we are going to see less environmental protection as a result of these cuts. Let me give you several examples from recent cases. Senator Corzine mentioned ozone nonattainment. Three years ago, we settled cases against nine diesel manufacturers. These are manufacturers of diesel truck engines. Together, those settlements take over one million tons of nitrogen oxide a year out of the air. These are cases where the companies were cheating, to put it bluntly, by wiring their computers in these trucks to turn off emission control devices. The result was more NOx. We were able to recover over one million tons of NOx. If those settlements do not thrive, if they are not enforced, if we do not see that the promises in those settlements are carried through, we are going to have a lot of States that are not going to meet air quality standards. If you think this issue does not matter to States, you can talk to Bill Becker at the State Air Pollution Administration. They are very, very concerned about the settlement.

Senator Corzine mentioned refining. Last year, we settled cases with over one-third, actually about one-third of the U.S. refining industry. I am talking about capacity. These settlements will take 150,000 tons of sulfur dioxide and nitrogen oxide out of the air. One of those companies in a recent news report said, one of their spokesman said, "We settled because we expected the law to be enforced against our competitors. If that is not going to happen, and we are left holding these costs by ourselves, then that is unfair. We

expect a level playing field." That comes from the company, not from EPA.

I just want to add on the issue of interfering with the ability to make gasoline available to consumers at a reasonable price, ask the companies that settled. We have a third of the industry under settlement. I think they will tell you they can do the job. They can meet clean air requirements. The settlements are flexible. They are practical and get them into compliance with the law.

One more point I cannot resist making, the economy changes the kinds of environmental problems we have to deal with. A decade ago, we did not have corporate hog farming on the scale that we see today. Now, you have 10 companies that together control more than half the pork production in the United States. Some of their facilities are enormous. We have one in the Midwest that produces more waste water than the entire city of St. Louis. That is without primary treatment, never mind secondary treatment.

For those that think enforcement is done, I would invite you to come out on a hot summer night in one of those Midwestern States and stand downwind from one of those operations, and talk to the neighbors about how we are going to rely on voluntary programs to fix that problem. That would be a very interesting meeting. It would be a lively meeting.

On the issue of *EPA* v. the *States*, which I think is an artificial conflict, I do not think you will see States and I do not think you will see States asking for cuts in the Federal enforcement program, which leads me to ask, who is asking for these cuts? The Administration is having trouble explaining them or even providing numbers. It is not coming from the States. I just direct your attention to a letter sent to Senator Jeffords by the Environmental Council of States representing State Commissioners. It says, in brief, States need more money to do environmental enforcement. That is true, but we did not ask you to cut the Federal enforcement program. In the letter they recognize EPA enforcement does different things. EPA is not the 51st State. We deal with a unique set of problems. We look at multi-State actors. We look at interstate transfer of pollutants. We deal with some big, tough polluters that are beyond the reach of some State programs.

We do this together with States. I will just give you one statistic. In the settlements we had last year, we gave $25 million in penalties to State programs. These are States that came into partnership with us and did the cases. They got $25 million as part of the settlement. That is almost twice what the Administration is proposing to give to States in the budget this year. So we can work with States. We have been working with States. I do not think they want the Federal enforcement program cut.

In the end, I really do not think this is about who does enforcement. I think it is about whether these environmental laws will be enforced at all. I welcome your attention to that. I do not think that question can be taken for granted. I would be pleased to answer any questions.

Senator BOXER. Thank you very much. We will put all of your entire statements in the record. I appreciate that you spoke just from the heart because I think it is effective to do that. You certainly know your territory.

Our next speaker will be Dr. Barry Johnson, who represents the Environment and Health Program at the Physicians for Social Responsibility. He previously served as Assistant Surgeon General and Assistant Administrator at the Agency for Toxic Substances and Disease Registry at the Public Health Service. Is that correct?

Dr. JOHNSON. This is correct.

Senator BOXER. Was that also under the first George Bush?

Dr. JOHNSON. Yes.

Senator BOXER. Yes. Dr. Johnson has worked for several decades in several senior government positions, on the impacts of toxics on human health.

Before you begin, I just want to answer one point Mr. Schaeffer made about the fact that he hopes this will not become a partisan issue. So do I, because if it does, the environment loses. Just because I have to say I thanked Senator Chafee at the beginning of this, because Lincoln Chafee agreed that we could have this hearing. This hearing could have been held up for another week, but he agreed. So I want to again thank him. I also remember his father with great fondness because without him, we would not have had a lot of the landmark laws that we want to enforce.

So, in my view, environment has never been a partisan issue. In my own State, it brings people together—75–80 percent of the people asked say they are environmentalists, no matter whether they are Democrats, Republicans, Independents. They will cross-over vote, as you did Mr. Schaeffer in your own life. People will cross-over vote, in many cases depending on a candidate's stand on the environment. I can tell you that. In my State, it is absolutely a truism.

So I hope you do not feel in any way defensive about anything or the position you find yourself in. This hearing was called by myself and Senator Chafee. A fight for a clean environment is not a partisan fight.

So Dr. Johnson, with that, we welcome you. What I hope you will address is real-life consequences of non-enforcing our environmental laws. I hope that you will do that, and I welcome you. Please begin.

STATEMENT OF BARRY L. JOHNSON, ADJUNCT PROFESSOR, ROLLINS SCHOOL OF PUBLIC HEALTH, EMORY UNIVERSITY

Dr. JOHNSON. Thank you.

I am Barry Johnson representing the Environmental and Health Program, Physicians for Social Responsibility. PSR has had a longstanding concern about hazards in the environment and the importance of physician education about them. We welcome the opportunity to brief the subcommittee on matters of environmental health.

My purpose today is to update you on recent research findings from several sources. The findings, PSR believes, are of great import to the public's health and support the need for greater action by government, private industry and nongovernment organizations to reduce the pollution load experienced by the American public.

In previous testimonies to Congress, I noted that the body of published epidemiological research points to increased reproductive disorders in children born to parents who resided near Superfund

and similar hazardous waste sites. The overall pattern of reproductive disorders included birth defects of the heart, neural tubes and oral cleft palate. Reduced birth rate has been reported in several studies. Similarly, British investigators using data from registers from congenital anomalies in five European countries have reported quite similar findings.

Since 1999, British investigators have reported small excess risk of congenital anomalies and low and very low birth rates in populations living near landfill sites operating in Great Britain. In a different investigation, European investigators recently reported an increase in chromosomal anomalies in persons living close to hazardous landfills. The gravity of the adverse reproductive outcomes from exposure to hazardous substances and the environment led PSR to develop its birth defects and other reproductive disorders brochure and distribute it to more than 20,000 medical specialists in obstetrics and family medicine.

The effects of release of hazardous substances from hazardous waste sites on cancer rates of communities near their sites are less clear than for reproductive outcomes. There are some published studies that show increased rates of cancers of the stomach, gastrointestinal tract and urinary bladder, but in my opinion there is not a current, consistent pattern of association of various cancers with proximity to hazardous waste sites.

At this point in my testimony, I want to bring some quite recent studies to the subcommittee's attention. The effect of air pollution on children's health is a particularly important subject. Any disease or disability in children reduces the quality of life and brings expensive health care costs. Knowing the effects of environmental hazards on children's health is important because they are preventable—reduce the level of pollution.

In regard to outdoor air pollution, one major study has reported serious consequences to children who resided in areas of California with measured levels of air pollutants. A key finding includes a correlation between lower lung function and more intense air pollution. This finding and others from the study are obviously of great concern to public health, and raise the obvious question about whether air quality standards for air pollutants are adequately protective of human health.

Another very recent study was conducted by the American Cancer Society and associated investigators, and found fine particulates in sulfur oxide-related air pollution were associated with excess deaths from lung cancer, cardiopulmonary disease and from all causes of death combined. Scientific evidence has emerged from several studies that air pollutants may exert an even greater public health burden as a contributor to heart disease. For example, total suspended particulate levels in the air of Milan, Italy were associated with heart failure deaths. Similarly, a study of Philadelphia residents found that an increase in total suspended particulate levels was associated with deaths from cardiovascular disease.

Although further research is needed to clarify the association between air pollution and fatal heart attacks, there is already sufficient data, I believe, to move forward with public education prevention actions such as public awareness and physician education campaigns.

Senators as you know, the core principle of public health is to prevent disease and disability. Regarding toxicants in our communities, they should be eliminated or reduced to levels that do not cause adverse human health effects. EPA and States have made considerable progress in reducing environmental health risks, and the public health community supports further risk reduction based on the best scientific evidence. Now is not the time to gamble with unproven administrative procedures that may set back the progress already made.

I look forward to any questions you may have. Thank you.

Senator BOXER. I want to thank you, Dr. Johnson. I think you read the statement very calmly, but the impacts of it I am just frankly stunned at what you are telling us. I will ask you a number of followup questions.

Now it is my pleasure to introduce our last speaker, Mr. Scott Segal. He is a partner with the law firm of Bracewell and Patterson. For the past 13 years, Mr. Segal has represented industries such as MTBE producers, trade associations and not-for-profits. He currently represents electric utilities in their efforts to change the Clean Air Act enforcement policy—I assume change it in a way that would——

Mr. SEGAL. Clarify the NSR program.

Senator BOXER. Clarify—you clarify the Clean Air Act. Well, good. I thought you wanted to weaken it.

Mr. SEGAL. No. We can use some clarity.

Senator BOXER. This is good news. Anyway, Mr. Segal, I am teasing you. Please go ahead and take your time.

STATEMENT OF SCOTT SEGAL, PARTNER, BRACEWELL & PATTERSON, LLP

Mr. SEGAL. Thank you, Madam Chair, Senator Corzine.

It is my pleasure today to address some of these environmental enforcement questions. I have to say at the outset that I have litigated against the Environmental Protection Agency before and the Department of Justice, who of course is the Nation's law firm. With all due respect to Mr. Schaeffer, I have never noticed them to be short-handed. I have never noticed them to be unwilling to litigate and anything less than enthusiastic.

I would point out that the first two examples that Mr. Schaeffer cites—the tremolite mine, which is a quarry in New Jersey, and the MTBE in Region 9—I am familiar with both of those. What is interesting, and it goes to the point Mr. Schaeffer made, and frankly, Madam Chair, that you made, which is that this is a bipartisan issue, because both of those requests were made during the last Administration when the economy was in a relatively stronger situation and the ability to fund the EPA was at a higher level. I notice that making tough choices with respect to enforcement is a bipartisan enterprise. Tough choices need to be made under both Administrations.

The one thing I would hope that no one believes is that all of the situations with trends in reductions in employees, particularly at the Senior Executive Service level at EPA, has something to do with a partisan finding or an attempt to punish the Agency. In fact, I have a GAO report here which talks about Senior Executive

Service levels not just at EPA, but across the government. What it shows is that EPA at this very time is at a low point in a bell curve, or reverse bell curve, if you will, where it has more SES vacancies coming up because baby boomers are retiring and a lot of baby boomers work for the Agency and have served with great distinction for a number of years. That curve is ending in the next 3 years.

So I would not want us to believe that somehow the Bush administration is responsible for demographic trends. The White House is a bully pulpit, but it is not responsible for all of that. There are natural cycles within agencies, and some of these cycles will correct themselves.

I do not wish to diminish the seriousness of this chart that is up here or of any environmental concern, but I do want to observe that there is some good news. Senator Corzine referred to some of it, which is the reductions in air emissions over time. But to show you how significant those reductions in air emissions are, I would also remind that over that same period of 1970's to present, we have had an increase in energy consumption of some 41 percent and an astounding increase in gross domestic product of 140 percent, yet we have been able to reduce air emissions—the very types of air emissions that Dr. Johnson is talking about; particulate matter, for example, that he discussed, down 75 percent over that period.

So we have been able to make gains. How have we done it? Through gains in efficiency in industry, that is part of it. How else have we done it? We have done it through enforcement of the Clean Air Act. We have done it through substantive provisions of the Clean Air Act, permit restrictions, State and local requirements, changes to siting—a number of different ways that it has been done.

We have not done it, however, by the 1999 enforcement initiative of the New Source Review program. Unless a time machine was used, we have not done it by that. So of all the things that could have caused those tremendous reductions, we know that the recent enforcement initiative of NSR is not one of those factors. We still face many challenges. One of them that has been at issue today, mobile sources, still a challenge. EPA says the personal automobile is the greatest single polluter. Some have mentioned MTBE. That was part, as you know, of a broader program, the reformulated gasoline program, which has produced marvelous results. Although there are enforcement implications to the reformulated gasoline program, it succeeds largely absent from traditional enforcement mechanisms, of the kind of bean-counting that is discussed in these charts.

In many respects, we are the victim of our own success, because frankly even as program offices have got the message that there have been substantial gains and new priorities need to be established, somehow enforcement officers seem to march to their own metric of counting numbers of inspections, counting out civil fines as if that were the only way to reduce pollution. I know it is not the only way and Vice President Al Gore stated it was not the only way in his reinventing government report. He said, "We need to reach out to all parties." He said, "Programs can no longer succeed

as an adversarial process with parties seated at separate tables." In the finest tradition of that reform, he introduced Project XL and the Common Sense Initiative under Administrator Browner. In both of those cases enforcement personnel and their legal counsel raised questions. In that same tradition, President Bush has now introduced the Clear Skies Initiative.

Talk about this partisanship stuff, I say this as a Democrat—I mean, some of you I know crossover vote on this issue. I am a Democrat and so are the International Brotherhood of Boilermakers who join us in the bottom part of our statement.

So how do we fix the environmental enforcement effort? Legal scholars reflect there are essentially three ways. We have to have a system that has more clarity, more predictability and seeks environmental improvement over mere bean-counting. My argument would be that the current New Source Review enforcement initiative does not succeed on any of those three standards. The way it is interpreted now, by reducing routine maintenance, it actually decreases energy security, most terribly increases the environmental consequences that we are trying to protect against. In fact, "no greater source on the New Source Review program than Attorney General Blumenthal from Connecticut, who has joined with Mr. Schaeffer or some of Mr. Schaeffer's former colleagues in these enforcement initiatives." He wrote, "Decimating energy efficiency is a disastrous disservice to consumers and environmental interests. It means higher energy prices, lower energy supplies, more greenhouse gases, acid rain and other sources of pollution."

He said that in suing the Bush administration on efficiency standards. What I would suggest to you is if energy efficiency makes sense for air conditioners, it also makes sense for major industrial and utility sources of electricity. Any interpretation of the enforcement program which interferes with the routine maintenance of these facilities does so at great damage and great peril to environmental protection in the United States and to workplace safety, as major labor organizations have indicated.

As one State regulator put it, "The true measure of successful enforcement is in quantifiable improvements in our environment. Improved natural resources, and not fines, must be the primary objective of any effective environmental policy." She concluded, "The traditional environmental enforcement can simply encourage litigation and slow environmental progress. Now is the time to think outside the box on NSR and on other trends with respect to environmental enforcement."

Thank you.

Senator BOXER. Thank you very much, Mr. Segal. We will give people a chance to comment.

I am going to take 7 minutes, then I am going to give Senator Corzine 7. Whoever shows up will get seven until we are done with our questions. I want to thank the panel.

It is hard to know exactly where to start, but I just want to say since, Mr. Segal, you talked about Al Gore and you said, when you read it back, you will see your statement, which I will send to Al Gore to have him respond to it. You basically said that President Bush is essentially picking up where Al Gore left off with this comment. I think to say that President Bush and Al Gore are similar

on the environment is wrong. If there is anyplace that we could see differences here, it is that. Al Gore would never been touting a budget for his EPA that said we are going to have fewer inspections, fewer investigations, fewer voluntary disclosures and cut in half the amount of pollution reduction in light of what Dr. Johnson has told us. So I just want to say, you have a right to your opinion and I am going to ask Al Gore if he agrees with this.

I also want to make it clear that the Republicans on the committee asked that you be—you see, we are nonpartisan. You are a Democrat, but they asked that you come and speak today, and I want to clarify that my understanding is that you are currently working in the private sector to represent clients who are trying to get changes in the Clean Air Act, and if I understand it, also representing companies or you have in the past that have been connected with the MTBE problems. Is that correct?

Mr. SEGAL. That is correct.

Senator BOXER. OK. I just want to make sure that people listening understand this.

Dr. Johnson, I am just taken by your testimony. You have tremendous credibility in my eyes, given all your work in public health. If you stop a woman randomly on the street and say, "What is the biggest threat to your health?" The woman, in my experience, is probably going to say breast cancer. In fact, it is heart disease that is the largest killer of women. It is huge. I teamed up with Congresswoman Maxine Waters a few years back to get more focus on heart disease and women. I want to go back to your testimony. What you said about cancer and the environment was that you think more study is needed, but there is a cause for concern. Is that because it takes a long time to really understand? Is that a correct summary of what you said on the cancer question?

Dr. JOHNSON. Pretty much. What I said in my written testimony about cancer rates in communities around hazardous waste sites and Superfund sites in particular was that there was, in my opinion, no consistent pattern of excess cancers. I also said in the written testimony this may be because cancer is a disease of long latency, 20 to 40 years depending upon the kind of cancer.

I further said, though, that the work from ATSDR that has looked at the chemicals, the toxicants that actually have gotten into communities, where people came into contact with them, were some 30 chemicals that we see over and over and over, most often released. Eighteen of those are carcinogens or thought to be. I think that gives us really great concern as to whether cancer patterns may develop in future years.

Senator BOXER. Yes. So I wanted to clarify that. So your concern is that the pollutants are cancer causing, but we do not have enough studies or time behind us yet to know whether in fact there will be increased cancer rates due to this hazardous material in the environment.

Dr. JOHNSON. That is correct.

Senator BOXER. Now, on heart disease, I want to just prod you on this. Scientific evidence is emerging that air pollutants may exert an even greater public health burden as a contributor to heart disease. Particularly alarming is the reported association between very small particles in the air and their contribution to sud-

den heart failure. I want to explore that with you because the whole argument over this pollution reduction is not about some abstract theory or political argument, but it seems to me to be very clear that there is this connection. So could you speak to me without notes, just talk to me about the quality of the air and what happens in terms of the strain on a person's heart?

Dr. JOHNSON. These findings are really rather recent and most come from researchers who are either at the Harvard School of Public Health or have some association with that excellent institution. This kind of study that has begun looking beyond the matter of cancer, looking at other health impacts, in this case cardiovascular disease, are relatively new and I think extraordinarily important.

What a number of studies have done, and this is roughly 6 to 10, and they have been reasonably consistent in their findings—Italy, Philadelphia, other areas of the country.

These studies basically look at causes of death and also look at measurements of pollution. Some of those measurements obviously include fine particulate matter. They look through rather sophisticated computer models.

Senator BOXER. Fine particulate matter are those very tiny particles——

Dr. JOHNSON. Ten micrometers, 2.5 micrometers. So it is $PM_{2.5}$, PM_{10}.

But looking at these environmental measurements over periods of time—quite a number of years, 10–12 years. What they find is when you look at the causes of death, they are elevated when these pollution levels are elevated. There have been some studies that have looked at possible causes, because when you think about it, these are fine, very small particles. They are basically very small particles of soot that have been inhaled. How that might relate to heart failures, myocardial infarctions, is really quite challenging in trying to understand that. Some studies have been done looking at the effect of these particles on the ability to control heart rate, and in particular looking at the variability in heart rate in persons who have been exposed to various levels of fine particles. What they find is that the variability decreases.

This is important because it may have implications for the particles somehow affecting how the vagus nerve regulates the heartbeat. Now, the vagus nerve is there as part of the autonomic nervous system to control heart rate. So when we get excited, like testifying, our heart rate goes up a little bit and that is because of actions primarily from the vagus nerve on heart tissue.

Now, if we have less control because of pollution to vary our heart rate, then this makes us, it is argued, somewhat more susceptible to heart disease, heart attacks. There are some other studies that have looked at similar kinds of effects on heart regulation and so forth. It is a new body of science. It seems internally consistent to me, looking across roughly 8 to 10 of these studies. It is, I think, of great importance because if pollution levels that we thought were safe in fact are contributing to other kinds of mortality, premature deaths, that is serious business, Senator.

Senator BOXER. Yes. Does this alarm you—and then I am going to turn it over to Senator Corzine—the fact that we got this from

EPA's own documents that they are cutting back on the amount of pollution reduction, given what you now know about this emerging science?

Dr. JOHNSON. As a retired public health officer who spent a career in dealing with environmental pollution, both in the workplace and in communities, yes, this bothers me a great deal. It bothers me that States have fewer resources to do things of an enforcement nature, to do other things that will help us reduce what I call the pollution load that we bear as an American public. So yes, this does concern me.

Senator BOXER. I want to thank you. I think this message has to get out, Senator Corzine. You know, it is very hard to get any message out in this particular time-frame that we are in. It is understandable. We nurture our families, we love our children, and I will get in the next round the impact on children is enormous. We know that. This has been a crusade of mine for a long time. We have this Office of Children at the EPA which was set up under Bill Clinton. I was happy to see that the Administrator has kept it, but if we cannot enforce these laws, we are going to have suffering.

So I hope that the word will go out from this hearing that this is an attack on the American people, when you cut back on what you want to—the dirty particles in the air, and you are cutting that back, and they are having a harder time breathing, and the kids having asthma and all the other problems, and we do not know about the hazardous sites and cancer yet—that this is an attack, stealth attack because it is not doing what Mr. Segal is doing up front—I want to change the law. That is up front. I can handle that. Let's have that fight. I will go to the mat on it. I will take whatever happens.

But when you do it in a stealth way and you have to pull apart a budget document, thousands of pages to get this, plus you never saw this one on the number of people they are cutting back on, that was something they got from internal documents—my good staff. This is stealth attack on the American people's health. I hope word will go out that that is what I think is happening, and I am not going to let it to unnoticed.

Senator Corzine.

Senator CORZINE. Thank you, Madam Chairman.

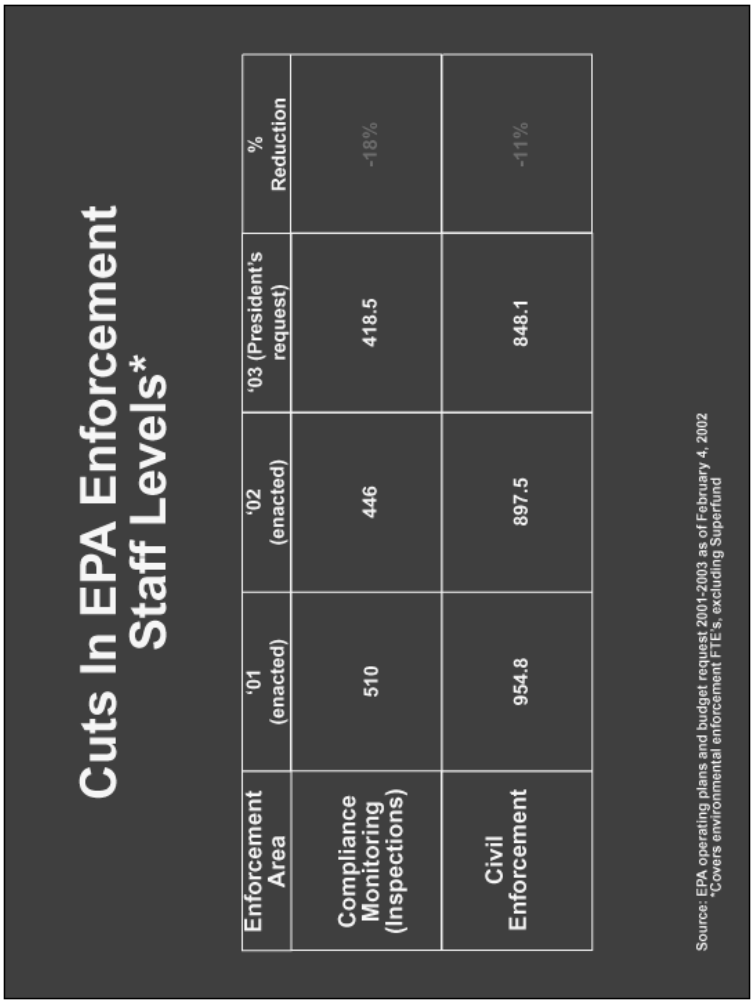
Let me ask Mr. Segal, do you accept that the pollution reduction that is shown on this chart and the EPA numbers has some correlation with the number of inspections, investigations, and other issues? Or is it all bean-counting?

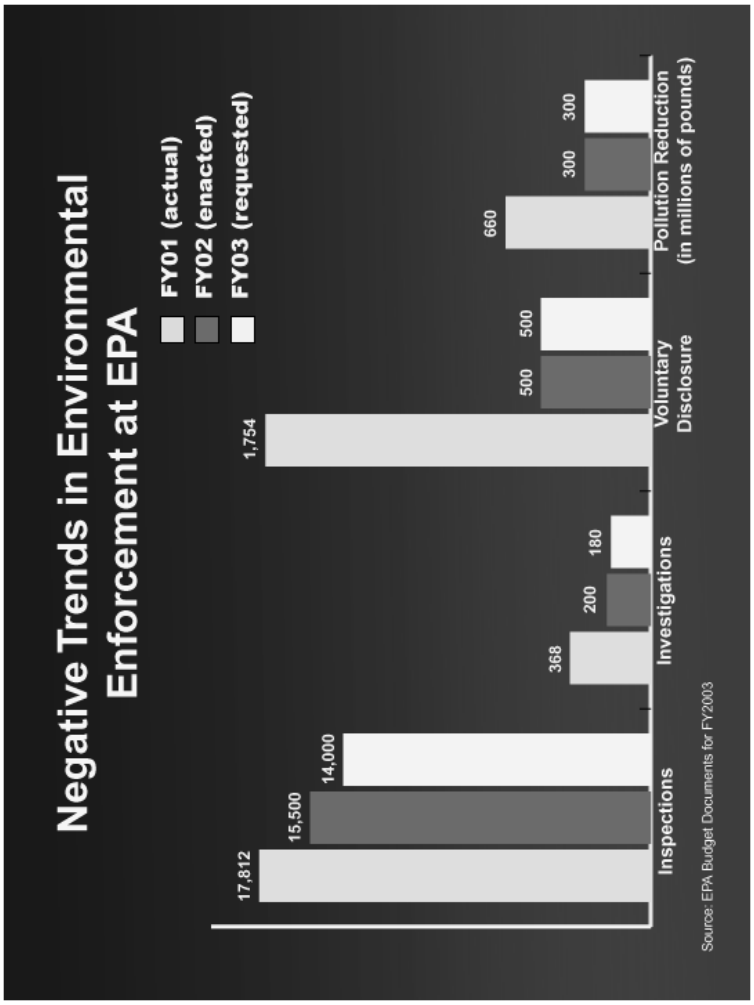
Mr. SEGAL. Well, I will tell you, I have been puzzling over that chart since it got up there. Now that I hear the Chair say that it was sort of achieved by looking through thousands of pages and generating it, because I still do not get it. I looked at the same EPA budget documents, although I do not hold myself out as an expert on the EPA budget, that is for sure. What they showed me is in the enforcement area, one, two, three, four, five, six, seven, eight, nine of the requested areas are actually having budget increases from fiscal year 2002 to fiscal year 2003. They also demonstrated to me that grants to States have held steady and actually increased in one category.

Now, we can argue about it back and forth, but that is one thing that became apparent to me.

Senator BOXER. Let me, Mr. Segal, if I might ask unanimous consent to place into the record the actual words that make this chart valid comes from EPA. They talk about the millions of pounds of pollutants' reduction. So we will share it with you. It is page 17.

[The referenced document follows:]





Mr. SEGAL. I am referring to this chart at page 95 of goal nine, which is the discussion of the EPA's enforcement budget.

But as I say, I do not hold myself out as an expert on the EPA enforcement budget and it could well be. I will say this——

Senator BOXER. Well, sir, if I might——

Mr. SEGAL. Please.

Senator BOXER [continuing]. Yes, I have the documents, so I would hope that we would not debate whether this is what is in the document. I am happy to make it—I will send it over to you, and put it in the record.

Mr. SEGAL. Senator Boxer, in fairness, and I think Mr. Schaeffer would agree, in all 50 States there have been cuts in money put

toward environmental protection. I think it is unfortunate. You would certainly agree with that. So what I am saying is I do not think it is a cabal or a stealth attack as you would describe it, simply limited to the EPA. It is occurring in all 50 States and it has a lot to do with the fact that the government in general has far less resources. That is just a fact. We are in a deficit situation. I am not saying maybe we should not spend more money here and spend less in other areas, but I am just saying I do not think you can fairly say that this is just a stealth attack on the EPA.

Senator BOXER. Well, then I would ask why we had to dig in the internal documents. This was nowhere to be found; was not even released to the committee, that shows these cuts. It is all about priorities and what is important to the American people.

Mr. SEGAL. I do not know. I have never seen that. As I said, I did read the——

Senator BOXER. Of course, you did not, because it was not made public until we got it.

Mr. SEGAL. Right. I did read this GAO report which shows that the number of SES cuts demographically begin to get less and less and less as we get to 2006, 2007, and 2008.

Senator BOXER. I do not know what you are talking about, but that's fine.

Mr. SEGAL. Well, I will be glad to submit this for the record if you would like.

Senator BOXER. This is what they want to do.

Mr. SEGAL. OK.

Senator BOXER. This is what they are asking for.

Mr. SEGAL. But let me answer Senator Corzine's question, which is, do I believe there is a functional relationship between the enforcement effort reduction and the levels of diminished environmental protection. Here, I want to focus like a laser beam on the NSR enforcement initiative. It is one of the highest profile enforcement initiatives. It is one of the major items Mr. Schaeffer complained of in his resignation letter. Here I would say that if we reinterpret the rules of NSR as we did in 1999, and we interfere with routine maintenance activities, then we are doing so at the peril to environmental protection.

Dr. Johnson has described to you the impacts of air quality. For me, the interesting question is, how do we best address that? If we interfere with routine maintenance and we decrease energy efficiency at these facilities, we will end up with declines in air quality. I do not think that is what anybody wants.

Senator CORZINE. Mr. Schaeffer, could you respond?

Mr. SCHAEFFER. Thank you so much, Senator Corzine. I am dying to answer Mr. Segal on some of these issues.

On this kind of sound bite, which is a sound bite now, that EPA has reinterpreted the rules to the enforcement actions. I think Mr. Segal knows that is just what the Justice Department looked at. That is what the industry asked the Justice Department to look at. I think his clients were hoping that Mr. Ashcroft would agree with them, and say we had in fact illegally interpreted the rules. He did not. That report was out in January. To the Justice Department's credit, it said the NSR cases are based on an interpretation of law that is reasonable and that EPA has been consistent. That is on

the record. That is in January. That is this Administration's Justice Department. That question I think has been asked and answered.

I also must respond to this notion that NSR enforcement has done nothing for the environment, which I heard Mr. Segal say. I am going to read you some numbers: Tampa Electric Company, settlement now about 2 years ago, 190,000 tons of nitrogen oxide and sulfur dioxide taken out of the air every year. You have heard about fine particulate matter, the scientists say that is driven primarily by sulfur dioxide. We are talking about premature deaths. This is a very important issue—190,000 tons from Tampa Electric.

Senator Corzine, you already mentioned the PSE&G settlement. That is over 50,000 tons. We estimate that is one-third of the SO_2, the sulfur dioxide emissions in your State taken out of the air in the PSE&G settlement. To their credit, they settled with us.

Refineries—150,000 tons of nitrogen oxide and sulfur dioxide taken out of the air from our settlements with refiners covering one-third of U.S. refining capacity. Cinergy and Vepco, if the Administration will get the agreements signed that these companies already agreed to, 750,000 tons of sulfur dioxide and nitrogen oxide.

What is wrong with that? That is not bean-counting. We are talking about emission reductions and we are talking about human health.

Senator CORZINE. Mr. Segal, I think your point was that routine maintenance, changing pipes, has ended up getting tied up in New Source Review. But for the life of me, I do not know how that in any way obviates the importance of the kinds of dramatic shifts that have come from the implementation of these New Source Review standards.

Mr. SEGAL. Senator, I will keep it real short on this one. In many respects, we are like two ships passing in the night here. My clients do not advocate a repeal of the New Source Review program. To the extent that companies have violated the law, they ought to be held to task under NSR. Our beef is a lot more narrow than that. The question is, should the NSR program be used in cases where it is inappropriate, in an effort to retire, essentially to retire older coal-fired generation capacity? That is using the square peg in the round hole. That reduces environmental protection, reduces workplace safety, and frankly reduces the energy security that Senator Inhofe was talking about at the outset.

So my beef is not—I never said there should not be another settlement discussion. That is not our beef. But to apply the full weight and authority of the NSR program for a pipe replacement or an upgrade in a turbine blade is ridiculous and is contrary to energy efficiency.

Senator CORZINE. Did you happen to read that Wall Street Journal article that I cited where there were only about 63 percent of the people conforming with laws?

Mr. SEGAL. I did.

Senator CORZINE. How are we going to get at legitimate enforcement if we are pulling away—and these were obligations that were intended for 1997—if we are going to have the kinds of reductions in personnel, and then I think the real implication is the kinds of

costs in public health that flows from this? I find it, if you had 63 percent hit ratio on people conforming to the law on embezzlement or reporting adequate capital adequacy at banks, you would have a failed financial system—something that I know a little bit about. I just do not understand these kinds of statistics and I do not understand it in the context of the New Source Review either.

Mr. SEGAL. The only thing I would say is, to put this in perspective, what this report says is that 63 percent of the major sources had obtained permits, and it attributes the cause of that to be an excess—sort of a bureaucratic slow-down with respect to permit granting. The absolutely dead wrong thing to do to prompt more permit granting is to precipitate an endless cycle of litigation. In my testimony, "State air authorities as saying that is the dead wrong way. That is the way that slows environmental progress."

So I guess I would say to Mr. Schaeffer or others that if we misuse, in my judgment, the NSR program, that will not speed up this permitting question. It will only make matters worse. So I understand these statistics. I have not peer-reviewed this report or anything like that. All I have seen is the Wall Street Journal article. But in my judgment, an endless cycle of litigation is not the cure for the problem that is discussed in this article.

Senator CORZINE. Mr. Schaeffer, any comment?

Mr. SCHAEFFER. On the issue of the narrow change and the routine maintenance question, I have raised this before, but we have a TVA case now going to the 11th Circuit. The trial transcript is well worth reading. I can share a copy with Mr. Segal. I am guessing he already has it.

We asked the TVA's own witnesses, and these were hostile witnesses, Were these routine maintenance activities or were these big projects? We put the big projects that we had identified as violating New Source Review because they increased emissions up on the board. That witness, a 12-year employee at TVA, said unequivocally, those are routine maintenance. I am sorry. Let me correct that. Those are not routine maintenance. He said, "No, sir, those are not routine maintenance."

Now, his lawyer called him back on the stand and essentially said, "Do you want to think about that and try that again?" The answer came back the same—no, can't go with you; these are not routine maintenance; these are big projects.

So our position is, the industry knew. The industry knew these were likely to trigger New Source Review requirements. They took a chance. They took a risk. I am not saying these were criminal. They have got their legal arguments together. We have shed some light on those projects now. We would like Mr. Segal to make his very eloquent arguments in court and not in the political arena by trying to get the law changed; not by doing some narrow thing to routine maintenance, by essentially turning it into a loophole that swallows the whole Clean Air Act.

Senator BOXER. We have to vote and we are going to come back. Can the witnesses stay put? I just wanted to say, Mr. Segal, when you opened up in your opening statement, you said the NSR has not done any good. I wrote it down. Now you seem to be saying, "I am not saying it did not do any good." So when we get back, I

want to probe that with you a little bit because it sounds like you backed away.

Mr. Schaeffer, that was an interesting story that you told about that witness. I am married to a lawyer. My dad was a lawyer. My son is a lawyer. They always tell me, do not ask a question you do not know the answer to. It sounded like that lawyer did not get the answer he wanted. This fellow told the truth twice, that they were using this as an excuse. I will tell you something, you want to look at an interesting situation in California. The energy generators were pulling plants off-line so they could say that they had to maintain them, when in fact they were holding back electricity. So there is a lot of stuff going out that does not—it is not all that it seems.

When we come back, Mr. Segal, I am going to talk to you about your openings statement. We can read back what you said, and now you are backing up, saying, I am not saying it does not do any good. So which is it? I want to get to that.

But I want you to know the whole issue is here not whether New Source Review does any good, but it gets to the enforcement question in general, which is what they are doing here to the staffing.

Thank you. We will be back shortly. We stand in recess.

[Recess.]

Senator BOXER. We are going to reconvene. We are not going to be that much longer, as promised, but I want to say to Mr. Segal, your testimony confused me because your statement at the opening was that we have made a lot of progress on the environment—by the way, you listed enforcement, so I am sure you should be as upset as I am at this cut in the personnel. Then you said, but NSR has not done any good. Then I am going to ask Mr. Schaeffer to respond to whether NSR has done any good.

Mr. SEGAL. What I said, and if I did not say it this way, what I meant was that the 1999 NSR enforcement initiative cannot be fairly stated to have caused the 20 years that preceded it of declines in air emissions; that is a more complicated picture than that. It involves efficiency gains by industry. It involves the progress of new technology. It involves some fuel-switching. It involves other substantive provisions of the Clean Air Act.

But remember, the very interpretation of NSR that Mr. Schaeffer rejects was the interpretation that obtained during the majority of the period where air emissions were declining.

One other thing—Mr. Schaeffer had indicated that he has the transcripts of folks from TVA. I want to say, I have a CD-ROM which shows transcripts of EPA officials also being asked questions under oath. One little bit of it, which I will submit for the record if you would like that I think you would love, is a statement by EPA officials that they changed the definition of what triggers NSR literally the night before they filed their litigation; that it appeared in no Federal Register document, no memorandum, no guidance documents. So to the extent we do not like stealth attacks and we want everything to be on the record and open, that is not the way to do business either.

Senator BOXER. Mr. Schaeffer, you want to——

Mr. SCHAEFFER. I would love to see that. I will give you the TVA transcript if you give me——

Mr. SEGAL. It will be a trade.

Mr. SCHAEFFER. OK.

Senator BOXER. Let me just say that since we had our electricity crisis in California, four power plants that supply 1,459 megawatts have come on line, and an additional 16 power plants have been approved. These plants will provide 9,887 megawatts. I have a map showing where they went. My understanding is because of New Source Review, there is no adverse impact on the environment, and I think that is very significant.

Dr. Johnson, because I feel that what happens in a lot of these hearings, things get very technical. We have seen them get legalistic, technical. The reason I am here, the reason I want to be here, is because I want to protect the health and safety of people. I have always viewed this as my No. 1 priority.

Now, you cannot do the impossible. We all know that. Everything we do, we compromise in some fashion, of course, because certain things—you do not have the technology, etc. From the time I served on a local air quality board, we put in the notion of best available technology. The notion is that you use what is available, because if you do that, you are going to cut down on the pollution and you are going to have fewer casualties out there. Is it going to be perfect? No. Somebody who is sensitive is still going to have a problem. But we are trying to do the very, very best we can.

All the talk about costs, I think Senator Corzine made a good point. The cost of the health care system, for example, of children who are staying home because of asthma and need care because of asthma—Blue Cross/Blue Shield in my State sent out cassettes to everyone there saying this is the way to use your asthma medication in the best way. Asthma is so prevalent, if you go to any school, Mr. Segal, in California—I cannot speak for other States; I am sure it could be even worse in other States—and you ask these children, how many of you either have asthma, have someone in the family with asthma, have missed school—you will see 40 percent of the classroom kids will raise their hands.

I want to probe Dr. Johnson on this question of children's health. When we talk about the most vulnerable populations, I think it is a very important point because it used to be that when the environmental rules are made, they are made and they look at the impact on a healthy, 150-pound man. We have been arguing that does not answer the question for someone, a female for example, who is littler or a child or an older person who is vulnerable or a sick person.

So I want to talk to you about this issue of children. I do not know if it is your expertise, but from your experience and your reading of the studies, is it not so that children are far more susceptible to these toxins? Explain to us some of the things—again, you had it in your opening testimony, but I want to stress it for the record, the impact of children that you believe there is no question about it; not that you think, but what you know so far, Dr. Johnson.

Dr. JOHNSON. The simple answer is yes. Children are more vulnerable for various physiological as well as behavioral reasons. In addition to children, the fetus is also at extra risk if maternal—and there is some indication, paternal—exposures to toxicants have

been present. Children are more vulnerable because their physiology is different from what an adult has. Their breathing rate is faster. Their metabolism is different from that of an adult. Their play activities are different. I have now proudly six and two-thirds grandchildren. I have been through the delightful stage of watching them learn to walk, but first they crawl, when they crawl they put their hands in their mouths etc. So these kinds of activities of children are quite different, obviously, from that of adults.

Senator BOXER. One question on that—when children breathe in the air, don't they breathe in more relative to their size than an adult?

Dr. JOHNSON. Than adults do—that is correct. So if you have some kind of toxic experience that is going to diminish children's ability—their lung capacity, their forced vital capacity and so forth, how efficiently they breathe—then that is a health consequence to that child.

If, as I said, the mother has been exposed during pregnancy, that can have an effect, as I testified, on birth defects that are associated I think quite strongly and clearly now with certain kinds of toxicants in the environment.

So children who have birth defects, children born with lower birth weights than what would have been normal, represent a health consequence, and the importance of the consequence varies according to the degree of severity.

Without getting terribly personal, I am a father of a child with a serious birth defect—spina bifida. It is a horribly difficult condition for both the child as well as the parent. Avoiding birth defects through traditional public health mechanisms is a very preferred course to take.

We have learned the lesson of lead, very low exposures to lead in children, from various sources. One of the great public health stories is the removal of tetraethyl lead in gasoline in this country. Getting lead out of paint used in housing is another success story. We have learned through our science. Our science has led us to these conditions that need to be improved upon. We learned from science what low-level exposures to lead were doing to young children, and to consequences of exposure prenatally.

We are learning the same thing about now air pollutants, very recent research that I have described, and this is not the time for us to start trying new ways to enforce our laws, to do other things that will help us reduce the pollution load. We have to have the science guide us, and that science, it seems to me, is rather clear what it is pointing toward—reduce the pollution load.

I am not stupid to the complexity of all this happening. I am simply here as a public health officer saying this is what the research is showing. We need to factor this into how we go about our business in dealing with pollution and the American environment.

Senator BOXER. So when we cut back on the inspectors—and I am going to ask Mr. Schaeffer about that in a minute—and we reduce the amount of pollutants we are taking out of the air, it is a fact that I could quote you on saying, Dr. Johnson, that the children, because of these various vulnerabilities, are going to feel it first.

Dr. JOHNSON. Yes, I agree with that very much. Pollution reduction is in the interest of betterment of children's health.

Senator BOXER. Right.

Dr. JOHNSON. Period.

Senator BOXER. I would also point out for everything, and I know Mr. Segal agrees with the lead issue, he was nodding his head, everyone of these improvements came with howls and screams from industry—every one. There wasn't any. I mean, you could look at seat belts; you could go anywhere. It always came from the public sector to say, we know people aren't going to do it. I understand it. If you are in it for the bottom line, you are in it for the bottom line. That is our system. You are going to be a force for the status quo. In the end, my belief is we make—everybody is better off. Business is better off.

Now, you have the car companies advertising that they have these great air bags. Well, that was something they did not want to do. We have the best air bags in the business. So in the end, we all come together on this, but it is always a struggle and a fight.

Which gets me to you, Mr. Schaeffer. We hear about the lead. The lead issue is—it is just devastating to see the impact of lead on children's brains and what happens to children. Isn't it true that there may be some inspections that are not happening on lead because of these cutbacks?

Mr. SCHAEFFER. We do have a serious shortfall in that area. The requirement I think you are referring to is one that has landlords and sellers of residential property notify tenants or buyers about the presence of lead hazards. It is a simple notification requirement, but it helps mothers with young children, fathers with young children know that there is lead in the house and that they may need to take care of it.

We are seeing a fair amount—actually a lot of noncompliance, especially in areas of public housing. With the resources we had, yes, a couple of years ago I was estimating we got to 1 out of maybe 5,000 residential units with an inspection every year. That is 1 out of 5,000. If you look at the 64 million units that are subject to this law, it is going to take us 1,000 years to get through all of them. That housing will be long gone before we can finish the inspections. Obviously, those are very important requirements to protect especially young children, and I am concerned that we are short of what we need.

Senator BOXER. Yes. Is it a fact that when you came on—not when you came on—when the Bush administration came on, you were ready to hire some new people and you were told not to do that?

Mr. SCHAEFFER. That is true. That was last spring. We had offers to a couple of, actually two attorneys in the Air Program, in personnel, and I had to call them and withdraw them. We have other examples, in essence, of essentially being told you can't fill the vacancies; we are stepping down the number of personnel, to try to make the numbers you have displayed.

Senator BOXER. Let me thank everyone here. I just want to say I think it has been a good hearing. I have had some very encouraging conversations with people on the Budget Committee, to give

them my sense of it in terms of what we need to do in the budget. It is all well and good to say, gee, we are in a budget crunch. That is life. I am in a budget crunch in my house too, but I decide the things that are most important I am going to do. If what is most important to me in this budget is protecting the health and safety of the people that I represent and the children and the sick people and the old people and the weak people, that is what we are here for. So it is a priority.

We will figure out what to do. We will figure out some things that are less important and we will do it. That is why we get paid the big bucks, is to figure these things out.

I want to say to Mr. Segal, I look forward to the day that maybe you will switch sides and come on the other side of the equation, because you are very good at what you do. I would love to see you on what I consider to be the public health side, and be great.

I want to say to Mr. Schaeffer, in a straightforward way, that you are a rarity in life today. Now, I do not say this in any way to give you a big head, because that is not the point. I think the people are few and far between who are willing to stand up and say, "I am walking away; I am not going to hide how I feel; and I am going to tell people how I feel." No matter what pressures may be put upon you, I want you to remember this, that you know the truth and the truth can never hurt you. You just keep on speaking the truth. I think you are a fair person. I think you showed that today. You are going to be missed immensely by many people who know you and many who never met you. I hope that we will be able to call on you in the future because this is not a ball that I am going to drop.

Anyone who knows me knows that I am tenacious on the point. I may not win every time, but I am tenacious. I have a feeling that the people in the country want us to protect their health and the health of their children and their grandchildren. This is not about numbers and percentages. Let's look at the other chart. Taking the tons of pollutants out of the air—this is not just a intellectual argument. It means that real people who we know are going to have real problems. If I can have anything to do, a number of us, we are going to change this. We are going to say no to this. If the President wants to veto what we are doing, fine. I will take that to the American people any day of the week. I feel it is something that we must debate.

Dr. Johnson, thank you for what you are doing. You have stayed, really, in the public arena in many ways working for the public good. I do not know what I would do if I did not have people like you to call on because there are a lot of folks who do not like what I do. They let me know every day of the week, and they let me know every time I run for office. What I believe is that you tell the folks what is happening, they will send you back.

Now, I cannot do that alone, because I am not a doctor and I do not know all those studies. But the fact that you brought those studies to our attention is very important, and I hope again that you will be willing to come back when we get into another discussion like this.

So I appreciate your all being here. I know it was not easy for Mr. Segal, but hey, he knew what to expect. Senator Inhofe had a

little bit of a sore throat or he would have stayed and defended you, I am sure. But I thank everyone for being here. We are going to keep talking about this. This is going to be a budget fight, and you have added immeasurably to our case. Thank you.

The committee stands adjourned.

[Whereupon at 11:50 a.m., the subcommittee was adjourned, to reconvene at the call of the chair.]

[Additional statements submitted for the record follow:]

STATEMENT OF ERIC SCHAEFFER, CONSULTANT, ROCKEFELLER FAMILY FUND

Thank you, Madame Chairman and members of the subcommittee, for inviting me to testify at today's hearing on EPA's enforcement program. I am presently a consultant to the Rockefeller Family Fund, but for the past 5 years was Director of the Office of Regulatory Enforcement, managing the civil enforcement program for Federal air, water, and hazardous waste laws, and other environmental statutes. As you might expect, I have some opinions on the value of Federal enforcement of these laws, but will make three points in my testimony that may help you to draw your own conclusions:

- The budget for Federal environmental enforcement program is being cut, and we are losing expertise as a result;
- The budget cuts do have real impacts on our ability to protect the public from violation of the laws enacted by Congress;
- EPA and States should not be pitted against each other in a battle for scare resources, when both levels of government have an essential role to play in protecting the environment.

First, the civil enforcement budget for all programs except Superfund has been cut sharply between fiscal year 2001 and the 2003 budget proposal. The number of full time employees for inspections and case development has declined from 1,465 in fiscal year 2001, to 1,343.5 in fiscal year 2002, to 1,266.6 in the fiscal year 2003 proposal, for a 14 percent decline in 2 years. Contract resources used for field sampling, inspections in key programs like fuel standards, and expert witnesses has dropped even faster, from 12.4 million in 2001 to 10.1 million in the 2003 proposal, over a 20 percent decline. These projections can be easily verified by referring to the Agency's own operating plan, which establishes the spending ceiling for all EPA programs. These cutbacks accelerate a trend that began in the late nineties, when Congress disallowed inflation adjustments to the enforcement budget for several years in a row.

Congress appeared to reject this trend in the fiscal year 2002 Appropriations Act, when it directed EPA to, "restore Federal enforcement positions in accordance with the fiscal year 2001 Operating Plan." That did not happen. Instead, the FTE's for inspections and civil enforcement for programs other than Superfund were cut by nearly 130 positions below last year's level.

These cuts do not come from shedding "surplus" vacancies the Agency was somehow unable to use, as some have suggested. They reflect a planned reduction in hiring ceilings and contract dollars that is being phased in over a 2-year period. While no staff have been laid off, EPA enforcement has been unable to fill vacancies for those who have left voluntarily, and likely will have to shift some staff to non-enforcement functions to manage the reductions in the fiscal year 2003 budget if it is approved. It is the Administration's right to propose cuts in the Federal enforcement budget, but those decisions ought to be in plain view.

Next, the consequences of reducing Federal enforcement ought to be made clear. Nearly 2 years ago, I wrote a memorandum to the Assistant Administrator detailing the effects of restrictions that Congress placed on our budget in fiscal year 2000. These effects include:

- Reducing inspections of fuel to see if they meet Clean Air Act standards;
- Declining to followup on tips about cheating on engine air emission standards;
- Reducing inspections and enforcement of new Clean Air Act standards for hazardous air pollutants;
- Conducting only a nominal review of new Title V Clean Air Act permits;
- Abandoning efforts—almost entirely in some regions—to enforce the Toxic Substances Control Act, and the school asbestos program;
- Reducing followup inspections in a county with serious air quality problems, and one where we received serious complaints from local residents;

- Providing only a limited response to desperate requests for help from EPA Region 9 on the MTBE investigation in Santa Monica, California, and the investigation of an asbestos quarry in New Jersey by Region 2;
- Abandoning a national effort to work with States on the lack of financial assurance capacity for treatment, storage and disposal sites, such as that which led to the recent bankruptcy of Safety-Kleen;
- Inspecting only about one out of every 50,000 housing units subject to Federal laws requiring that tenants and homebuyers be notified of lead hazards. With 64 million housing units to go, we are going to be at it for hundreds of years at the current rate;
- Turning back requests for inspections of sewage sludge disposal practices, despite a recent report from EPA's Inspector General that is cause for concern.

The memo listed specific cases affected by these budget cuts, and it was based on extensive consultation with my program managers or staff. It might be useful to ask the U.S. General Accounting Office to update that review. In fact, last year, the GAO recommended that EPA not cut the enforcement budget without "more complete and reliable work force-planning information than is currently available on the enforcement workload and the work force capabilities of EPA's 10 regional offices." No such review has been conducted to justify the latest budget proposal.

EPA has taken a number of steps to try to get more value out of the diminished resources for Federal enforcement. These include a policy that encourages the voluntary disclosure and correction of violations, which has won praise from the Washington Legal Foundation and helped thousands of facilities returning to compliance without litigation. Almost all cases are settled out of court, with penalties only a fraction of the amounts we are authorized by Congress to demand. The Agency has focused its scarce resources, appropriately in my view, on several key areas where violations result in the most environmental damage, and tried to make its national experts more geographically mobile to work on the most important cases. It has pursued global settlements that cover many facilities, and which offer economies of scale to both the government and companies that enter into such settlements. No doubt there is much room for improvement, but there is a limit to how far improved efficiency can compensate for budget cuts in a program that is already stretched so thin.

I want to turn next to the argument that the States will pick up any slack left by cutting the Federal enforcement program. You will have to draw your own conclusions, but I would ask that you consider the following:

- Many programs are still managed exclusively by the Federal Government. These include fuel standard and vehicle emission controls, wetlands protection in 48 States, pesticide registration requirements, right-to-know programs, the Toxic Substances Control Act, the Clean Water Act in six States—the list goes on. The Federal Government still enforces these laws—the State lack the legal authority to assume this responsibility.
- EPA and States are gradually working toward a practical division of labor. EPA, for example, has a growing docket of large cases that focus on multi-state corporations, or trans-boundary pollutants. These cases can be more efficiently handled by the Federal Government, although many States join these suits as co-plaintiffs. For example, last year we successfully reached settlement with companies representing almost a third of U.S. refining capacity, that will reduce nitrogen oxide and sulfur dioxide pollution by over 150,000 tons per year.
- Finally, it has to be said that some States still lack the capacity, sometimes through no fault of their own, to enforce certain requirements. EPA has had to step in behind States that face sudden shortfalls in funding, or a tough polluter that has tried to use its political influence to avoid complying with the law. A recent letter from the Environmental Council of States to Senator Jeffords notes that State environmental agencies are facing cuts of 6 percent or more this year. The same letter questions, I think it is fair to say, the wisdom of pitting two underfunded enforcement programs—State and Federal—against each other when both have so much to do.

You sometimes hear today that we have moved beyond the need for enforcement, because companies have internalized environmental values and serious violations occur about as often as shark-bite or lightning strikes. That is not my experience. Companies are under enormous pressure in today's highly competitive global marketplace. They are bought and sold quickly, sometimes by companies headquartered in other countries, broken into component parts and reassembled, and expected to turn a profit in short timeframes. These companies are ultimately run by imperfect human beings, not abstract "management systems," and the temptations to cut environmental corners in the face of such pressure should not be surprising.

While EPA has encouraged voluntary auditing as a way to help check these impulses, the Enron debacle illustrates the limits of self-policing. Federal enforcement can help to keep the marketplace honest, and I think the American public and responsible businesses instinctively understand that.

In the end, I think the question is not whether EPA or the States will enforce the Clean Air Act, the Clean Water Act, and hazardous waste laws; that's a false conflict, as there is more than enough to do for all of us. The real issue is whether the laws that protect public health and the environment will be enforced at all; whether, in Teddy Roosevelt's words, compliance will be demanded as a right, not asked as a favor. We can no longer take that question for granted.

Thank you again for your efforts to examine the Administration's environmental enforcement program, and I would be pleased to answer any questions you may have.

STATEMENT OF SCOTT H. SEGAL, BRACEWELL & PATTERSON, L.L.P.

Senator Boxer and members of the subcommittee, thank you for this opportunity to testify regarding the current state of EPA enforcement programs. My name is Scott Segal, and I am a partner at the law firm of Bracewell & Patterson. In that capacity, I have represented clients here in Washington on environmental policy matters for 13 years. I have worked with a wide variety of Federal agencies, and have become familiar with a number of industrial sectors. I have represented private corporations, trade associations, and non-profit organizations. In addition, I serve on the adjunct faculty of the University of Maryland (University College) in the area of Science and Technology Management.

I represent many groups that have taken an active interest in environmental enforcement matters. With respect to the current need to clarify the New Source Review program, I specifically represent the Electric Reliability Coordinating Council, a group of six electric utilities. Further, I serve as outside counsel to the Council of Industrial Boiler Owners, a trade association whose members represent some 20 industrial sectors. While I have learned much from these clients, the views I express today are my own.

ENVIRONMENTAL INDICATORS SHOW MARKED IMPROVEMENT: THE EXAMPLE OF CLEAN AIR

In the United States today, we have much to be proud of when we contemplate the success of environmental programs. It has often been observed that at the outset of the current Federal environmental programs in the early 1970's, our problems were substantial and obvious. It stands to reason that at that time, and for a period following, our environmental enforcement priorities were also fairly obvious. In many ways, as milestones of environmental achievement have been reached, our adversarial enforcement model has not caught up.

It is clear that substantial environmental progress has been made since the adoption of major control statutes. Using clean air progress as an example, we can see measurable success. An analysis of Federal Government data earlier this year demonstrates astounding reductions. The analysis tracks air quality gains and energy consumption during the 30-year period from 1970–1999. It is derived solely from data produced by the U.S. Environmental Protection Agency (EPA) and the Energy Information Administration (EIA) of the U.S. Department of Energy.

The nationwide data show that since 1970:

- Carbon monoxide (CO) levels have dropped 28 percent;
- Sulfur dioxide (SO_2) levels have decreased 39 percent;
- Volatile organic compound (VOC) levels have declined 42 percent;
- Particulate matter (PM_{10}) levels have fallen 75 percent;
- Airborne lead levels have declined 98 percent; and
- Overall energy consumption has increased 41 percent—by sectors, commercial energy consumption grew by 80 percent, residential energy by 34 percent, and industrial energy consumption by 21 percent.[1]

Senator Boxer, these gains are evident even in challenging air emission situations, such as your own State of California. As Peter Venturi, a California State Air Resources Board official stated at a recent EPA hearing in Sacramento, "The system

[1] Foundation for Clean Air Progress, Air Pollution Plummets as Energy Use Climbs (release of study results) (January 17, 2002), available at: www.cleanairprogress.org /news/energy—01—02.asp. The study's state-by-state analysis tracks air quality and energy consumption during the 15-year period of 1985 to 1999. The data were drawn from the National Emission Trends (NET) data base which is available from EPA.

is working," noting that smog-forming emissions from businesses in the State have declined by 50 percent in the past 20 years despite a 40 percent increase in population and commensurate industry growth.[2]

The acid rain reductions, contained in Title IV of the l990 CAAA, are of special importance because they in part serve as a model for the Administration's recent Clear Skies Initiative and for legislation pending before this committee. Title IV has, by all accounts, been highly successful. Gregg Easterbrook, a senior editor at the New Republic, wrote last summer that the results have been "spectacular. Acid rain levels fell sharply during the 90's, even as coal combustion (its main cause) increased."[3]

Notwithstanding these successes, there remain some difficult problems. Ozone levels, while improving, are still in violation of the NAAQS in substantial sections of the country. I think it's important to say here that while acid rain is primarily, though not exclusively, a power plant problem, ozone is primarily a mobile source problem today. Cars, trucks and buses account for twice the NOx produced by power plants, which in turn have no role in VOCs, the other smog precursor. That mobile sources account for the greater portion of pollutants of concern to human health is clear. EPA itself has observed that, "in numerous cities across the country, the personal automobile is the single greatest polluter, as emissions from millions of vehicles on the road add up. Driving a private car is probably a typical citizen's most 'polluting' daily activity."[4]

Much has been written recently about the effects of small diameter particulate matter, or PM. Thanks to a combination of the TSP and PM_{10} NAAQS, the ozone standard and the acid rain program, the United States has engineered a massive reduction of PM_{10}, which is now largely in attainment (achieving a 15 percent reduction from 1990 to 1999 and a 80 percent reduction from 1970). EPA has pending a NAAQS to control $PM_{2.5}$ which could, if implemented, call for further reductions of power plant emissions, along with other pollutants. In the meantime, existing EPA control programs are producing continuing reductions of what EPA describes as the "gaseous precursors of fine particles (e.g., SO_2, NOx and VOC), which are all components of the complex mixture of air pollution that has most generally been associated with mortality and morbidity effects" ($PM_{2.5}$ emissions declined 17 percent from 1990–1999). In addition, it is far from clear that PM levels should be viewed as a traditional enforcement issue; the President's own proposal for a Clear Skies Initiative is another, undoubtedly more efficient mechanism to incentivize and engineer further reductions in PM. And recent data has demonstrated that among the most dangerous forms of PM are those arising from automobile exhaust—a source controlled by the Federal reformulated gasoline program, a program enforced with a minimum of traditional adversarial enforcement actions.

CHANGING ENVIRONMENTAL ENFORCEMENT TO REFLECT NEW REALITIES

In some respects, we are a victim of our own success. As environmental indicators are trending in a positive fashion, the decisions we make as a society become more difficult in the area of allocation of resources. Environmental protection remains just as important, but the tools we use must become more refined. Unfortunately, while many program officers understand the need for changing priorities, enforcement officers often view the world in a binary fashion with little room for subtlety.

There seems to be a bipartisan consensus that such an approach makes little sense, and can even produce perverse results. Then-Vice President Al Gore, in his September 1994 report to President Clinton on the progress of governmental reinvention activities, observed that, "EPA Administrator Carol M. Browner, for instance, is reaching out to all parties with potential roles to play. Environmental protection, she says, can no longer succeed as an adversarial process, with the polluter on one side of the table and the offended party on the other. Now, all parties must sit and work together."[5] Two years later, Vice President Gore revealed the successes that could be achieved when pilot projects were adopted—sometimes over the objec-

---

[2] Venturi is quoted in the Statement of C. Boyden Gray, Hearings: Air Emissions from Power Plants, Senate Committee on Environment and Public Works, July 26, 2001.

[3] Id.

[4] U.S. Environmental Protection Agency, Automobile Emissions: An Overview, Factsheet OMS–5 (August 1994). With respect to NOx emissions, a comparison of reductions required of mobile sources and electric utilities shows that the utilities are pulling their own weight. Mobile sources contribute 58 percent of annual NOx emissions, more than double the 25 percent generated by electric utilities, and consequently would seem to have much more scope for emissions reduction.

[5] Vice President Al Gore, Creating A Government That Works Better and Costs Less (Chapter III—Creative Approaches to Environmental Protection)(September 1994).

tions of enforcement officers—such as Project XL and the Common Sense Initiative at EPA. He stated, "EPA has found that when they let companies volunteer to cut pollution without the government dictating how they had to do it, thousands of companies jumped at the chance."[6]

What Vice President Gore and Administrator Browner recognized from their efforts at governmental reform is what is evident today: as the nature of environmental challenges has changed, so too must antiquated notions of a purely adversarial approach to enforcement.

Two thoughtful legal observers have articulated a rubric for judging effective environmental enforcement. To be effective, an enforcement regime must:

- be clear in what it mandates and prohibits;
- be predictable in how it punishes violations of the regulations, and rely where possible on cooperative, problem-solving approaches; and,
- seek environmental improvement, not numerical enforcement targets.[7]

By the standards of this approach, it would appear that the current approach to environmental enforcement is less than optimal. One the first measure—clarity—the New Source Review program is an example presently of what NOT to do. But it is hardly alone in a lack of clarity. In fact, one widely quoted study has it that fewer than one third of the responding attorneys felt that it was even possible to comply fully with Federal environmental laws given their current lack of clarity.[8] Unfortunately, the mechanism used to address enforcement clarity often is part of the problem: when EPA issues enforcement guidance documents that have the effect of creating entirely new obligations without notice and comment rulemaking, obligations become all the more confusing and less respectful of proper process.[9]

The second observation, the need for predictability, is also missing in many of today's enforcement activities. Again, the NSR program is an excellent example of the problems faced by the regulated community. As we further discuss in the White Paper attached to this Statement as Appendix One, EPA's NSR rules, which for 30 years have been consistently applied only to new greenfield sources or major modifications of existing sources, are now being reinterpreted without any rulemaking change and applied to routine repair, replacement and maintenance activities at all existing sources, causing major disruption in routine maintenance schedules, curtailing power output, and dismembering whole Titles of the Clean Air Act.

The rationale for the radical shift in interpretation is in the allegation that utilities are by illicit maintenance keeping afloat old plants that were "grandfathered" from any CAA controls and that are now threatening the nation's health. But the 1990 CAA Amendments mandated sweeping reductions for all power plants regardless of age through the use of highly efficient market incentives. The 1990 Act thus established a flexible market-based system that is working very efficiently to drive down pollution through 2010 and beyond, but that is now being repealed by administrative fiat and replaced by an outmoded, inefficient and counterproductive command and control regime.

And the clear truth is that many of the targets of the current NSR enforcement initiative are functionally related to routine maintenance, repair and replacement. They cannot usefully be characterized as major modifications or boiler or powerplant expansions. Appendix Two delves into the exact nature of the activities at issue here.

---

[6] Vice President Al Gore, "The Environment" from 1996 Annual Report: The Best Kept Secrets in Government (report to President Clinton regarding Reinvention of Government and the National Performance Review).

[7] Alexander Volokh and Roger Marzulla, Environmental Enforcement: In Search of Both Effectiveness and Fairness, RPPI Policy Study No. 210 (Aug. 1996) at http://www.rppi.org/environment/ps210.html.

[8] Jonathan H. Adler, Anti-Environmental Enforcement (Feb. 1, 1997), at http://www.cei.org/utils/printer.cfm?AID=1307 (citing a 1993 survey of 200 corporate general counsels conducted by the *National Law Journal*).

[9] The same source continues: "Federal agencies publish more than 65,000 pages of rules and interpretive statements in the *Federal Register* each year, and issue countless pages of regulatory guidance. Much of this "guidance" actually attempts to change the meaning of the regulations, or to add new requirements not contained in the published rule. These thousands upon thousands of pages of regulations and interpretations often are inaccessible to most Americans, creating a welter of "private regulations" of which citizens are completely unaware. These memoranda, letters, and notes, prepared by thousands of separate government employees, are sometimes inconsistent with each other—as well as with the regulation. Indeed, the more ambiguous the regulation, the greater the proliferation of interpretations and guidance, leaving the citizen to pick through them to ascertain—at his peril—what those regulations require of him. The results, in many instances, include ruinous penalties and the shattering of lives of ordinary, law-abiding Americans who tried to do the right thing."

The last component of effective enforcement—a desire to embrace outcomes over mere numbers of cases—is again often missing in today's approach to enforcement. Of course, current enforcement efforts are not without their traditional numerical successes. Indeed, EPA released data on its enforcement and compliance assurance results earlier this year, which included "record-setting amounts of money violators have committed to environmental cleanups and restoration, and for projects to protect the environment and human health beyond injunctive relief, and to record penalty assessments."[10]

Despite this numerical success, Administrator Whitman has recognized that such numbers are not the sole relevant benchmark . "With our State and local partners, we set a high priority on areas that posed serious threats to health and the environment," said EPA Administrator Christie Whitman. "The Administration is determined to actively pursue those who fail to comply with the law while working closely with the regulated community to find workable and flexible solutions."[11] Clearly then, there is growing recognition that it is important to prioritize enforcement; to target areas of greater environmental reduction; and to work cooperatively toward solutions.

Perhaps it is Administrator Whitman's experience as a Governor that has led her to this conclusion. We should remind ourselves that the number of Federal enforcement actions are not the sole indicators of success. In fact, 2 years ago, the U.S. Congress commissioned the Environmental Commission of the States to examine relevant differences and interrelationships between Federal and State enforcement actions. ECOS reported that in 1 year alone, States passed over 700 environmental statutes for which there were no Federal counterparts. However, Federal statistics collected by EPA do not count enforcement efforts undertaken by the States in reference to these actions.[12] Indeed, of the universe of all enforcement actions undertaken by both the States and EPA, States alone conducted about 90 percent.[13] However, the great majority of these actions are undertaken in a spirit of cooperation and compliance assurance. ECOS concluded:

"Many State environmental leaders do not believe that their primary goal is just to conduct enforcement actions. It is more important to assure compliance, and more important still to improve environmental quality and public health. For this reason, States have been leaders in developing 'compliance assistance' programs."[14]

But, in any event, it is curious and misplaced criticism to look at elements such as numbers of cases and workyears of budget allocation as reflective of actual realities. If it is to succeed in moving the needle toward additional compliance, enforcement programs must be less adversarial and of greater real assistance. As one State regulator put it, "the true measure of successful enforcement is in quantifiable improvement in our environment. Improved natural resources, not fines, must be the primary objective of any effective environmental policy." She concluded: "Allowing States to establish, develop, and implement environmental improvement policies is critical to their autonomy and the health of the environment. Heavy fines simply encourage litigation and slow environmental progress."[15]

THE PRICE OF FAILURE: THE CASE OF NSR CLARIFICATION

EPA's reinterpretation is not only flawed as a matter of law, but it also undermines our energy supply, environmental protection and workplace safety. Because NSR is a costly and time-consuming process, EPA's current position discourages utilities from undertaking needed maintenance projects. This makes plants more reliant on deteriorating components, resulting in less efficient, less reliable and higher emitting power generation. For example, the efficiency of currently available steam boiler equipment deceases over time as plant components deteriorate. Boiler tubes, in particular, are subject to very harsh temperature, pressure, and chemical conditions, and leaks result. Short-term fixes include patching tubes where there are leaks, but eventually whole sections begin to wear out and must be replaced if the plant is to continue to operate. Yet EPA's reinterpretation of NSR could have such a routine and necessary activity declared non-routine.

---

[10] U.S. EPA, fiscal year 2001 Enforcement and Compliance Results (Jan. 31, 2002), available at: http://es.epa.gov/oeca/main/2001eoy/index.html.

[11] Id.

[12] The Environmental Council of the States, State Environmental Agency Contributions to Enforcement and Compliance (April 2001), at 9.

[13] Id. at 14.

[14] Id. at 10.

[15] Becky Norton Dunlop, Environmental Enforcement: Supporting State Efforts to Encourage Voluntary Compliance at http://www.adti.net/html—files/reg/dd/dddunlop.htm

There are 300,000 megawatts of coal-fired generating capacity which is 55 percent of all electricity generated in the United States. Approximately 1,200 coal-fired generating units are in service. These generating units involve two distinct sets of operations: (1) a steam cycle (e.g., the boiler and related equipment), and (2) the turbine cycle (where the electricity is generated). In the past few years, there have been some very exciting innovations in the turbine technology area. For example, just one type of efficiency improvement project, the so-called Dense-Pack which enhances the efficiency of turbine blades, can result in a very significant improvement in the efficiency with which steam is turned into electricity.

A more efficient turbine results in more electricity output from the same steam input, with no greater fuel use. For example if one assumes that most generating units could improve efficiency by between 2 percent and 4 percent (a very conservative estimate, based upon the actual operating experience of several units which have installed the Dense-Pack technology), this would mean an additional output of 6,000–12,000 megawatts of power in the near term, with significant decreases in emissions per unit of fuel burned. This increase in available installed capacity is the equivalent of building 20–40 new plants of 300 megawatts each with no new emissions. We should recall that the very definition of pollution is inefficiency; getting more electrons out of less coal is the best way to prevent pollution.

Last, we should be clear that many of our colleagues in organized labor support the notion that the NSR program should be clarified in order to allow for sufficient routine maintenance activities. The greater the incentive for maintenance, the safer our work environment will be. Attached for the subcommittee's review as Appendix Three is a statement offered by the International Brotherhood of Boilermakers at EPA's regional conference on NSR held last summer.

APPENDIX ONE

Electric Reliability Coordinating Council
White Paper on Clarification of New Source Review

Summary

EPA's NSR ("New Source Review") rules, which for 30 years have been consistently applied only to new greenfield sources or major modifications of existing sources, are now being reinterpreted without any rulemaking change and applied to routine repair, replacement and maintenance activities at all existing sources, causing major disruption in routine maintenance schedules, curtailing power output, and dismembering whole Titles of the Clean Air Act. The rationale for the radical shift in interpretation is in the allegation that utilities are by illicit maintenance keeping afloat old plants that were "grandfathered" from any CAA controls and that are now threatening the nation's health. But the 1990 CAA Amendments mandated sweeping reductions for all power plants regardless of age through the use of highly efficient market incentives. The 1990 Act thus established a flexible market-based system that is working very efficiently to drive down pollution through 2010 and beyond, but that is now being repealed by administrative fiat and replaced by an outmoded, inefficient and counterproductive command and control regime.

I. HOW DID WE GET HERE?

The CAA, which has produced dramatic reductions in air pollution over the last three decades despite explosive economic growth, operates through two approaches. The first approach develops national health and environmental standards for the States to apply to the existing sources in their jurisdictions. DOE reports that the utility industry alone has spent more than $30 billion to achieve compliance with these health standards.

The second approach applies the best current technology to new sources and major modifications of old sources that increase pollution levels where inclusion of such technology can be integrated in an efficient manner without highly disruptive retrofitting. The purpose is to prevent new pollution by new plants, both to preserve air quality in areas that attain health standards, and to avoid complicating ongoing plans to clean up existing plant and equipment in areas that do not.

Because of delays and regulatory difficulties primarily associated with ozone attainment and a need to address acid rain not previously regulated, the Congress enacted the 1990 CAA Amendments ("1990 CAAA") to impose a sweeping array of new pollution reductions on power plants (and other pollution sources as well). These new programs included the acid rain program of Title IV, which mandates a 50 percent reduction in SO^2 by 2010, and the interstate transport provisions of Title I,

which are now being implemented to impose additional NOx controls in Midwestern power plants that may themselves be located in attainment areas, but that send pollution through tall smoke stacks to the neighboring States.

These new programs adopt a different—and highly successful—approach that assigns and limits the absolute number of tons a plant can emit, leaving to the plant the decision as to how to reduce its tons, rather than assign a particular technology to the plant which it must build. Because the preexisting NSR program is technology-based, rather than ton-based, EPA issued a rulemaking in 1992 to reconcile the old with the new, as described more fully below. It is this 1990 CAAA and 1992 rulemaking which EPA is now blatantly violating—by, for example, forcing utilities to accelerate reductions much faster than those mandated by Title IV of the 1990 CAAA.

As indicated above, NSR was intended primarily to apply to new sources and can also apply to existing plants only when a large industrial source of air emissions, a refinery or a power plant makes a non-routine physical or operational change that results in or causes an emissions increase.

Over the last thirty years, EPA's regulations and practice have excluded from NSR all "routine maintenance, repair and replacement" activities undertaken by power plants and other industries. Additionally, EPA surveyed utility maintenance projects, including "life extension projects," in the early 1990's and concluded that those did not trigger NSR. EPA also has published guidance in the Federal Register defining what was routine by reference to the standard practices of the relevant source category, in this case the utility industry. Likewise, EPA's regulations specifically exclude any increases in emissions associated with operating a facility more hours, unless such an increase is prohibited by a federally enforceable permit condition.

EPA's practices interpreting the NSR rule were explicitly described to Congress by then-EPA Administrator Reilly and other Agency officials when Congress was considering the Clean Air Act Amendments of 1990. One of the reasons Congress adopted the Acid Rain provisions of Title IV to reduce SO_2 by 50 percent (10 million tons) was because utility units typically operate for 65 years or longer without major modification and the NSR program would not obtain equivalent reductions. To help facilitate cost-effective compliance by the utility industry with both the ton-based 1990 CAAA and the pre-existing technology-based NSR program, EPA, after an extensive notice and comment process in 1992, promulgated a rule which explicitly laid out all of the NSR procedures applicable to the utility industry and confirmed that "pollution control" projects would not trigger NSR.

In 1996, EPA initiated a rulemaking to revise the 1992 NSR rule, but never finished it. Instead, in 1999, EPA commenced a major enforcement initiative against virtually every coal-fired utility plant in the country for repair and replacement activities undertaken over the past 20 years. Under EPA's reinterpretation, virtually every maintenance, repair or replacement project undertaken by any utility plant could be considered non-routine. Any project that increases availability or efficiency or corrects problems causing forced shutdown of plants potentially triggers NSR. EPA abandoned its simple test for determining when maintenance practices are routine—common industry practices—and now applies a multi-factor (more than 20 different factors) weighing and balance test that only it can perform with any sort of regulatory certainty. Amazingly, even installation of pollution control equipment by utilities may now be viewed as an NSR-triggering event.

Whatever policy merits EPA believes justify its new position on NSR applicability, EPA's efforts to achieve this through enforcement actions against utilities for projects undertaken decades ago is inconsistent with current law. If EPA believes this NSR reinterpretation is correct, it should only apply it after notice and comment rulemaking or ask Congress for new legislation to revise the 1990 CAAA.

In justifying its enforcement actions, EPA claims that its sole goal is to avoid emission increases by power plants operating more hours than in the past. This point is so important that a more detailed explanation is in order. Under the Clean Air Act provisions, every power plant in the country is allowed to emit a certain quantity of various regulated pollutants, of which NOx and SOx are the two key ones. Each utility plant has a legally mandated emission rate—a maximum amount of pollution that can be emitted per hour, per day, per month, or even annually, depending upon air quality and other consideration. But, any time a plant slows down because of a maintenance problem, it will necessarily be able, once repaired, to operate more hours—and emit more—than it did during the problem period—even the emissions are well within the limits spelled out in the State SIP and the Federal reductions required by Title IV. These various limits are spelled out in permits held by utility plants or in State implementation plans, and they reflect EPA-prescribed public health-driven ambient standards. These limits cannot be breached

by power plants under any circumstances, and there is no claim that any of the plants subject to the EPA enforcement did exceed the permitted limit of emissions. However, every unit must be prepared to operate more hours within their tonnage limits in order to meet customer demand.

EPA's definition of an emission increase is artificial and arbitrary. Power plants operate under extremely harsh conditions; every several years, as the plant equipment deteriorates, the plant's efficiency, availability and reliability go down. Eventually, the plant operator performs a set of routine maintenance procedures to restore and maintain the plant's efficiency, availability and reliability. To emphasize, throughout all of these changes, the plant never increases or exceeds its legally binding and public health-driven emission limits. EPA, however, compares a plant's actual emissions at the time it was operating in the recent past before a maintenance procedure with its future potential emissions following that procedure, assuming that the plant will, as a result of the project, operate every hour of every day in the year at maximum output. In other words, EPA's methods always predicts an emission increase even though none may occur, and even though the plant may not under any circumstances exceed the CAAA's mandated reductions.

II. EPA'S REINTERPRETATION DISCOURAGES NEEDED MAINTENANCE PROCEDURES AND REDUCES GENERATING CAPACITY

EPA's reinterpretation is not only flawed as a matter of law, but it also undermines our energy supply. Because NSR is a costly and time-consuming process, EPA's current position discourages utilities from undertaking needed maintenance projects. This makes plants more reliant on deteriorating components, resulting in less efficient, less reliable and higher emitting power generation. For example, the efficiency of currently available steam boiler equipment deceases over time as plant components deteriorate. Boiler tubes, in particular, are subject to very harsh temperature, pressure, and chemical conditions, and leaks result. Short-term fixes include patching tubes where there are leaks, but eventually whole sections begin to wear out and must be replaced if the plant is to continue to operate. Yet EPA's reinterpretation of NSR could have such a routine and necessary activity declared nonroutine.

A plant operator typically will accept some level of deterioration in efficiency for a short period of time but must eventually undertake the repair and maintenance necessary to regain lost efficiency and to maintain unit availability. The timing of these projects depends in part on the demands being placed on the power plant to operate to meet energy supply needs. Unit unavailability can seriously impair a utility's ability to meet customer demand and nearly always results in running less efficient units. Operating inefficient units increase the amount of pollution emitted. Under the EPA Office of Enforcement and Compliance Assurance's new interpretation of the NSR rules, it is these projects, designed to maintain efficiency and availability, that are no longer regarded as "routine." EPA then assumes the unit will operate more hours than before the project and further assumes that the project, rather than customer demand, weather, or other unit outages, causes this increase. Once EPA thus determines that NSR will be triggered, the unit cannot even begin to proceed with the project without either going through the lengthy NSR permitting process, which takes a year or more, or without "capping" operations at historical levels. Thus, the unit must either wait or derate. Either alternative can have significant adverse consequences for the reliability of the country's electric supply. Waiting can idle a unit during peak demand for 12–24 months, more if intervenors challenge the permitting. Derating effectively confiscates capacity, even when the unit is permitted to operate at maximum output year-round.

Over the next 3–5 years, thousands of megawatts of existing generating capacity will be lost if companies are not able to undertake these routine maintenance and repair projects, or if companies must accept caps on utilization to avoid lengthy NSR. In the longer term, EPA's new position would involve the loss of an even greater number of megawatts. The result of EPA's reinterpretation will be the decrease in available installed power plant capacity at a time when we already have a supply shortage—something this Nation, and the West in particular, can ill afford.

III. EPA'S REINTERPRETATION DISCOURAGES EFFICIENCY IMPROVEMENTS

There are 300,000 megawatts of coal-fired generating capacity which is 55 percent of all electricity generated in the United States. Approximately 1,200 coal-fired generating units are in service. These generating units involve two distinct sets of operations: (1) a steam cycle (e.g., the boiler and related equipment), and (2) the turbine cycle (where the electricity is generated). In the past few years, there have been some very exciting innovations in the turbine technology area. For example, just one

type of efficiency improvement project, the so-called Dense-Pack which enhances the efficiency of turbine blades, can result in a very significant improvement in the efficiency with which steam is turned into electricity.

A more efficient turbine results in more electricity output from the same steam input, with no greater fuel use. For example if one assumes that most generating units could improve efficiency by between 2 percent and 4 percent (a very conservative estimate, based upon the actual operating experience of several units which have installed the Dense-Pack technology), this would mean an additional output of 6,000–12,000 megawatts of power in the near term, with significant decreases in emissions per unit of fuel burned. This increase in available installed capacity is the equivalent of building 20–40 new plants of 300 megawatts each with no new emissions.

As an example, this type of efficiency improvement, if installed by the approximately 1,000 utility units (out of some 1,200 existing coal-fired utility plants) that can be most easily retrofitted with Dense-Pack technology, would reduce criteria pollutants that NSR was meant to address (NOx and SOx) substantially.

However, under EPA's reinterpretation of its NSR rules, the installation of even this type of beneficial technology requires an elaborate, expensive and time-consuming permitting process, which results in the imposition of additional costly control technology requirements on existing plants, and therefore discourages the installation of new and more efficient technologies.

IV. CONCLUSION

Overall, the effect of EPA's recent position is to block routine maintenance, repair and efficiency improvement projects that could immediately expand generating capability without increasing fuel burning and will decrease by a significant percentage the total available installed capacity through caps on operations. Stated differently, EPA's reinterpretation of NSR is tantamount to shutting down dozens of utility units every year at a time when electricity supply is already so short as to be unreliable in many areas.

APPENDIX TWO

THE TRUE NATURE OF REPAIR AND REPLACEMENT

This document provides more detail on major repair and replacement projects that must be undertaken at utility generating stations, in order to keep those facilities operational. The utility industry generally plans for a major outage at each generating unit at a regular interval, which has changed over time. During the 1970's and earlier, annual outages were the norm, and each unit would be removed from service for several weeks at a time to undertake a comprehensive boiler inspection and repair outage. Currently such outages occur on schedules ranging from 18 months to 3 years, and they therefore last longer. Turbine overhauls are planned on longer intervals, approximately every five to 8 years, and generally last even longer due to the nature of the work required. In the years when turbine overhauls are scheduled, more extensive boiler work can also be scheduled to occur.

During each major outage, work will be conducted on one or more of the projects discussed below. For each, this document provides examples of the types of major repair and replacement projects that are conducted in the industry, a discussion of the consequences of not undertaking the project, and information on typical project costs. There are many smaller repair and replacement projects that take place in each of these projects that are not discussed here, given our focus on major repair and replacement projects that are common in the utility industry. These smaller projects will typically be performed during forced outages as time permits, during shorter scheduled outages on weekends, or during the planned outages scheduled for the more significant projects discussed in this paper. These smaller projects add to the overall capital costs incurred for repair and replacement projects at an individual unit over time.

BOILER TUBE ASSEMBLIES

a. Project Description

Boiler tube assemblies include superheaters, reheaters, economizers and boiler walls and floors. These tube assemblies may also be known as division walls, wing walls, waterwalls or steam generation tubes. Boiler walls consist of rows of tubes mounted along (and essentially forming) the interior walls of a boiler. Superheaters, economizers and reheaters are typically bundles of tubes which hang from the ceil-

ing or sides of a furnace into the hot combustion gasses. The heat in the furnace is thereby transferred to the water or steam passing within each tube.

Boiler tubes function in extreme conditions. These tubes are not exotic alloys and therefore are expected to experience wear and periodic failure. Corrosion and erosion, in addition to temperature and pressure-related stresses, wear or weaken the tubes. When boiler tubes leak, those tubes, and typically surrounding tubes, must be repaired or replaced. If deterioration is limited to a few tubes, repairs can be effected by cutting out the leaking section of tubes and welding in place a new tube section. More extensive deterioration, including deterioration anticipated based on the results of nondestructive analysis of the boiler walls, requires replacing an entire tube assembly. When materials that can better withstand the destructive environment of the boiler and can reduce the susceptibility of the tubes to wear are available, it is common practice to use those materials to the extent it is cost-effective. Similarly, improvements in tube arrangement in the boiler are common as the individual air/gas flow patterns of a boiler are established. Finally, the headers that collect the water or steam and feed it into the tube assemblies and the structural components associated with the tube assemblies are also subject to deterioration due to the same failure mechanisms.

b. Consequences of Forgoing Project

Once a tube develops a leak, the unit can only operate for a few hours to a couple of days, depending on where the leak is in the boiler and whether the leak endangers the integrity of other tubes or components. After that short time, the unit must be shut down in order to repair or to replace the leaking tubes, because tube repairs must be conducted off-line after the boiler has cooled. Replacement of an entire tube assembly becomes necessary as anticipated or projected failures increase. Forgoing replacement severely jeopardizes the reliability of the unit by requiring that it be repeatedly shut down in response to tube leaks. Ultimately, tube leaks can require that the plant be shut down. Foregoing replacement also jeopardizes the integrity of other tubes and components, creating a risk of massive boiler failure that would endanger employees and prevent the boiler from being operated to supply electricity.

c. Other Information

Repair of leaking sections and wholesale replacement of tube assemblies are common projects. Replacing tube assemblies can cost up to $40/kw on a large coal-fired boiler, and even more on a smaller boiler. A census of repair and replacement practices at coal-fired utility boilers shows that entire tube assemblies have been replaced by almost every boiler in the industry, with some replacements occurring as early as 5 years after commercial operation.

AIR HEATERS

a. Project Description

Electric steam generating plants use air heaters to pre-heat the combustion air to improve the combustion process and the overall efficiency of the unit. Generally, air heaters receive hot flue gas passing through the economizer and cooler combustion air from the forced draft fan. Air heaters transfer the heat from the hot flue gas to the cooler combustion air. Regenerative air heaters perform this heat transfer through the use of air heater tubes or baskets (which are comprised of rows of metal plates with corrugations and undulations designed to facilitate flow paths and heat transfer).

Condensation and the presence of ash can corrode, erode or plug air heater baskets or tubes. While washing and soot-blowing (see project family #10) may address short-term plugging issues, corrosion of the metal surfaces and the resulting losses in heat transfer require the replacement of air heater baskets or tubes at a frequency ranging from 5 to 15 years.

Air heaters also suffer from the erosive effects of ash and other materials, especially if gaps in air heater seals are worn or weakened. This may lead to the replacement not only of air heater tubes and basket layers, but also of structural elements, seals and gaskets. When air heater tubes or basket layers and associated equipment are replaced, it is standard practice to consider improvements in plate configuration, in materials or in the corrugation or undulation of the plates, or in the arrangement of tubes to account for the specific requirements of a particular boiler.

b. Consequences of Forgoing Project

If air heater tubes, baskets and other air heater equipment are not replaced when they deteriorate, the plant loses efficiency because the incoming combustion air is not warmed sufficiently. As the air heater becomes further plugged or corroded, the

unit is further limited in its capability to generate electricity because less air and exhaust gases can pass through the air heater. As the efficiency of the unit decreases, the amount of emissions per unit of electricity generated increases. If most or all of the air heater is plugged, no air can flow through, and the unit cannot operate. Ultimately, if not replaced, pieces of the air heater that have been eaten away could be sucked into the boiler, causing damage and forcing the boiler to shut down.

c. Other Information

The replacement of air heater basket layers, tubes and the seals around the air heater are common projects. Replacing tubes and basket layers can cost up to $6/kw on a large coal-fired boiler. As with other components, costs in $/kw tend to be higher on smaller boilers. A census of repair and replacement practices at coal-fired utility boilers shows air heater baskets/tubes have been replaced by over 80 percent of the units surveyed.

FANS

a. Project Description

A fan consists of a bladed rotor, or impeller and a housing to collect and direct air or gas. Many boilers operate with both forced and induced draft fans—also known as "balanced draft." These boilers use the forced draft fan to push air through the combustion air supply system into the furnace. The induced draft fan is on the other end of the furnace, and sucks combustion gases through. In this way, the two fans maintain the pressure of the boiler in "balance" or at atmospheric pressure or slightly negative pressure.

Other boilers were designed to operate at positive pressure, using only a forced draft fan and no induced draft fan. However, this design forces heat and ash through the joints of the boiler and ducting system, resulting in employee health, safety and other concerns stemming from the dusty environment. These include increased equipment maintenance needs due to the high dust levels. Accordingly, many companies with positive pressure boilers have replaced the forced draft fan system with a balanced draft fan system to correct these maintenance and employee safety problems.

Another kind of fan necessary to pulverized coal-fired boiler operation is a primary air fan. Primary air fans supply coal pulverizers with the air needed to dry the coal and transport it to the boiler. Primary air fans may be located before the air heater (cold primary air system) or downstream of the air heater (hot primary air system).

In some cases, gas recirculation fans are used for controlling steam temperature, furnace heat absorption and slagging of heating surfaces. They are generally located at the economizer outlet to extract gas and re-inject it into the furnace.

Fans rotate at high speeds, and experience erosion and cyclic fatigue. They therefore need to be replaced periodically. Fans (e.g., induced draft fans) may also be subject to high temperatures, erosive ash, and corrosive gases.

b. Consequences of Forgoing Project

Poor fan operation translates immediately and directly to reduced boiler load and less production of electricity. If a large fan fails, it can shut down the unit. Failure of small fans in a multiple system will result in reduced boiler load. Fan systems that fail or that cause maintenance and employee safety problems must be replaced for the boiler to continue to operate.

c. Other Information

Common replacement projects include balancing and blade replacements, and wheel, motor and rotor replacement. Fan replacement projects can cost up to $20/kw. Replacement of a forced draft fan system with a balanced draft fan system can cost up to $70/kw. A census of repair and replacement practices at coal-fired utility boilers shows that fans have been substantially replaced at more than 70 percent of the units in the industry.

MILLS/FEEDERS

a. Project Description

Feeders deliver raw coal from the coal bunker to the pulverizer (also called "mills"). Coal crushers and conditioners are used in some cases to prepare the coal for the mills. Coal pulverizers then grind coal to a fine powder, suitable for efficient combustion in the furnace.

Various types of feeders are used in the industry, including gravimetric feeders, volumetric feeders, and bucket-type feeders. Replacing volumetric feeders with tech-

nologically superior gravimetric feeders is common in the industry, in order to improve the consistent measurement of coal added to the mills.

Pulverizers are manufactured in several designs. Some pulverizers use metal balls that roll around a metal track and crush coal. Other pulverizers use rollers to crush the coal. Both designs contain motors and gear boxes to drive the grinding mechanism. Pressurized air created by seals and air fans keeps the fine coal dust out of the motor and gears. Nevertheless, fine coal dust is present and causes continual wear and eventual failure of mills.

The coal is sorted within the pulverizer and delivered to the burners by the primary air fan. In some designs, exhauster fans then deliver the pulverized coal through pipes to the burners for introduction into the furnace. The "classifier," located at the top of the pulverizer, contains openings through which fine coal passes on its way to the burners; coarser particles hit the classifier and fall back to the grinding mechanism.

The major causes of wear and deterioration in pulverizer systems are abrasion due to exposure to hard minerals such as quartz and pyrite found in raw coal, and erosion due to the stream of solids that strikes pulverizer surfaces. Given the constant wear experienced in a pulverizer, repair and replacement of pulverizers and related equipment is essential to continued operation of the boiler.

The components that experience direct, constant wear and that require periodic replacement include rollers, tables, and balls; classifiers; bearings in rollers and the shaft; and seals and motors. Within the feeder system, belts, flow control devices, and associated piping must periodically be repaired or replaced. Eventually, abrasion and erosion of the pulverizer may become so severe that the pulverizer or mill internals must be replaced.

b. Consequences of Forgoing Project

The obvious consequence of mill/feeder failure is the reduction of the capability of the mill to deliver coal to the boiler, and hence of the unit to generate electricity. As less fuel is available to the boiler, less steam can be produced. More subtly, improper mill performance leads to combustion problems that not only damage other equipment but that increase emissions. For example, coal which remains too coarse will not combust completely, and will cause a loss of efficiency and an increase in particulate emissions. Some equipment in a mill or feeder cannot be repaired effectively more than a few times because the mill parts then will not work together properly. Replacement of the mill is then necessary.

c. Other Information

Replacing wear parts in the interior of the mill can cost up to $2/kw, and replacement of a mill can cost up to $5/kw. A census of repair and replacement practices at coal-fired utility boilers shows that pulverizer mills have been replaced or substantially replaced (e.g., the entire grinding zone) at more than 50 percent of the units in the industry.

TURBINES AND GENERATORS

a. Project Description

In the steam turbine at a modern power plant, superheated steam from the boiler is exhausted over turbine blades (these look like the fanjet blades in a jet engine). Because the steam is very hot (about 1000E°°F), enters at very high pressure (2400 to 3600 pounds per square inch), and contains impurities, turbine blades experience substantial wear and tear. For example, there are impurities in the steam—like little pieces of sand—hit the turbine blades at extremely high velocities and damage the blades by pitting them. When turbines are inspected, some blades or rows of blades (e.g., the "high pressure" or HP section) may need to be replaced.

When blades are replaced, the manufacturer typically offers a new, more efficient design or better alloys as the result of R&D or new, more durable materials. Indeed, the older, less efficient design may no longer be available. Use of more efficient turbine blades also allows the turbine to use a smaller amount of steam to produce the same amount of electricity, thereby decreasing emissions per megawatt of power output. Other turbine components, including nozzles, diaphragms and rotors, are also commonly replaced when they deteriorate or fail.

Generator rotors and stators are also subject to failure. The generator rotor turns (is rotated) inside the stator. Both the stator and the rotor are typically made of steel and have "slots" that run their length. Both the rotor and the stator have windings, that is, wires that fit into the slots. A direct current is applied to the rotor winding, which turns this large piece of steel into an electromagnet. The stator winding is a conductor (typically copper). When an electromagnet is turned relative to a conductor, it produces a current in the conductor. The current produced in the

stator winding is the electricity made by the generator, which is then sent to the transmission grid.

The windings are surrounded by insulation. This insulation can wear out due to heat, electrical and/or vibratory stress (e.g., rubbing on adjacent insulation.) Also, insulation can deteriorate due to exposure to contaminants such as moisture and oil, particularly from the cooling mechanism. If the wear is extensive, the entire winding itself must be replaced.

Finally, the steam turbine shell may develop defects due to stresses created by high temperatures and high pressures. If the turbine shell develops defects, it is commonly repaired or replaced at the same time the turbine blades are replaced.

b. Consequences of Forgoing Project

Replacement of damaged turbine blades is a necessity both from a reliability and from a safety standpoint. Damaged, rotating turbine blades can break off and fly through the turbine casing at extremely high velocity, creating the risk of serious injury or death and extensive damage to the power plant. To avert this catastrophe, turbine blades are inspected and replaced if wear and tear indicates they may fail.

Besides the employee safety issue, a broken blade can damage other portions of the generating unit, resulting in prolonged unit shut-down. Even prior to failure, deteriorated blades reduce the efficiency with which steam is turned into electricity, thereby reducing the electric output of a generating station and increasing the amount of emissions per unit of electricity produced.

Worn windings and insulation in the generator stator and rotor decreases the efficiency of the generator to convert mechanical energy to electrical power. This translates to increased fuel consumption and increased emissions per unit of electricity and decreases the capacity of the unit to produce electricity. Failed insulation also presents a fire hazard, and can result in faults that prevent the generator from operating at all.

c. Other Information

Common projects include the replacement of turbine blade rows or sections and turbine rotors. Moreover, a generator rotor or stator is rewound periodically in the life of a unit. Turbine blade and turbine rotor replacement projects can cost up to $20/kw, while shell replacements can cost up to $60/kw. A census of repair and replacement practices at coal-fired utility boilers shows that more than 90 percent of the units in the industry have replaced turbine blades or rotors.

CONDENSERS

a. Project Description

Once steam has passed through the turbine, it is condensed back to water, which is cleaned, pumped again to high pressure and returned to the boiler. The condenser provides the heat transfer necessary to convert the spent steam into water.

The condenser consists of a large chamber containing bundles of long, thin tubes. The tubes contain flowing water (typically river water or some other source of cooling water). Low temperature steam exiting the turbine at pressure approaching a perfect vacuum is directed into the chamber across the outside of the bundles of tubes, which are arranged perpendicular to the steam path. As the steam flows over the outside of the tubes, the heat from the steam is transferred to the cooling water inside the tubes. As enough heat is removed from the steam, the steam condenses to water.

The combination of steam constantly passing across the outside of the condenser tubes and water (filtered, but typically untreated) passing through the inside of the tubes leads to corrosion and erosion. Also, the interior of the tubes is subject to plugging and biological fouling. Despite constant efforts to clean the tubes, tubes eventually become partially or entirely plugged and no longer provide heat transfer. Also, if a condenser tube leaks, untreated river water will enter the steam path due to the vacuum on the steam side and will contaminate the high purity steam.

Short-term repairs include intentionally plugging a leaking tube. When numerous tubes have become plugged, it is necessary to replace an entire set of condenser tubes (also known as retubing the condenser). When new materials designed to better withstand the destructive environment of the condenser are available, it is typical to use the improved materials.

b. Consequences of Forgoing Project

Because the steam side of the condenser is at a vacuum, when a leak occurs, the dirtier cooling water flows into the steam side. This necessitates shutting down the unit so as not to allow the untreated water to damage the boiler and the turbine. The leaking condenser tubes are then plugged. As tubes are plugged, the unit be-

comes less efficient, meaning that its ability to generate electricity declines and more emissions are associated with each unit of electricity produced. Condenser tube leaks eventually become so significant that the unit is constantly being shut down to plug tubes. Eventually, the condenser must be retubed or the unit can no longer operate.

c. Other Information

The replacement of entire tube bundles is common, and such replacement projects cost up to $10/kw at larger boilers. A census of repair and replacement practices at coal-fired utility boilers shows that more than 60 percent of the units in the industry have replaced condenser tubes.

CONTROL SYSTEMS

a. Project Description

Careful monitoring and control of operating conditions at a coal-fired electric steam generating unit are necessary to insure safe, efficient, and reliable operation of the unit. Control and monitoring equipment at a unit consists of three major (core) systems: (1) boiler controls; (2) turbine controls; and (3) balance of plant management. Instruments and controls have advanced rapidly in the past two decades to provide greater operator knowledge and ability to optimize unit performance and to control emissions. For this reason, it is typical to replace out-dated benchboard type switches, lights, gauges, recorders, and manual/automatic stations with digital, computerized controls with touch screen monitors.

b. Consequences of Forgoing Project

Because controls help manage all aspects of combustion, unrepaired or outmoded controls will prevent the boiler from operating as efficiently and safely as is possible with modern controls. Moreover, because outmoded controls cannot manage a unit with the same efficiency as modern controls, failure to replace outmoded controls will result in higher emissions associated with startup, shut-down and combustion staging. Often, replacement parts for outmoded controls may simply be unavailable.

c. Other Information

The replacement of pneumatic controls with solid state, computerized or automated controls has occurred at most units, and will continue to occur as technology improves. Such projects can cost up to $10/kw on larger units, and $40/kw on smaller units.

COAL AND ASH HANDLING

a. Project Description

Coal handling equipment includes everything involved in unloading the coal from its transportation device (a railcar, barge or truck), storing it in a pile, and then conveying it to the plant so that it arrives at the feeders. After unloading, the coal is typically transported to a storage pile by a conveyor belt and reclaim system. While on the pile, the coal is usually managed by bulldozer, and then pushed onto a conveyer belt feeder. Sometimes a crusher in the coal storage area "pre-crushes" the coal. The coal travels by conveyor belt to the plant, where it is distributed among a series of bunkers by the tripper cars. The bunkers sit above and supply the feeders.

Much of the coal handling system is exposed to the weather. Moreover, coal is a hard substance that wears away the handling equipment. For example, conveyor belts, the motors that drive them, and structural equipment wears and corrodes over time, and this equipment is therefore commonly repaired and/or replaced. The rate at which the coal handling equipment deteriorates is influenced by the type of coal that is burned, with the result that variations in the coal that is burned in a boiler can lead to accelerated deterioration or obsolescence of existing coal handling equipment. Other factors that contribute to deterioration include local climate and proximity to salt water.

Once coal is combusted, the ash that results from the combustion process is collected in hoppers (bottom ash) or by pollution control equipment (fly ash). Once collected, the ash is recycled or treated and stored in ash storage ponds or landfills. The equipment for collecting, transporting and storing ash is subject to deterioration resulting from corrosion, abrasion and exposure to the environment.

b. Consequences of Forgoing Project

If coal handling equipment is not repaired or replaced when it deteriorates, fuel cannot be fed to the units and the plant must reduce load or eventually be shut down. Replacements are necessary when deterioration is so severe that repairs

would be ineffectual, or where repairs would not resolve reliability problems. If ash handling equipment and disposal systems are not subject to constant maintenance and repair, the boiler will have to reduce load or cease operation until the ash it generates can be properly handled.

c. Other Information

Common projects involving coal handling equipment include the replacement of conveyer belts and motors, pre-crushers, barge and rail unloaders, and tripper cars. Such projects can cost up to $4/kw. Common projects involving ash handling equipment can cost up to $15/kw.

FEEDWATER HEATERS

a. Project Description

Once the turbine has finished with the steam, the steam is condensed into water in the condenser and sent back to the boiler for reuse. Between the condenser and the boiler are a series of low pressure and high pressure feedwater heaters that gradually raise the temperature of the feedwater prior to returning it to the boiler, where it is then converted to steam. The feedwater system includes a condensate polishing unit (more common on larger, newer units) where impurities are removed, low pressure feedwater heaters, a deaerator heater, a boiler feed pump and high pressure feedwater heaters. From the last high pressure feedwater heater, the feedwater is delivered to the economizer inside the boiler.

A feedwater heater consists of a shell that covers a densely packed bundle of U-shaped tubes in which the condensate or feedwater flows. On top of the shell, there is an inlet for extraction steam from the turbine. As the condensate or feedwater flows through the tubes, extraction steam passes over the outside of the tubes and transfers heat to the water inside the tubes. Condensate or feedwater passes through the heaters in series, gradually increasing temperature thereby making the overall unit more efficient.

The feedwater heater system is subject to deterioration due to the effects of pressure, temperature and corrosion. It is common for tubes in this system to spring leaks, with the result that the heater must be bypassed until the unit can be taken off line to conduct repair or replacement activity. Newer corrosion resistant alloys to reduce maintenance problems are under constant development.

When leaks are detected, feedwater tubes are typically plugged. From 10 to 30 percent of the tubes may be plugged in some units, resulting in a significant reduction in unit efficiency. At some point, plugging tubes is no longer an option and replacement is necessary.

b. Consequences of Forgoing Project

Failure to plug leaking tubes results in a loss of overall unit efficiency and reliability. A tube leak therefore requires that the feedwater heater be bypassed until the unit can be taken off line for plugging or replacement of the leaking tubes. Plugged tubes cannot be feasibly repaired, so replacement is necessary once enough tubes have been plugged. Failure to replace the heater means that the heater must be removed from service, which can cause significant losses in efficiency and reduce the capacity of the unit to generate electricity, increase the emissions from the boiler per amount of electricity generated, and increase the reliability problems of the other feedwater heaters.

c. Other Information

Replacing an individual feedwater heater can cost up to $5/kw for a large unit. A census of repair and replacement practices at coal-fired utility boilers shows that more than 80 percent of the units in the industry have replaced feedwater heaters or major tube bundles in the feedwater heaters.

SOOTBLOWERS/WATER LANCES

a. Project Description

When coal is burned in the boiler, "ash" is produced which adheres to the boiler walls and tube assemblies and to the air preheater. The buildup of ash immediately reduces the heat transfer capability of these components which, in turn, means that more fuel is required to maintain the same load. In the long term, the presence of ash (slag) will cause tube overheating and boiler tube leaks, and may completely plug an air preheater.

Sootblowers are mechanical devices used for on-line cleaning of ash and slag deposits in the boiler, in order to maintain the heat transfer efficiency and to prevent damage to tube assemblies and other components. Various types of sootblower are

used in a boiler depending on the location in the boiler, the cleaning coverage required and the severity of the deposit accumulation. Sootblowers basically consist of: (1) a tube element or lance which is inserted into the boiler and carries the cleaning medium (typically steam or compressed air), (2) nozzles in the tip of the lance to accelerate and direct the cleaning medium, (3) a mechanical system to insert or rotate the lance, and (4) a control system.

Acoustic blowers, which rely on sound waves, are also used. Sootblowers of all designs must function in the harsh environment of the boiler and are subject to wear due to exposure to high temperatures, corrosion, and erosion from high velocity particles. Accordingly, sootblowers are commonly replaced as they wear out. Also, because the slagging characteristics of a boiler can change over time, it is common to change the type of sootblower as the slagging characteristics change or become better understood.

b. Consequences of Forgoing Project

Failure to replace a deteriorated sootblower so that it can continue to remove soot, ash, and slag, will limit the capacity of the unit to generate electricity, and will eventually shut the unit down. Moreover, if boiler tube assemblies are not kept clean, more tube failures will occur, requiring more frequent shut downs to replace tube assemblies (see project family #1). Uncontrolled slagging can also cause catastrophic boiler damage if the accumulated slag falls from the boiler wall or roof onto the boiler floor.

c. Other Information

Sootblowers damaged from wear have been replaced at most units in the industry. Replacement of water lances, sonic blowers and related technology is also common. Such projects can cost up to $9/kw.

BURNERS

a. Project Description

Burners provide the final link between the fuel and combustion air and the boiler. Burners are specialized tubes or barrels (in the case of cyclone boilers) which direct pulverized coal (carried by primary air) and combustion air (or secondary air) into the combustion zone. Each boiler has many burners. The arrangement and performance of the burners have a direct impact on the distribution of air, the stability of the flame in the boiler and the combustion efficiency. These factors are adjusted by controlling the rate and pattern in which air and fuel enter the boiler.

For boilers other than cyclone boilers, dampers (driven by attached linkages) and vanes control the swirl and volume of air, while restrictors may be used to manage the volume of coal. Each burner consists of a coal (or other fuel) pipe and nozzle with a nozzle tip or impeller at the end of the nozzle at the interior wall of the boiler. Surrounding the fuel nozzle is the windbox, with secondary air passing through the windbox and into the boiler via a toroidal opening with the nozzle tip at the center. Accessories such as flame scanners and lighters are commonly found in the burner assembly.

Burners, particularly the nozzle tips, are required to function in extreme conditions. Corrosion, erosion and temperature-related stresses wear or weaken the tips. Further, the combustion zone can extend to the tip itself, and the high temperatures can effectively destroy the tip. The damper linkages are subject to high use and may fail from exposure to the boiler environment. Finally, because burner configuration and performance play a key role in staging and controlling combustion, entire burners may be replaced with modernized designs intended to control the formation of NOx or otherwise improve the efficiency or completeness of the combustion, thereby reducing emissions.

A cyclone boiler is designed to melt as much ash in the coal as possible during the combustion process, and then to drain it from the bottom of the furnace in order to keep molten slag off of the superheater and other tube assemblies. This design objective is accomplished by creating a combustion zone outside the main furnace. These combustion zones or “cyclones” are cylindrical barrels attached to the sides of the main furnace. Crushed coal and air are introduced into the cyclone in a tangential pattern, in order to create a swirling motion to promote mixing of the coal and air to ensure complete combustion of the coal. The introduction of crushed coal and air at high velocities erodes the cyclone, and the hot molten slag environment causes corrosion. High temperatures cause metal fatigue and deterioration of the cyclone.

b. Consequences of Forgoing Project

Failure to replace damaged burners or cyclones reduces the efficiency of combustion. Moreover, a damaged burners can clog and create a safety hazard. Unrepaired damper linkages prevent the unit operator from controlling the volume and spin of combustion air and will reduce the efficiency of the unit, thereby increasing emissions for each unit of electricity generated.

c. Other Information

Common projects involving burners include the replacement of cyclones, burner tips, burner linkages and the wholesale replacement of burners for low NOx designs. Burners or cyclones have been replaced one or more times at most units in the industry, at a cost of up to $30/kw.

MOTORS

a. Project Description

There are numerous electric motors in a power plant. For example, motors are used to drive fans, pumps, conveyor belts, pulverizers, and so on. All motors have insulation which breaks down over time, causing the motor to overheat and even short out. Usually, when motors short out they shut down automatically, but they can even catch on fire or explode. When motors short out, they can be rewound or, if rewinding is too expensive, they must be replaced.

b. Consequences of Forgoing Project

Failure to replace or to rewind a damaged motor risks a fire (or explosion if the motor is near coal dust) if the motor continues operating. Shutting down the motor means the pump, fan, mill, conveyor, etc. will no longer operate. This means that the unit must either operate at a lower capacity or potentially even that the unit must be shut down.

c. Other Information

It is common to rewind or to replace a motor. Replacement projects can cost up to $5/kw per motor. A survey of repair and replacement practices at coal-fired utility boilers shows that it is common in the industry to replace electric motors.

ELECTRICAL EQUIPMENT

a. Project Description

Electrical equipment is used to transmit electricity and make it usable for electrically powered fans, motors, conveyors, lights, and numerous other applications in a power plant. There are several types of electrical equipment, including buses or wires that transmit the electricity, transformers that convert it into a usable form, switchgear or breakers that turn it on and off and protect it from electrical surges. In addition, for motors, there are often motor control centers and motor starters. Also, the plant itself uses buses, transformers and switchgear in the process of supplying electricity from the generator to the grid.

Shorts and overloads can occur in any of this equipment due to coal dust and the harsh environment of power plants. Damaged equipment is either repaired or replaced, depending on the severity of the damage.

b. Consequences of Forgoing Project

Replacement of electrical components that have deteriorated or are damaged due to the harsh power plant environment is necessary to support the electrical equipment at the power plant. If the electrical circuits are not operating, the equipment served by that circuit cannot operate and the unit will be unable to supply electricity at its previous capacity, if at all.

c. Other Information

Replacement of switchgears, and other electrical equipment components are very common. Replacement projects can cost up to $9/kw.

PUMPS

a. Project Description

Pumps are used to convey fluids around a power plant, including water (condenser circulating pumps) or water containing ash (ash sluice pumps). Pumps have moving parts. Ash sluice pumps are exposed to erosive, highly stressful environments. Other pumps, such as boiler feed pumps, are exposed to extreme temperatures and are expected to operate at very high pressures. These failure mechanisms lead to deterioration, which often requires replacement of a pump.

b. Consequences of Forgoing Project

If a pump is not repaired, additional stress is placed on other pumps in the system, and reliability problems will result. Eventually (immediately for some pumps) failure to replace certain broken pumps means that the boiler cannot operate at its design pressure.

c. Other Information

Common projects involving pumps include replacement of boiler feed pumps and ash sluice pumps. Replacement projects can cost $10/kw. A census of repair and replacement practices at coal-fired utility boilers shows that nearly 100 percent of the units in the industry have overhauled or replaced boiler feedpumps.

PIPING/DUCTS/EXPANSION JOINTS

a. Project Description

Pipes are used to carry mass (fluids or fluids containing solids) through a power plant. Ducts are essentially square pipes that carry air or flue gas. In an industrial environment like a power plant, pipes and ducts spring leaks due to the high pressure, high temperature and corrosive environment. If a section of pipe or duct leaks on an ongoing basis, the economic choice is to replace that section.

Expansion joints are flexible pieces that connect two sections of ductwork or piping. They are used because temperature differences cause different sections of ductwork or pipe to expand and contract at different rates. Even though expansion joints are designed to move as the contraction and expansion occurs, they can experience cracks and separations due to fatigue. If too many leaks occur, they must be replaced.

b. Consequences of Forgoing Project

Leaking ducts, pipes or expansion joints dilute the power of the fan or pump. Failure to repair or replace the pipe, duct or joint, therefore, will prevent the unit from generating electricity at its design capacity. Moreover, leaks of steam, gasses or fuel present safety hazards which must be addressed in a timely manner once they are identified.

c. Other Information

Replacing leaking ductwork, high temperature steam pipes, ash handling pipes, fuel piping, and expansion joints are common projects. It is also common to convert from fabric to metal joints or the reverse, depending upon boiler characteristics. Replacement and repair projects can cost up to $23/kw.

AIR COMPRESSORS

a. Project Description

Air compressors are mechanical devices similar to a pump, except that they compress air instead of a liquid. Air compressors have moving parts that are subject to wear. The principal use of compressed air in steam plants is for pneumatic drives for dampers and valves, system controls, some types of sootblowers, and power repair hand tools.

b. Consequences of Forgoing Project

Failure to repair the service air system will affect at least some and perhaps many aspects of the plants controls. If control air is no longer available, it becomes impossible to position valves properly and the unit cannot be operated. Failure of the air compressors that service sootblowers will prevent the operation of those devices, with the resulting damage to the boiler (see project family #10).

c. Other Information

Replacement is often the most economical choice for fixing a damaged compressor. Replacement projects can cost up to $2/kw.

APPENDIX THREE

STATEMENT OF PAUL KERN, RECORDING SECRETARY, LOCAL NUMBER 105, INTERNATIONAL BROTHERHOOD OF BOILERMAKERS, IRON SHIP BUILDERS, BLACKSMITHS, FORGERS AND HELPERS, AFL–CIO

PUBLIC MEETING REGARDING NEW SOURCE REVIEW

Members of the panel, thanks for allowing the Boilermakers Union to provide a statement at today's discussion of New Source Review. The Boilermakers are a diverse union representing over 100,000 workers throughout the United States and Canada in construction, repair, maintenance, manufacturing, professional emergency medical services, and related industries. I am recording secretary at one of our large locals, located in the Greater Cincinnati area.

First, let me be clear today that Boilermakers do not oppose the Clean Air Act, nor do we oppose its rigorous enforcement. In fact, construction lodges of our union look forward to doing much of the actual work for the installation of new technologies and controls at utility plants and for industrial boilers across this region and the country. In reference to the NOx control program alone, our international President Charlie Jones recently wrote:

"The EPA estimates that compliance measures will cost about $1.7 billion a year. A sizable portion of that money will go to the Boilermakers who do the work necessary to make the additions and modifications required by the SCR technology."[16]

Aside from NOx control, Boilermakers have always led the way on Clean Air Act issues. For example, Boilermakers were pioneers in installation of scrubbers and further in fuel-substitution programs at our cement kiln facilities. In short, Boilermakers have been there to meet the challenges of the Clean Air Act, to the benefit our members and all Americans that breathe clean air.

However, Boilermakers cannot support the EPA's recent interpretation of its authority under the New Source Review program. NSR, correctly interpreted, forces new sources or those undergoing major modifications, to install new technology, like the technology President Jones mentioned. We support NSR in that context.

But, when NSR is applied to the routine maintenance policies and schedules of existing facilities, very different results occur. In those cases, facilities are discouraged from undertaking routine actions for fear of huge penalties or long delays or both. By applying NSR in that way, we are pretty sure that Boilermakers won't have the opportunity to work on maintenance projects that we know are extremely important to energy efficiency. Just hearing about recent events in California is enough to make the case that facilities need to be as efficient as possible.

Efficiency is not the only reason to encourage routine maintenance. Experienced professionals or Boilermakers new to the trade can both tell you: maintenance is necessary to maintain worker safety. Electric generating facilities harness tremendous forces: superheater tubes exposed to flue gases over 2000 degrees; boilers under deteriorating conditions; and parts located in or around boilers subjected to both extreme heat and pressure. Any EPA interpretation which creates incentives to delay maintenance is simply unacceptable to our workers.

As you can see, Boilermakers do not ask for repeal or substantial revision of the NSR program. We encourage the development and installation of new technology, and we stand ready to continue to train and apprentice workers to meet the needs of the Clean Air Act. However, when the NSR programs goes where it wasn't intended—and discourages the very maintenance, repair and replacement activities that constitute the livelihood of Boilermakers—we must strongly object.

Thanks for the opportunity to make a statement.

STATEMENT OF BARRY L. JOHNSON, PH.D., F.C.R., ASSISTANT SURGEON GENERAL (RET.), ADJUNCT PROFESSOR, DEPARTMENT OF ENVIRONMENTAL AND OCCUPATIONAL HEALTH, ROLLINS SCHOOL OF PUBLIC HEALTH, EMORY UNIVERSITY, ATLANTA, GA, REPRESENTING PHYSICIANS FOR SOCIAL RESPONSIBILITY

Good morning. I am Barry Johnson, Ph.D., representing the Environmental and Health Program, Physicians for Social Responsibility (PSR). PSR has had a longstanding concern about hazards in the environment and the importance of physician education about them. We welcome the opportunity to brief the subcommittee on matters of environmental health. Prior to my retirement in 1999 as a commissioned

[16] Boilermaker Reporter, vol. 38, No. 1 (1999) SCR means selective catalytic reduction. SCR essentially consists of injecting ammonia into boiler flue gas and passing it through a catalyst bed where the NOx and ammonia react to form nitrogen and water vapor.

officer in the Public Health Service, I served as Assistant Administrator of the Agency for Toxic Substances and Disease Registry (ATSDR), which was created under the Superfund Law of 1980. I am currently Adjunct Professor of Public Health, Emory University, Rollins School of Public Health in Atlanta. I am also editor-in-chief, *Journal of Human and Ecological Risk Assessment*.

I have previously testified several times before Congress on matters of hazardous substances in the environment and their consequences to the public's health. My testimonies have always been based on current scientific findings and their implications for human health. In particular, my testimonies have presented Congress with specific information about the effects on the public's health of long-term exposure to contaminants released from hazardous waste sites and other sources of release. My testimony today will not depart from previous testimonies. My purpose today is to update you on recent research findings from several sources. The findings, PSR believes, are of great import to the public's health and support the need for greater actions by government, private industry, and non-government organizations to reduce the pollution load experienced by the American public.

In previous testimonies to Congress, I summarized findings about the hazard to human health posed by hazardous waste sites. In particular, I noted that the body of published epidemiological research points to an increase in reproductive disorders in children born to parents who resided near Superfund and similar hazardous waste sites. The overall pattern of reproductive disorders included birth defects of the heart, neural tubes, and oral cleft palate, and reduced birthweight has been reported in several studies. Of note, British investigators, using data from registers of congenital anomalies in five European countries, reported in 1998 that residence within 3 km of a landfill was associated with increased risks of neural tube anomalies, defects of the heart, and anomalies of arteries and veins. These findings from European investigators are quite similar to findings from studies of American Superfund and similar sites and suggest that landfills containing hazardous waste are a general public health concern. The gravity of the adverse reproductive outcomes from exposure to hazardous substances in the environment led PSR to develop its Birth Defects & Other Reproductive Disorders brochure and distribute it to more than 20,000 medical specialists in obstetrics and family medicine.

More than 60 studies of communities residing near hazardous waste sites are summarized in my 1999 book *Impact of Hazardous Waste on Human Health.* As an example of the impact of specific Superfund sites, both the Lipari site in New Jersey and the Love Canal site in New York share a common outcome: during the period of documented, greatest release of hazardous substances from these sites, the incidence increased of reduced birthweights of babies born to parents residing nearest the sites. When the releases were interdicted, birthweights returned to a normal pattern. This is a noteworthy observation implying that public health assessment of hazardous waste sites and site remediation are vital public health actions.

The effects of release of hazardous substances from hazardous waste sites on cancer rates of communities near the sites are less clear than for reproductive outcomes. There are some published studies that show increased rates of cancers of the stomach, gastrointestinal tract, and urinary bladder, but in my opinion, there is not a current consistent pattern of association of various cancers with proximity to hazardous waste sites. As you know, most cancers have a relatively long latency, 20 to 40 years, typically, perhaps contributing to lack of better understanding about any association between cancer rates and hazardous waste sites. However, the published work by ATSDR provides a basis for public health concern. Of the 30 hazardous substances most often released from Superfund sites, 18 are known human carcinogens or are reasonably anticipated to be. This knowledge is of great import to public health because it points us toward community and physician education programs and remediation priorities for EPA Superfund site clean-ups and other actions bearing on protecting the public's health.

Since 1999, additional studies have been published in the scientific literature that associate specific health effects with residential proximity to hazardous waste sites. For example, British investigators reported small excess risks of congenital anomalies and low and very low birthweight in populations living near 9,565 landfill sites operating in Great Britain between 1982 and 1997. The anomalies included small, elevated risks for neural tube defects, hypospadies, and abdominal wall defects. In a different investigation, European researchers studied 245 cases of chromosomal anomalies and 2,412 controls who lived near 23 hazardous waste sites in Europe. This year, the investigators reported an increase in chromosomal anomalies in persons living closest to the sites.

These studies from European investigators add further scientific weight to previous studies that living near hazardous waste sites is associated with an increased risk of adverse reproductive outcomes, including birth defects and reduced birth-

weight babies. These are matters of serious public health concern and argue for a strong program of remediation of Superfund and other hazardous waste sites.

At this point in my testimony, I want to bring some quite recent studies to the subcommittee's attention. These studies report serious public health consequences of air pollution. There are common themes across these studies. First, these studies have included data on the levels of toxicants in the environment of the populations studied. Second, these are studies of long-term, chronic exposure of the populations at risk. Such studies are difficult to conduct because the exposure levels are generally low, difficult to estimate or measure, and health outcome data may be hard to obtain. In other words, these kinds of longitudinal studies that engage both health data and environmental pollution levels are particularly valuable for public health purposes and for policies on environmental remediation.

The effect of air pollution on children's health is a particularly important subject. Any disease or disability in children reduces their quality of life and brings expensive health care costs. Knowing the effects of environmental hazards on children's health is important because they are preventable: reduce the level of pollution. In regard to outdoor air pollution, one major study has reported serious consequences to children who resided in areas in California with measured levels of air pollutants. In 1992, the California Air Resources Board commenced a large-scale, long-term study of the health effects of children's chronic exposures in southern California areas of air pollution. Approximately 5,500 children in 12 communities were enrolled in the study. The children's health status was assessed through questionnaires, pulmonary function testing, and monitoring of school absences. The study's major findings to date include: correlation between lower lung function and more intense air pollution; slower lung growth associated with high levels of nitrogen dioxide and particulate matter (2.5 and 10 micrometers); lower breathing capacity for girls living in the most polluted communities; and more evident wheezing in boys exposed to higher levels of nitrogen dioxide and acid vapor. These findings are obviously of great concern to public health and raise the obvious question about whether air quality standards for air pollutants are adequately protective of human health.

Another very recent study, conducted by the American Cancer Society (ACS) and associated investigators, assessed the association between long-term exposure to fine particulate air pollution and causes of death. Using vital status and mortality data collected by the ACS and by administering a survey questionnaire, risk factor data for approximately 500,000 adults were linked with air pollution data for metropolitan areas throughout the U.S. The investigators found fine particulate and sulfur oxide-related air pollution were associated with lung cancer, cardiopulmonary, and from all causes of death combined. Each 10-microgram/m^3 increase in fine particulate air pollution was associated with about a 4 percent, 6 percent, and 8 percent increased risk of all-cause, cardiopulmonary, and lung cancer mortality.

While the effects of air pollutants on lungs are, and will remain, significant in terms of the public's health, scientific evidence is emerging that air pollutants may exert an even greater public health burden as a contributor to heart disease. Particularly alarming is the reported association between very small particles in air and their contribution to sudden heart failure. As examples of research findings, researchers examined air pollution levels for the years 1980–1989 in Milan, Italy, for association with deaths on days of elevated pollution. Among the findings, a significant association was found for heart-failure deaths (7 percent increase/100-micrograms/m^3 increase in total suspended particulate [TSP]). Similarly, another investigator analyzed daily mortality from nonexternal causes among Philadelphia, Pennsylvania, residents from 1973–1980. They found that a 100-micrograms/m^3 increase in the 48-hr mean level of TSP was associated with deaths due to cardiovascular disease.

Other investigators suggest that exposure to fine (i.e., 2.5 micrometer in diameter or less) particulate matter ($PM_{2.5}$) decreases heart rate variability, possibly contributing to myocardial infarction. Although further research is needed to clarify the association between air pollution and fatal heart attacks, there is already sufficient data, I believe, to move forward with public health prevention actions, such as public awareness and physician education campaigns.

Senators, the cited studies reinforce the body of scientific evidence that associates hazardous substances in the general environment with adverse health effects. As you know, the core principle of public health is to prevent disease and disability. Regarding toxicants in our communities, they should be eliminated or reduced to levels that don't cause adverse human health effects. EPA and States have made considerable progress in reducing environmental health risks, and the public health community supports further risk reduction, based on the best scientific evidence. Now is not the time to gamble with unproven administrative procedures that may set back the progress already made.

Thank you for your attention, and I look forward to any questions from the subcommittee.

RESPONSES OF BARRY L. JOHNSON TO ADDITIONAL QUESTIONS FROM SENATOR SMITH

Question 1. Would you please provide citation for all data in your testimony—was this data peer-reviewed (if yes, by whom)?

Response. Attached is my testimony, with references given as footnotes. All are peer-reviewed studies published in technical journals, except for the Air Resources Board study, which has not been published to date. My book (Impact of Hazardous Waste on Human Health) was peer reviewed by both ATSDR scientists and three persons outside government (Thomas Burke, Johns Hopkins University, School of Public Health; Philip Landrigan, Mt. Sinai Medical School; Doris Cellarius, Sierra Club).

Question 2. Are you familiar with other peer-reviewed studies that draw similar conclusions—if so, please cite.

Response. I don't know what is meant by "similar conclusions." The references cited in my testimony are those key to my testimony and the cited authors' conclusions speak for themselves. If by "similar conclusions," one means has anyone else published a synthesis paper like my testimony, the answer is, "no, to the best of my knowledge."

Question 3. Are you familiar with other published, peer-reviewed research that demonstrates the primary cause of cancer incidents are due to the wide variety of environmental factors over a person's lifetime and not proximity to Superfund sites?

Response. Yes, depending on how one defines "environmental factors," there are published studies on the association between tobacco use and lung and mouth cancer, studies on association between long-term exposure to trihalomethanes in water with cancer, and there are occupational health studies that associate, e.g., various workplace toxicants with specific kinds of cancer. Also, the ACS study (reference No. 11 in my testimony) associates air pollution with excess mortality from lung cancer.

Question 4. Please provide the specific citation for the American Cancer Society Study you refer to on page 6 of your written testimony?

Response. See Reference No. 11 in the attached testimony.

Question 5. Do you have any further comment on the testimony of Mr. Segal?

Response. No.

Question 6. Do you have any further comment on the testimony of Mr. Schaeffer?

Response. No.

○