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UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

THE ADMINISTRATOR

**ENVIRONMENTAL PROTECTION IN
THE BUSH ADMINISTRATION:
MEASURES BY WHICH TO JUDGE US**

William K. Reilly
Administrator
U.S. Environmental Protection Agency

Remarks before
the National Press Club
Washington, D.C.

April 20, 1989

Before I begin my more formal remarks, I'd like to take this opportunity to announce the results of a recent EPA study. Based on measurements taken in 3000 schoolrooms in 16 states, it appears that elevated levels of radon gas can be found in schools throughout the United States. This finding is particularly troublesome because of the nature of the radon risk, and the potential vulnerability of children exposed.

Therefore, I am recommending that schools nationwide be tested for radon, and that schools prepare to take remedial actions depending on the levels of radon found. As a first step to help the nation's schools address this problem, EPA has published guidance on how schools can measure radon, and how they can reduce exposures. This guidance is now available from the Agency.

I wanted to make this announcement personally, because it is important that school administrators nationwide understand both the seriousness of the risk, and the relative simplicity of testing for and fixing the problem. The risks posed by radon gas are very real. But with a little thoughtful effort, we can solve this problem with relative ease.

As you know, radon is a well-recognized health risk. We estimate that lifelong exposure to a radon concentration of 4 picocuries per liter of air has a risk equal to smoking half a pack of cigarettes a day. Studies indicate that indoor exposure to radon may cause up to 20,000 lung cancer deaths a year -- second only to smoking.

During its survey of 130 different schools, EPA found that about half of them had at least one room with radon concentrations about 4 picocuries. And radon levels over 20 picocuries were found in about 3 percent of the rooms. Although the small number of test schools was not selected randomly -- and I want to emphasize that point -- we believe that elevated levels of radon may be as prevalent in schools nationwide as in homes.

Fortunately, this problem is much more tractable than most. Concentrations of radon can be measured reliably and at low cost. If problems are found, they can be fixed -- in most cases -- with relatively simple, inexpensive steps like better ventilation and better maintenance.

So it's important that school systems begin planning to test for radon next winter. And it's important that they begin planning to take action if radon levels are unacceptably high.

I chose to make this announcement at the National Press Club for two reasons. First, the radon problem, like so many others, is going to be solved through actions taken in every community across the country. So every community needs to hear about the problem and understand it. And there's no better way to talk to communities from coast to coast than through the national press.

But I also wanted to announce it here because, for better or worse, you pronounce the public judgement on EPA's efforts to protect the environment. You not only write the news, you also evaluate it.

In fact, one of the interesting things I have noticed in my 10 weeks as EPA Administrator is how often the press conducts "tests" to determine whether this is really going to be an environmentalist Administration. Each week I seem to read of yet another test. How will we handle a pesticide named Alar and the great apple scare? Where will we come out on a dam called Two Forks in Colorado? Will we propose a ban on ozone-destroying chlorofluorocarbons? Will we tighten automobile fuel efficiency standards? Will the federal environmental budget grow faster than expenditures in other areas? Will we federalize the Alaskan oil cleanup? Will we abandon oil exploration in the Arctic National Wildlife Refuge? Will we stop shipping hazardous waste to developing countries? Will we propose a tough new Clean Air Act? Will we act to stop the destruction of wetlands in America?

Even as we resolve one issue, another is added. Inexplicably, the pending decision frequently is described as "the first big test of the Bush Administration," irrespective of the results of the last "big test."

I sometimes feel as though I'm back in school in a period of perpetual final exams.

Yet I find all this somewhat encouraging. It suggests that the people -- or at least the press -- are ready to believe we really may mean what we say. It indicates that even demanding critics like environmentalists believe the President may have meant it when he promised leadership on the environment, and when he called himself an environmentalist.

I appreciate your openness in setting the standards against which you propose to measure us. But I do not believe these early tests are the ultimate measure of our success. And so I would like to use this occasion to suggest some of my own measures of success. I would like to lay before you a set of propositions to which we can all return some years from now and ask: how did we do? Did we achieve our goals? Did we succeed?

First, let me paint in the background. The United States has come a long way since President Nixon signed the National Environmental Policy Act of 1969 and proclaimed the 1970s "the decade of the environment." As a society we made numerous commitments and huge investments in bringing pollution under control, in reducing the assaults on our air and water and land. Our cities today are subject to less air pollution. Our lakes and rivers are holding their own, and many are again swimmable and fishable. The improved environment was a genuine if unsung success story of American life in the 1970s.

Nevertheless, we now face a crisis of accumulating waste here at home, and an accelerating devastation of nature abroad.

Together they threaten not only to cancel the gains we have made, but to destabilize the very planet we live on. The 1990s will be a decade of decision for the environment. We must decide whether we will arrest the wasteful and destructive practices that threaten to alter the climate, wreak havoc with natural systems, wipe out countless species of plants and animals, and render much of this earth a poisoned, impoverished, and forbidding place.

Consider the global realities. Five of the 10 warmest years on record occurred in this decade. A temporary warming cycle? Maybe. But carbon dioxide in the atmosphere has increased 25 percent in 100 years. Something significant may be occurring. We dare not ignore it. EPA scientists estimate that if we don't act to reduce greenhouse gases, worldwide temperatures will rise at least 2 to 3 degrees centigrade by the year 2050. Such an increase would bring enormous changes in climate, rainfall, agricultural productivity, and sea level.

A second global reality is this: barring some dramatic reversal in current trends, the next decade will witness the extreme contraction of most of this earth's remaining tropical forests. Gone with them will be the rich abundance of plants and animals they harbour. It seems astonishing that 6 percent of the planet's land area could be home to almost half the earth's species, but such is the incomparable richness of tropical forests, these vast libraries of medicinal plants and useful genetic materials, so many likely to vanish before they even have names. And deforestation also accounts for about a fifth of the climate-altering greenhouse gases.

The more urbanized areas of the developing world, including much of Eastern Europe, are increasingly awash in pollution and waste. Many great cities face dangerously unhealthy air, toxic substances accumulating in their groundwater, and the prospect of catastrophic accidents involving hazardous materials.

These three international issues -- climate change, destruction of tropical forests, and toxic pollution in developing countries -- these are issues of the utmost seriousness. The degree to which the United States contributes to ameliorating these three problems will be, I believe, a demanding yet plausible test of the Bush Administration's environmental record.

Obviously, we cannot solve these problems in 4 years, or even 10. We cannot solve them alone. But we can lead the world community down a new path toward peace with nature. By our example and with our encouragement, I believe this nation can lead the campaign to restabilize the planet.

We have already begun. Secretary of State Baker, in the first speech of his tenure, unequivocally stated this country's intentions to cooperate with other nations to assess and manage human-induced alterations in climate. President Bush then committed the United States to a full phaseout of ozone-destroying CFCs and halons by the end of the century, provided safe substitutes are available.

There is a fortunate and persuasive coincidence between the policies we need to undertake to address global warming and the policies desirable in and of themselves for our domestic environmental and economic good. These include phasing out CFCs, which account for almost a fifth of all greenhouse gases. They include promoting energy efficiency; saving energy also reduces carbon dioxide emissions. And they include using our influence with the World Bank and other multilateral aid and lending institutions to give a higher priority to environmental values like reforestation.

We can also increase our help to other countries facing severe pollution problems. They want our help. They know we have made great progress in reducing pollution, and they need our

expertise. One of the most welcome and least expensive objects of our foreign policy is the help, the information, and advice we provide developing countries in better managing their wastes and reducing their pollution.

But if we are to play a major role in the great cause of restoring the natural systems of this earth, if we are to aspire to lead this effort, we must set a shining example here at home. To be a beacon to the world we will have to do better ourselves.

We in the United States produce twice the solid waste per capita that West Germany does, and three times that of Italy. We use twice as much energy per capita as Switzerland and nearly three times that of Japan. And the energy we use and the waste we generate make this nation the source of a fifth of all greenhouse gases.

We must do better. We can do better. We must learn not just to control pollution but to prevent it, not just to dispose of waste more safely but to eliminate it altogether.

Here I must confess that more of the same -- more controls, tighter standards, better enforcement -- will not be enough to get us there. Regulations closing off waste disposal options will help, have helped. Greatly increased costs of waste disposal are creating incentives to reduce waste. Did you know that a third of the landfills in this country will be obsolete in 5 years? Ten years ago the cost of solid waste disposal was \$5 to \$10 per ton. Now in some places it is \$125 per ton and rising.

When costs rise like this, so must our ingenuity and resourcefulness. We must learn to generate less waste in the first place, to make products that are recyclable or reusable.

And we will. We will make pollution prevention a hallmark of our environmental efforts. The people of this country are, I believe, ready to participate in this effort. It is an area that demands education more than regulation, and information more than enforcement. We will help meet the coming crisis in waste management by significantly reducing the amount of waste per capita generated in our country. Recycling, reuse, reduction at the source -- these will be our watchwords.

Just as we hope to contribute to protecting and restoring natural ecosystems worldwide, so we will work to protect the productivity of natural systems here at home: the estuaries and coastal environments, the groundwater and the wetlands. We will reduce by millions of tons the emissions of sulfur oxides that are threatening the lakes and rivers of both the United States and Canada. And we will do it in this century.

We will respect the vital role of wetlands in nurturing marine life and waterfowl and filtering pollutants and buffering floodwaters. We will give policy expression to the goal of "no net loss of wetlands."

We will work to break the long, contentious, and dispiriting stalemate over clean air and send to the Congress -- for the first time in 10 years -- a Presidential proposal to reauthorize the Clean Air Act. This Administration will offer new legislation to ease the burden of air toxics cut back acidic air emissions, and reduce the smog that so bedeviled our cities last summer.

I hope that our approach to the Clean Air Act, on which we have consulted closely with the Congress and other interests, can usher in a new era of cooperation in the field of the environment. Cooperation between the Administration and the Congress. Cooperation between the regulated community and EPA. Cooperation between environmentalists and EPA. Cooperation between government and the people.

More than any other single achievement, the most meaningful measure of our progress, I believe, may be the degree to which we establish a relationship of trust on the part of the many interests touched by EPA. Whether the task is fixing Superfund or communicating about the risks posed by pesticide residues in food, we must have the confidence of the public.

As I try to master the information necessary to run EPA's programs, I am reminded how specialized and arcane much of our work has become. The public, so prone to worrying about risks of cancer, is easily led to panic in the wake of an apple scare. It is difficult in the throes of a full-scale pesticide panic to communicate sensibly about risk, to put it in perspective, or to reassure distraught mothers. At such a time no one wants to have to learn about risk assessment. What people want to know is that the regulators -- the protectors of their health -- share their values, that they are people of integrity and competence who can be trusted.

It sometimes seems to me as though the nation has behaved with a kind of schizophrenia toward EPA. On the one hand the agency has been policed, constrained, and restricted. On the other hand the agency has been asked to undertake the impossibly ambitious tasks of controlling smog in Los Angeles and Chicago, and making federal departments far larger than itself -- such as the Defense Department -- clean up their facilities. And I have recently observed agencies at both the state and federal levels sign off on controversial development projects because they are confident EPA could be counted on to stop them.

In this Administration we have a vision. We see a nation moving steadily to provide a greater measure of protection for human health and for natural systems. We see a public entitled to the truth about the realistic choices open to a highly

industrialized, economically developed society. We see people working to ensure that nature remains productive and unimpaired as we improve our economic prospects.

We are enthusiastic advocates of economic growth. Among other things growth is what pays for environmental protection. We want to infuse the country with an ethic of environmental stewardship so that our economic progress is more durable and better grounded in productive natural resources.

So judge us on our aim, and we are aiming high. Judge us on how well we cooperate with other nations in solving problems of truly global proportions. Judge us by the actions we take to protect fragile and unique ecosystems here at home. Judge us on how well we reduce the per capita waste stream in this country.

Above all, judge us not in the light of a politically volatile moment. Environmental protection is about sustaining life on earth. For the long term. We at EPA are the long distance runners of government. The real test is not in the regulatory decisions that are made in March or April or May. The real test will be the health of our people and the quality of our environment at the turn of the century and beyond. And that is a test we dare not fail.

Thank you.



EXECUTIVE OFFICE OF THE PRESIDENT
OFFICE OF MANAGEMENT AND BUDGET

DATE:

6/3/89

TO:

Mark Lange - speech-writing

FROM:

ROBERT E. GRADY
ASSOCIATE DIRECTOR
NATURAL RESOURCES, ENERGY AND SCIENCE

FYT

/ Bob G.

Congress of the United States
House of Representatives
Washington, DC 20515

June 1, 1989

Dear Colleague:

There's been a lot of talk lately about the job George Bush is doing in the area of environmental protection. While there's room for valid dispute in some areas, it is a great setback to bipartisanship and honesty in government to ignore the initiatives the President has already taken in just six months in office:

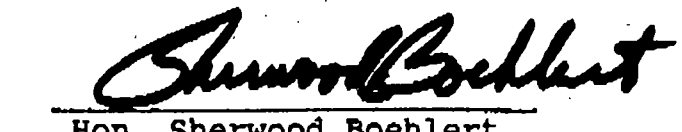
- ✓ 1) The President will shortly implement his pledge to submit strong, comprehensive Clean Air Act amendments to Congress, and make enactment a top domestic priority.
- ✓ 2) Secretary of State James Baker's first major address, in his first week in office, expressed the President's intention to take action against global warming.
- ✓ 3) The President has endorsed a worldwide phase-out of ozone-depleting CFC's by 2000, and will host a global workshop on the "greenhouse effect" this fall.
- ✓ 4) The President's budget includes: \$206 million for parkland acquisition under the Land and Water Conservation Fund, up from Reagan's \$17 million request; full funding (a \$385 million increase) for clean coal technology development on the 5-year timetable originally promised (but later delayed) by Reagan; full funding (\$340 million) for defense nuclear plant cleanups, a major increase over the Reagan budget request.
- 5) The President has declared a moratorium on long-contentious oil drilling leases off the shores of California and Florida.
- 6) Environmental Protection Agency chief William Reilly has halted the Two Forks Dam in Colorado, working with western Members of Congress on a fair, environmentally sound alternative.
- 7) Secretary of Transportation Samuel Skinner has raised corporate average fuel economy (CAFE) standards for autos to 27.5 mpg.
- ✓ 8) The President has requested funds to hire more environmental prosecutors at the Department of Justice.
- ✓ 9) An Administration task force is preparing a list of recommended strengthening reforms to the Superfund law.
- 10) EPA chief William Reilly has created a assistant administrator slot for international environmental issues.
- 11) The President held meetings in Tokyo with the leaders of Japan and Brazil to discuss ways of reversing rainforest devastation.

- 12) The President has proposed a new policy to ban hazardous waste exports absent an agreement with the receiving country to handle the wastes in an environmentally sound manner.
- 13) EPA has initiated a pilot medical waste tracking system, intended to prevent last summer's beach scares from recurring and serve as a model for nationwide action.
- 14) The President has extended an offer of American assistance for Eastern Europe's monumental cleanup problems.

We thought you ought to know.



Hon. Porter Goss
Chairman, Project 101



Hon. Sherwood Boehlert
Co-chair, Acid Rain Task Force

*Mark Lang
#11*



HOUSE OF REPRESENTATIVES
WASHINGTON, D. C. 20516

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*FYI and please feel free to use. Text also appears
in 6-1-89 Congressional Record on p E1972.
Might be useful next week -*

Dale

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House of Representatives
Washington, DC 20515

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Hon. Porter Goss
Chairman, Project 101



Hon. Sherwood Boehlert
Co-chair, Acid Rain Task Force

GHs

THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release

March 3, 1989

REMARKS BY THE PRESIDENT
TO WINNERS OF
WESTINGHOUSE SCIENCE TALENT SEARCH

The National Academy of Sciences Building
Washington, D.C.

2:20 P.M. EST

THE PRESIDENT: Thank you very much. Thank you, Mr. Marous, and all of what you at Westinghouse do for this outstanding concept. Doctor Press -- last time I saw Frank Press -- maybe it wasn't the last time, but he'd just received an honorary degree at a graduation ceremony where there were 50,000 people present at Ohio State University -- well-deserved honor, that he well-deserved, as a matter of fact, for prestige he's given to science in this country. And when he salutes a group like this, why, it makes a big impression on me as well.

I want to thank you all -- Dr. Seaborg, whose reputation is well-known to everybody here; and John as well, for explaining some of the exhibits to me. (Laughter.) I had done a lot in the field of the viability of MVM Parvo Virus. (Laughter.) And then at night I like to curl up with a book on mapping mutants. (Laughter.) And every once in a while, when I have some spare time, Barbara and I read aloud about the behavior of the inhibitions of sialidases. (Laughter.)

So we have a lot in common with these researchers here. (Laughter.) But I'll tell you, I'm glad there's no quiz. (Laughter.) And I am so impressed and I expect everybody here has had a chance to look at these studies. And I'll tell you, it just reaffirms your basic faith in the young people of this country and in the -- I'd say also, in the academic process. Yesterday we saluted some teachers over at the White House and, boy, I wish I'd seen this before I'd had -- before I'd been over there to pay my respects to the teachers who help these young minds.

But really, what all of you have accomplished is really something to be proud of. Not only is it a great achievement, but you really earned these honors. Thomas Edison said that genius is one percent inspiration and 99 percent perspiration. Well, each of you, with your academic diligence and your intellect and a lot of hard work, have won the oldest and largest national high school competition in the entire country.

And past winners of the Westinghouse Talent Search have distinguished themselves in every field of science and mathematics. And your predecessors have received every major honor and award in their fields, including the Nobel Prize and the National Medal of Science.

And what you've done is important for America. Scientific and technological advancement have always been at the very heart of our nation's pioneer spirit, pushing the boundaries of our knowledge, creating economic opportunity, and certainly increasing our standard of living and making this a healthier and safer world in which to live. It is scientific advancements that made us aware of the damage to our Earth's protective ozone layer and the need to reduce CFCs that deplete our precious upper atmospheric resources.

MORE

As a result of these advances, the United States and other nations have led the way through the Montreal Protocol, through -- towards reductions of CFCs. And that Protocol will reduce CFCs to 50 percent of 1986 levels by the year 1998. But recent studies indicate that this 50-percent reduction may not be enough. And that's -- I thought some of you interested in that field might like to know that I today asked Bill Reilly, our new EPA Administrator, to join with other nations this weekend as he goes abroad in supporting the call for the elimination of CFCs by the year 2000, provided the safe substitutes are available. And, of course, such a phaseout must be guided by the scientific, economic, and technological assessments under the Protocol.

As a nation, we have no natural resource more precious than our intellectual resources. In fact, it's only thanks to human knowledge and ingenuity that crude oil became a valuable fuel and that fields of grain become methanol, or that grains of sand become silicon chips.

Scientific knowledge must be renewed and expanded in each generation. Many of the miracles that we take for granted in everyday life originated in defense and space research. This investment in new technologies and new plant and equipment helps expand our competitive edge as a nation, and thereby assuring future opportunities for America's next generation in science, engineering, and manufacturing. But for our country to maintain its technological and scientific excellence, no investment in machines or laboratories, as vital as that may be, will, by itself, be sufficient. There have to be the people who have the knowledge and the commitment. And that will be men and women like yourselves who will lead America into the next century.

You know, by one estimate, it takes 10,000 high school students expressing an interest in a science or engineering major to assure us of 20 men and women who will go on to receive doctorate degrees. And I hope that each student in this room gets a doctorate, or pursues a career of one kind or another in science and technology, and that some of you consider returning to the classroom as teachers to inspire a new generation of scientists for the future.

The fruits of investing in science and scientists are evident. Human intelligence has explored the vastness of outer space and the inner frontiers of the particles of the atom; diseases have been cured, knowledge has been harnessed and energy -- I was going to say that energy has been created, but then I remembered the laws of thermodynamics. So let's just call it a wash -- (laughter) -- and say that energy has neither been created nor destroyed. (Laughter.) And please don't debate me on that, Glenn. (Laughter.)

But we truly have seen the scientific knowledge developed in the United States vastly improve the lives of our citizens and of people around the world. And today, international scientists and science students are coming here to America, to do research, to study, to teach; and this is something that our country greatly benefits from.

Yet, still, as a nation, let's face it, we've got to do better. We're not producing enough scientists and mathematicians, and engineers. American universities confer only about 77,000 engineering degrees a year at the undergraduate level. And that's about the same number that Japan produces with a total population of only half our size.

Initiatives from Washington are important. But they're not enough. Students and parents and teachers will determine the direction our young people take and, ultimately, what direction, therefore, that our country takes. And there's only one goal that is worthy of us as Americans. And that is to be the very best in the world; to be number one. That's our history, but it is also, I believe, our destiny. Our national qualities of intellectual

DRAFT: May 15, 1989

CLEAN AIR ACT OPTIONS PAPER: ACID RAIN

I. BACKGROUND

"Acid rain" is the common name for a phenomenon which occurs when sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions undergo a chemical transformation in the atmosphere and return to the earth as acidic rain, fog, or particles.

There is continuing debate over the nature and extent of damage caused by acid rain.

The Science: NAPAP

The National Acid Precipitation Assessment Program (NAPAP) is an interagency scientific committee established by Congress in 1980, with a 10-year mission to study the causes and effects of acid rain. NAPAP recently (1989) reported that:

*we've spent
\$500 million
since 1980
on
research.*

"The only benefits generally agreed to be expected from new acid rain controls will be improvements in acidic and sensitive lakes and streams..."

and that:

"There is no evidence of widespread forest damage from acid rain, with the possible exception of mountain-top exposures to acidic clouds."

With respect to health risks, NAPAP stated:

"Possible health risks associated with the acid rain pollutants are currently being evaluated."

NAPAP will have spent about \$500 million to study acid rain by the time its final report is released in 1990.



Competing views:

On the other hand, the World Resources Institute (1988) has reported that:

"acid deposition and ozone are important contributors to the decline of several tree species in the East."

and the Congressional Office of Technology Assessment (OTA) reported in 1984 that:

"Acid deposition may be adversely affecting a significant fraction of Eastern U.S. forests, ... [and] ... Fine particles such as sulfates reduce visibility and have been linked to increased human mortality in regions with elevated levels of air pollution."

Sources of Acid Rain-Causing Emissions:

About 20 million tons of SO₂ are emitted annually in the U.S. This represents a reduction of 25% since peak emissions in 1973, despite a near doubling of coal consumption during that period.

Roughly three quarters of these emissions result from the burning of fossil fuels by electric utilities. Another 20% comes from various, more widely dispersed (and thus more difficult to regulate) industrial sources, and 5% comes from transportation sources.

New sources of SO₂ emissions were regulated by the Clean Air Act, first passed in 1971 and strengthened in 1977. Because of this, the source of most emissions -- and thus the focus of most legislative proposals -- is a relatively small number of old plants (pre-1971) not subject to the Act's "new source performance standards." For example, the 50 largest emitting plants are responsible for 50% of the SO₂ emissions in the country.

NO_x emissions are also about 20 million tons per year -- with transportation sources accounting for about half. The level has been fairly steady in recent years (only a 2 million ton increase since 1980), but without further controls, NO_x emissions will begin to increase in the mid-1990s.

Commitments by the President

During the campaign, then Vice President Bush said:

"On the question of acid rain, the time for study alone has passed. We know enough now to begin taking steps to limit future damage ... As President, I will ask for a program to cut millions of tons of sulfur dioxide emissions by the year 2000, and to reduce significantly nitrogen oxide emissions as well."

He followed up on that with the following statement in his February 9th statement to the Joint Session of Congress:

"I will send to you shortly legislation for a new, more effective Clean Air Act. It will include a plan to reduce, by date certain, the emissions which cause acid rain -- because the time for study alone has passed, and the time for action is now."

The book, Building a Better America, said:

"The Administration's program will include market-based approaches, supplementing and modifying the traditional command-and-control approaches. The goal is to get the Federal government out of the detailed regulation of industry decisions and reduce the need for elaborate EPA-approved, State-prepared emission reduction plans ... The legislation will provide flexibility to states and industry to adopt least cost compliance strategies (and) incentives for the early deployment of innovative emission reduction techniques."

Costs of Controlling Acid Rain:

Since 1970, the U.S. has spent over \$225 billion to control emissions of sulfur dioxide and nitrogen oxides. Current estimates are that American industry spends about \$33 billion per year on air pollution control -- and EPA estimates that the electric utility industry now spends about \$10 billion a year for such controls under the existing Clean Air Act.

On the other hand, Americans spend over \$160 billion per year on electricity -- and any of the legislative approaches currently under consideration would cost less than 5 percent of that.

According to EPA, a "least cost" strategy for reducing SO₂ emissions from utilities by 7 million tons from 1980 levels and NO_x emis-

sions by 2 million tons from current levels would be between \$2.0 and 2.4 billion per year (in 1988 dollars). Raising the required SO₂ emission reduction to 9 million tons raises the cost to between \$3.6 and 4.0 billion annually.

For discussion purposes, these two alternatives translate into bills which would reduce SO₂ emissions by 8 and 10 million tons respectively, because smelters and other industrial sources have already reduced emissions by 1 million tons since the commonly-used 1980 baseline date. At the same time, electricity demand is expected to grow, causing additional emissions which will have to be offset with further reductions. The exact amount of projected growth is open to some question, with EPA projecting 1.2 million additional tons of SO₂ emissions, and others projecting less.

To the extent that utilities are allowed to decide freely how to achieve the required reductions, or trade "emissions credits" with other utilities or industrial emitters, the cost goes down. Further, to the extent that clean coal technologies prove to be lower cost alternatives to utilities' generation needs, the costs of SO₂ reductions go down.

Contentious issues:

Historically, two major issues of contention have caused a stalemate on acid rain control legislation.

First is the impact such legislation might have on high-sulfur coal producers and coal mining employment. To the extent that utilities choose to switch to other fuels (natural gas, low-sulfur coal), high-sulfur coal mining jobs will be lost -- although ICF estimated that under a full freedom of choice bill introduced in the last session the impact would be 16,800 high-sulfur coal mining jobs lost. It should be noted that these losses would be offset by job gains in low-sulfur coal mining (plus 18,000 jobs under the same ICF estimate). It should be noted that some of the job gains would be in the same states -- albeit in different regions -- as the job losses. Northern West Virginia, for example, could be expected to lose 1,200 high-sulfur coal mining jobs, but southern West Virginia could gain 4,000 low-sulfur coal mining jobs.

EPA feels that under a full freedom of choice bill which requires a 10 million ton SO₂ reduction, the total high sulfur coal mining job loss (including non-coal mining jobs in high sulfur coal mining com-

munities) could be between 20,000 and 50,000 jobs. These would, as noted, be at least partially offset by gains elsewhere.

In any event, options which are designed to increase the use of scrubbers or encourage the deployment of clean coal technology will mitigate the effect of reductions on these high-sulfur coal mining communities. Scrubber technology, however, is quite costly.

The second oft-discussed issue is the impact that any acid rain control program will have on electricity rates in affected states. In general, most Congressional proposals to date would raise national average electricity rates by about 2% after the year 2000. For the legislative proposal which mandated the most costly approach, scrubbers on specifically named plants, the rate increases in the two most severely impacted states (Indiana and Ohio) would be about 7% -- although without trading it would be higher for individual utilities.

What follows is a brief discussion of the major decisions to be made in crafting an acid rain reduction bill, with options presented to resolve each choice. To the extent possible, the costs associated with choosing these options -- as measured from the two base cases discussed above -- are identified. Because there is significant variability in possible true future costs, the cost estimates listed will be the mid-point of the range provided by EPA estimates.

II. POLICY OPTIONS

AMOUNT AND TIMING OF REDUCTIONS

Amount of Reductions: Second Phase

This is the most visible element of any new Clean Air bill, and, according to Members of the House and Senate who have been consulted, will be the key dimension on which the Administration's proposal will be judged. All tonnage reductions are from 1980.

Amount of Reductions: Second Phase

<u>Option 1:</u>	7 million tons	Cost: \$1.8 B per year
<u>Option 2:</u>	8 million tons	Cost: \$2.2 B per year
<u>Option 3:</u>	10 million tons	Cost: \$3.8 B per year
<u>Option 4:</u>	10 million tons with credit (trading) for NOx reductions	Cost: \$2.7 B per year

(Totals under all options incorporate 1 million tons from smelters and other industrial sources)

Pros (of higher amount):

A broad consensus exists on Capitol Hill that the Administration must come forward with a "10 million ton" proposal in order to be "credible."

In general, greater reductions afford greater environmental benefits. The relationship may not be linear; NAPAP reports that benefits are less identifiable above 3-4 million tons.

Canada is on record as favoring a 10 million ton reduction.

Cons:

Cost curves are not linear: each additional incremental reduction is more costly than previous increments.

Potential health benefits of additional reductions, which are still being studied, cannot be precisely identified (at least not in dollar terms).

Amount of Reductions: First Phase

Most bills call for a first phase of reductions as a way of guaranteeing early reductions and thus maximizing the cumulative reductions achieved through any control program.

Amount of Reductions: First Phase

Option 1: 5 million tons Cost: \$750 M per year

Option 2: 4 million tons Cost: \$450 M per year

Option 3: No first phase

(Totals for all options incorporate 1 million tons from smelters and other industrial sources)

Pros (of higher amount):

Higher amount of early reductions will be more "credible" with Hill and environmentalists.

Larger early reductions provide "insurance" against environmental and potential health effects.

Canadians favor 5 million tons.

Cons:

Higher amounts of early reductions drive up cost significantly.

Forcing larger early reductions could cause problems in siting new low sulfur mines to meet demand and siting and permitting retrofit technologies.

Timing of Reductions: Second phase

Option 1: 12/31/2000

Additional cost: EPA believes that annual cost will not rise with earlier date, although cumulative costs may rise.

Option 2: 12/31/2003

DOE points out that technology will continue to improve. CEA points out that annual costs simply will be incurred three years earlier with the earlier date.

Pros (of earlier date):

The year 2000, like 10 million tons, is a "magic number" with Capitol Hill, and is required to have "credibility."

EPA does not believe that earlier date will significantly raise costs annual costs; although CEA notes that billions of dollars are saved in the cumulative total for each year during which costs are deferred.

Canadians favor year 2000 deadline.

Cons:

DOE believes annual costs will be higher for earlier dates, because they could inhibit commercial deployment of new, potentially less costly clean coal technologies (unless extension is granted for CCT -- see below).

Extension for Clean Coal Technology

Should a three-year extension be granted for emission sources that use repowering clean coal technologies to achieve required reductions?*

Cost: Reduces annual cost by up to
- 1.5 B to 2.0 B after year 2000

Pros:

Takes advantage of U.S. government's planned \$2.5 billion investment in new clean coal technologies.

Provides incentive for utilities to accelerate and invest in commercial deployment of these new technologies.

Allows high sulfur coal, of which U.S. has substantial deposits, to continue to play a major role in firing electricity generation without requiring scrubbers or explicitly subsidizing coal producers and/or miners.

Cons:

Extending the deadlines may mean somewhat higher pollution during period of extension.

May allow some utilities who could achieve reductions earlier to wait until new deadline is expired.

- * Note: There is consensus among the working group and the DPC that the bill should include some incentives, as previously recommended by the President's Task Force on Regulatory Relief, for the deployment of Clean Coal Technology. This would include favorable rate regulation measures (such as "presumed prudence" of the CCT investment) to be promulgated by the Federal Energy Regulatory Commission (FERC) and/or state utility commissions.

Timing of Reductions: First Phase

Option 1: by 12/31/94

Additional cost: EPA believes annual cost will not rise relative to Option 2, but will be incurred one year earlier.

Option 2: by 12/31/95

(baseline cost)

Pros (of earlier date):

An earlier date will be seen as more credible by environmentalists.

Earlier date maximizes cumulative reductions.

Cons:

Earlier date leaves less time for technology advances to help in achieving reductions; drives up cost.

Earlier date leaves less time to develop trading system (see below); drives up cost.

Disruption to high sulfur coal producers will be more dramatic.

Earlier date limits fuel switching (and thus dictates scrubbers) because of time involved in opening and permitting low sulfur mines.

CONTROL STRATEGY -- TRADING AND EMISSIONS ALLOCATION

Emissions trading and "marketable permits":

One important way of reducing the cost of any required emissions reductions is to allow utilities to trade allowed emissions -- thereby allowing whichever source is able to achieve the reductions at least cost to undertake the actual reductions.

There is consensus among those who favor "least cost" solutions that a full trading scheme between utilities in all states affected should apply in Phase II of the bill. However, there is some debate as to whether to allow trading in the first phase and, if so, how to structure the trading scheme.

Emissions Trading: First Phase

Option 1: Allow trading of permits between all utilities within a state and within a utility system (even if the system is interstate).

Additional cost: This is used as the "least cost" baseline.

Pros:

Easy to implement, could be regulated by state public utility commissions.

Only slightly more costly than full interstate trading.

Cons:

Could allow some of the dirtiest plants to continue emitting SO₂.

May not be able to implement right away; could require some rule making process.

Emissions Trading: First Phase

Option 2: Provide State's Governors with authority to make re-allocations of any reductions allocated in the bill, plus allow trading within a utility system.

Additional cost: \$0 to \$.5 billion per year
(versus intrastate trading).

Pros:

Retains role for the states in determining how best to manage the effects of air pollution control programs.

Could be easier to implement than other trading schemes because many states already have acid rain control programs in place.

Allows Governors to take into account all economic effects of acid rain controls and to seek to mitigate them.

Cons:

Less fair than trading system, provides arbitrary allocation power to state governments.

Adds additional layer of bureaucracy to trading/allocation system.

Places Governors in difficult situation *vis a vis* competing interests; Governors may prefer Federal control.

By definition less efficient than open trade.

Emissions Trading: First Phase

Option 3: Full interstate tradingAdditional cost:
-\$100 millionPros:

Most flexible and least cost of all options.

Cons:

Extremely difficult to implement; would require lengthy rule-making procedure.

Probably not workable in first phase.

Emissions Trading: First Phase

Option 4: No trading.Additional cost: \$0.7 - \$1 B
(per year, v. full trading)Pros:

Afford protection to high-sulfur coal producers by effectively dictating some minimum amount of scrubbing.

Easiest to implement.

May be difficult to establish trading scheme in short time of Phase One because rule-making procedure could be lengthy.

Cons:

By far most costly of all alternatives.

Dictates scrubbing.

Control Strategy: How to allocate required reductions

Once a trading system is agreed to, it is possible to understand more fully the implications of any allocation strategy to achieve the reductions called for in any bill. There are several options for how to allocate initially the reductions that will be required -- although the actual execution of the reductions will also be affected by the trading strategy adopted.

Allocating Required Reductions

Option 1: Require all plants larger than 100 megawatts nationwide to meet a standard adequate to achieve reduction in first phase (4 million ton reduction would require 2.5 lbs./million BTU). (This would affect 107 plants in 18 states.)

Then require all plants nationwide to meet lower standard needed to achieve required reduction in second phase (9 million tons might require about 1.0 lbs./million BTU standard, again subject to continuing debate and analysis).

Pros:

Fairest of all the options -- requires all plants to meet the same standards.

Creates broader market for emissions trading and thus reduces costs.

Does not create a disproportionate burden for any one region or set of utility companies.

Low cost, since it allows individual plants to meet requirements in any way they choose.

Cons:

More difficult to implement, since it requires regulation of many more plants.

Will engender more widespread political opposition, since 107 plants in 18 states would be affected.

Allocating Required Reductions

Option 2: Require top 20 polluting plants (in phase one) to meet a certain average emissions standard (e.g. enough to achieve 4 million ton reduction -- approx. 1.1 lbs/million BTU). (This would affect 20 plants in 9 states.)

Then require all plants to meet average emissions standard in phase two (e.g., enough to achieve 9 million ton reduction -- estimated to be about 1.0 lbs. per million BTU, although this number is the subject of continuing debate).

Additional cost: \$1 to \$.5 B per year
(without broad trading)

Pros:

Easy to implement (in 1st phase), because we know who biggest emitters are.

Arguably more palatable politically, because this regime would only affect 20 plants in 9 states - thus generating less widespread opposition.

These plants tend to be in regions whose electric rates are somewhat lower than certain other regions.

Cons:

It seems unfair to subject some plants to one standard, other plants to another, less stringent standard.

Designed to force greater use of scrubbers because of narrow focus.

Concentrates cost effects on narrow geographic sector, increasing the political pressure for subsidies.

Reduces effectiveness of any trading scheme, because it creates less of a market for emissions reductions. Thus it drives up costs.

Allocating Required Reductions

Option 3: Allocate equal percentage of reductions to all sources greater than 100 MW with average emission rates of over 0.5lbs/MBTU. Thus all utilities covered would have to reduce emission by say 15 percent, regardless of current emissions.

Additional cost: \$100 - 500 million

Pros:

Spreads the pain -- required reductions spread evenly to all states and not focussed on a particular region.

Provides incentives for all utilities to continue reducing emissions.

Creates a broad market for emissions reductions and thus facilitates trading and drives down costs.

Cons:

Unfair to those states and utilities which have already taken steps to reduce emissions -- still requires further costly reductions in "clean" states, before "dirtier" states have controlled to a comparable level.

Utility rates in high emitting regions (e.g. the Midwest) are lower than those in some with lower emissions -- so it is fair to concentrate required reductions there.

Not entirely consistent with "least cost" control strategy.

Trading to encourage early reductions:

EPA has suggested offering 2 for 1 reduction credits for above-required reductions to sources which achieve greater than their reduction requirements in phase one.

Pros:

This helps achieve early reductions.

Mitigates against negative effect of fuel switching on coal mining producers.

Reduces overall cost of bill, because it obviates the need for some later reductions.

Cons:

Environmental benefits in the aggregate are lessened because total level of emissions reductions is reduced.

Acid rain damage is occurring at a slow enough pace that goal should be to maximize overall reductions, not necessarily encourage early reductions at the expense of later reductions.

Could reduce use of Clean Coal technologies in later phase by encouraging use of scrubber technologies in first phase.

By altering cost-effectiveness calculation with respect to scrubbers, reduces the cost-effectiveness of reductions actually achieved. (Although EPA argues net annual cost of bill is the same.)

Requiring NOx Emissions Reductions:

The focus of this paper heretofore has been SO₂ reductions. Most legislation on the Hill would also require reductions in emissions of NO_x.

Requiring NOx Reductions

Option 1: Require no NO_x reductions below current baseline.

Pros:

Least cost option.

Cons:

Likely to be criticized heavily by environmentalists.

Some NO_x reductions are easily achievable.

Requiring NOx Reductions

Option 2: Require NO_x emission reductions of 2 million tons below current EPA baseline projections.

Additional cost: \$.3 to \$.5 B

Pros:

First 2 million ton reduction can be achieved rather easily through low NO_x burners and combustion modifications.

Will help US comply with NO_x Protocol.

Cons:

Merely maintains NO_x emissions at roughly current levels-- could be seen as inadequate.

Requiring NOx Reductions

Option 3: Require NOx emission reductions of 4 million tons below current EPA baseline projections.

Additional cost: \$1.5 - 2.56 Billion

Pros:

Affords most environmental protection, since NOx emissions contain more acidity than do SO2 emissions.

Will help US comply with NOx Protocol.

Cons:

Costs of NOx reductions escalate sharply above 2 million tons.

Required NOx Reductions

Option 4: Allow SO2/NOx Trading:

Some have suggested that, in that the goal is to reduce overall emissions of acid rain precursors, trading between SO2 and NOx emissions should be allowed.
(See Option 4, Page 6.)

Pros:

Allows more flexibility in achieving overall reductions

Cons:

Depending on amount of SO2 reductions required, could be accused of weakening the bill. (Alternatively, could require higher SO2 reductions as well as trading.)

Old/New Source Emissions Trading:

All of the trading schemes above assume that trading would be allowed only between "old", or existing sources of SO₂ emissions. Some have suggested that trading should be allowed between "old" and "new" sources.

Additional cost: $-\$.3$ to $-\$.5$ Billion
(relative to least-cost "old-old" trading)

Pros:

Least costly of all schemes
Allocates reductions in way
deemed most efficient by marketplace.

Cons:

Re-opens the debate on new source performance standards, and in particular, percentage reduction (as applied to new sources), which was a major issue in the 1977 legislation.

Would be criticized by environmentalists.

Note: Another often discussed issue is whether to allow trading with non-utility industrial sources (which account for 20 percent of SO₂ emissions), if those sources can achieve the reductions more cheaply and certify that they have taken place. The DPC and the working group believe that this trading should be allowed.

Controlling emissions from oil-fired plants:

Some have suggested that oil-fired utility boilers should be subject to a 0.8 lb. per million BTU emission requirement.

Additional cost: \$400 M. per year

Pros:

Spreads the pain by requiring those regions most likely to benefit environmentally from acid rain legislation (e.g., the Northeast) to share in the required reductions.

Can add 1 million tons at low cost to reductions achieved since 1980, since 700,000 ton reduction has already taken place.

Cons:

Unfair to subject utilities in one region to a different, lower standard.

Achieves only 300,000 tons in actual reductions.

Not a cost-effective means of achieving reductions -- cost per ton removed higher than for comparable reductions from coal plants.

Allowing Emission Reduction Credits for Conservation Measures:

Some have suggested that some sort of credit be given to utilities for measures undertaken to promote conservation.

Option 1: No credit.

Option 2: Allow credit of 1 ton reduction for each \$1,000 spent by a utility on conservation measures.

Pros (of credit):

Promoting conservation has other benefits -- such as those on reducing global warming.

Easy to monitor -- utilities in many states already report conservation expenditures to state public utility commissions.

Cons:

Conservation initiatives may not actually contribute to achieving the desired emission reductions.

Depending on level at which credit is granted, may not be a cost-effective way of achieving reductions.

Option 3: Allow credit of 1 ton for those utilities that make expenditures of \$1,000 on conservation AND engage in least cost energy planning and load management practices approved by EPA and state environmental agencies.

Pro:

Helps certify that conservation measures undertaken by utilities really are effective.

Least cost energy planning is a proven way of ensuring cost-effective expenditures.

Cons:

Could raise Federalism issues.

Heavily bureaucratic and potentially inflexible way of achieving conservation.

ACID RAIN OPTIONS

At the request of the Domestic Policy Council, the individual issues presented in the attached discussion paper have been packaged into several options for consideration. The main parameters of five possible options are summarized below.

OPTION A:

* PHASE TWO:

Ten million ton reductions by the year 2000, with a three year extension for clean coal technology. Reductions would be allocated by setting an average emissions standard at approximately 1.0 lbs. per million BTU and requiring all plants in affected states to meet that standard. Full interstate trading would be allowed.

* PHASE ONE:

Five million ton reductions within 5 years from the date of enactment. Emissions would be allocated by requiring the all plants greater than 100MW in affected states (18 states) to meet a standard of 2.5 lbs. per million BTU. Full trading would be allowed between plants within a state, as would trading between plants within a utility system.

COST: \$0.7 billion per year Phase I
\$3.8 billion per year Phase II

OPTION B:

* PHASE TWO:

Same as Option A; except that oil-fired utilities would also be required to make reductions. They would be held to annual average emissions standard of 0.8 lbs/million BTU.

* PHASE ONE:

5 million tons by 1994. Emissions would be allocated by requiring top 20 SO₂ emitting plants (9 states) to meet a standard of 1.1 lbs. per million BTU. Trading by plants within a utility system would be allowed, and Governors would be given authority to re-allocate reductions. Oil plants would held to the same standard as in Phase II. A two for one credit would be allowed for reductions in this phase above those required by the bill, so as to minimize impacts on the coal market.

The principal differences between this and Option A are the narrower allocation scheme in phase one (20 plants vs. 107), the slightly less open trading scheme, the requirements on oil plants, and the early reduction credit designed to help coal.

COSTS: \$0.8 to \$1.3 billion per year in Phase I
\$3.8 billion in per year Phase II

OPTION C:

* PHASE TWO:

10.5 million tons by the year 2000, with a 3 year extension for clean coal technology. Allocation identical to Option A. Trading between "old" and "new" sources would be allowed, however.

* PHASE ONE:

5.5 million tons by 1994. Allocation identical to Option A, but full interstate trading and trading between "new" and "old" sources would be allowed.

The theory behind this option is to allow greater reductions at the same price as Options A and B by having the most open trading scheme possible.

COSTS: \$0.8 billion per year in Phase I
\$3.8 billion per year in Phase II

OPTION D:

PHASE TWO:

Seven million tons by the year 2000, with a three year extension for clean coal technology. Reductions allocated by requiring all plants in affected states to meet an annual average emissions rate of 1.8 lbs. per million BTU. Full interstate trading and trading between "old" and "new" sources permitted.

PHASE ONE:

None.

COSTS: none in Phase I
\$1.0 to \$1.8 billion per year in Phase Two.

OPTION E:**PHASE TWO:**

Ten million tons required by the year 2003, but no NOX reductions required. Since NOX/SO2 trading would be allowed in this option (as in all options), this is likely to translate into roughly 8 million ton SO2 reduction and 2 million ton NOx reduction. To achieve 8 million ton SO2 reduction by annual emissions standard, plants would need to achieve a rate of 1.4 lbs per million BTU. Full Interstate trading allowed.

PHASE ONE:

Four million tons by the year 1995. Reductions would be allocated by requiring all plants in affected states (107 plants, 18 states) to meet an emissions standard of 3.0 lbs. per million BTU. Full interstate trading and trading between "old" and "new" sources would be permitted.

COSTS: \$0.3 to \$0.4 billion in Phase I
\$2.7 to \$3.4 billion in Phase II

ACID RAIN OPTIONS

	<u>Option A</u>	<u>Option B</u>	<u>Option C</u>	<u>Option D</u>	<u>Option E</u>
<u>Phase II Requirements</u>					
Amount.....	10 M Tons	10 M Tons	10.5 M Tons	7 M Tons	10 M Tons
Timing.....	2000	2000	2000	2000	2003
CCT Extension.....	3 Years	3 Years	3 Years	3 Years	N.A.
<u>Phase I Requirements</u>					
Amount.....	5 M Tons	5 M Tons	5.5 M Tons	None	4 M Tons
Timing.....	5 Years from Enactment	1994	1994	None	1995
Targeting in Phase I...	2.5 lbs for top 107 plants	1.1 lbs for top 20 coal plants and 0.8 lbs for oil plants	2.5 lbs for top 107 plants	None	None
Targeting in Phase II...	1.0 lbs for all plants	1.0 lbs for all plants and 0.8 lbs for oil plants	1.0 lbs for all plants	1.8 lbs for plants	1.4 lbs for plants
<u>Trading Requirements</u>					
Phase II.....	Full Inter- state	Full Inter- state	Full Inter- state	Full Inter- state	Full Inter- state
Credits.....	None	2:1 Credit for Phase I reduction	None	None	3.0 lbs for top 107 plants

ACID RAIN OPTIONS

Option A

Option B

Option C

Option D

Option E

Trading Requirements (Cont)

Phase I.....	Intrastate (and Intra-Utility)	Intra-Utility plus Govern- ors given Intrastate Allocation Authority	Full Inter- state	N.A.	Full Inter- state
Existing/New Sources..	No	No	Yes	Yes	Yes
With Non-Utilities....	Yes	Yes	Yes	Yes	Yes
<u>NOx Reductions</u>	2 M Tons Nox/SO ₂ trading allowed	2 M Tons NOx/SO ₂ trading allowed	2 M Tons NOx/SO ₂ trading allowed	2 M Tons NOx/SO ₂ trading allowed	0 (But NOx/SO ₂ trading allowed)
<u>Conservation Credits</u>	1 Ton for \$1,000	1 Ton for \$1,000 with least cost energy planning requirements	None	None	None

Costs (Annual) (\$ in Billions)

Phase I.....	\$0.7 B	\$0.8-\$1.3 B	\$0.8 B	None	\$0.3 B
Phase II.....	\$3.8 B	\$3.8 B	\$3.8 B	\$1.0-\$1.8 B	\$2.7-\$3.4 B

PRESIDENTIAL STATEMENTS

"George Bush remains committed to the goals of the Clean Air Act. We have made some good progress towards cleaner air...Despite good progress in reducing emissions from cars, factories, and power plants, more than 100 cities still do not meet federal clean air standards. Urban ozone is one of the most complex and difficult environmental issues facing this country. Ozone is produced by many sources, but much of it comes from cars and small business. To really tackle this problem will affect the way we work, live and play. But we must act to make continued real progress towards cleaner air."

(Source: Statement contained in "George Bush, Leadership on the Issues" - A collection of speeches and statements The President made during his campaign)

"The most pressing need is to reduce levels of ambient ozone, which contributes to smog and has too often made the air dangerous to breathe. One of my priorities as Vice President has been to lead the search for alternative fuels -- so-called 'clean fuels' such as methanol made from remote natural gas and ethanol made from grain -- and to promote their use."

(Source: Speech made at Scripps Institution, San Diego, CA October 14, 1988)

THE WHITE HOUSE
WASHINGTON

CABINET AFFAIRS STAFFING MEMORANDUM

Date: May 12, 1989 Number: 490,800 Due By: _____

Subject: Domestic Policy Council Meeting on Monday, May 15, 1989 at 2:00 PM
in the Roosevelt Room Re. Acid Rain and Air Toxics

	Action	FYI		Action	FYI
ALL CABINET MEMBERS	☐	☐	CEA	☒	☐
Vice President	☒	☐	CEQ	☐	☐
State	☒	☐	OSTP	☒	☐
Treasury	☐	☒	_____	☐	☐
Defense	☒	☐	_____	☐	☐
Justice	☒	☐	_____	☐	☐
Interior	☒	☐	_____	☐	☐
Agriculture	☒	☐	Scowcroft	☒	☐
Commerce	☒	☐	Porter	☒	☐
Labor	☒	☐	Breeden	☒	☐
HHS	☒	☐	Cicconi (For WH Staffing)	☒	☐
HUD	☒	☐	BATES	☒	☐
Transportation	☒	☐	_____	☐	☐
Energy	☒	☐	_____	☐	☐
Education	☒	☐	_____	☐	☐
Veterans	☒	☐	_____	☐	☐
OMB	☒	☐	_____	☐	☐
USTR	☒	☐	_____	☐	☐
Chief of Staff	☒	☐	Executive Secretary for:		
UN	☐	☐	DPC	☐	☐
CIA	☐	☐	EPC	☐	☒
National Drug Policy	☐	☐	_____	☐	☐
EPA	☒	☐	_____	☐	☐
GSA	☐	☐	_____	☐	☐
NASA	☐	☐	_____	☐	☐
OPM	☐	☐	_____	☐	☐
SBA	☐	☐	_____	☐	☐

REMARKS: Attached is the paper for the DPC meeting on Monday May 15 at 2:00 in the Roosevelt Room. Please note that this is a CLOSE HOLD DOCUMENT AND NO COPIES SHOULD BE MADE.

RETURN TO:

☐ David Q. Bates
Cabinet Secretary
456-2174
(1st Floor, West Wing)

☐ Associate Director
Office of Cabinet Affairs
456-2800
(Room 235, OE08)

THE WHITE HOUSE

WASHINGTON

May 12, 1989

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

The Secretary of State
The Secretary of Defense
The Secretary of Agriculture
The Secretary of Commerce
The Secretary of Labor
The Secretary of Transportation

FROM: KEN YALE *KY*
Executive Secretary

SUBJECT: May 15 Domestic Policy Council Meeting

There will be a meeting of the Domestic Policy Council on Monday May 15, at 2:00 PM in the Roosevelt Room.

Attached are close hold documents for discussion at the meeting. The materials incorporate comments and suggestions of Council members. PLEASE REFRAIN FROM MAKING COPIES OF THE ATTACHED DOCUMENTS.

The meeting will be used to prepare for future Council meetings with the President.

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01a. Report	"Toxic Air Pollution Control." (12 pp.)	05/12/89	~~P-5~~	

Collection:

Record Group: Bush Presidential Records
Office: Speechwriting, White House Office of
Series: Speech File, Backup
Subseries:
WHORM Cat.:
File Location: Clean Air Act Announcement 6/8/89 [4]

Open on Expiration of PRA
 (Document Follows)
 By SN (NLGB) on 4/5/2005

Date Closed: 9/30/2004	OA/ID Number: 06264
FOIA/SYS Case #:	
Re-review Case #: 2004-2265-S	
P-2/P-5 Review Case #:	
MR Case #:	Appeal Case #:
MR Disposition:	Appeal Disposition:
Disposition Date:	Disposition Date:

RESTRICTION CODES

Presidential Records Act - [44 U.S.C. 2204(a)]

- P-1 National Security Classified Information [(a)(1) of the PRA]
- P-2 Relating to the appointment to Federal office [(a)(2) of the PRA]
- P-3 Release would violate a Federal statute [(a)(3) of the PRA]
- P-4 Release would disclose trade secrets or confidential commercial or financial information [(a)(4) of the PRA]
- P-5 Release would disclose confidential advice between the President and his advisors, or between such advisors [(a)(5) of the PRA]
- P-6 Release would constitute a clearly unwarranted invasion of personal privacy [(a)(6) of the PRA]

C. Closed in accordance with restrictions contained in donor's deed of gift.

Freedom of Information Act - [5 U.S.C. 552(b)]

- (b)(1) National security classified information [(b)(1) of the FOIA]
- (b)(2) Release would disclose internal personnel rules and practices of an agency [(b)(2) of the FOIA]
- (b)(3) Release would violate a Federal statute [(b)(3) of the FOIA]
- (b)(4) Release would disclose trade secrets or confidential or financial information [(b)(4) of the FOIA]
- (b)(6) Release would constitute a clearly unwarranted invasion of personal privacy [(b)(6) of the FOIA]
- (b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
- (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
- (b)(9) Release would disclose geological or geophysical information

May 12, 1989

Toxic Air Pollution Control

Background

Since 1974, EPA has been required to set health-based emission standards for hazardous air pollutants. Section 112 of the Clean Air Act requires EPA to protect public health and the environment "with an ample margin of safety" to ensure protection of the most vulnerable class of individuals (e.g., elderly, children) or species.

Estimates submitted to EPA show that 2.7 billion pounds of toxic chemicals are emitted annually. Approximately 280 toxic compounds were identified that are emitted in quantities that pose some risks. About 45 are carcinogens and are estimated to cause between 1500 and 3000 additional cancer deaths per year, of which 25 percent are caused by large stationary sources, 25 percent by small area wide sources and 50 percent by mobile sources. Non-cancer effects have not been quantified but would include reproductive and birth defects and neurotoxicity. High quality data exists for only 60-80 chemicals which would most likely be the basis for an initial regulatory program under revised legislation.

A majority of the number of identified carcinogens is emitted by about 30 industrial categories, including steel mills (coke ovens), rubber, pulp and paper, chromium electroplating, electric utility cooling towers, and solvent users. Illustrative lists of chemicals, emitting sources, and their cancer incidences are Attachments A - C. However, almost 75 percent of the total pounds of toxic pollution emitted are volatile organic compounds (VOCs) which are principally emitted from automobiles and smaller area sources such as gasoline stations and dry cleaners.

The desirability of an international convention to control VOC emissions is currently under consideration in the Economic Commission for Europe, in which the U.S. is an active participant. An Administration policy on air toxics would provide a sound basis for a U.S. position on VOC controls in any future negotiations.

Current Legislative Status

Two proposed bills to control stationary sources have been introduced by this Congress. H.R. 4 (Dingell) reintroduces a bill drafted by EPA last year. It did not represent the Reagan Administration position. S. 816 (Baucus) is far more stringent than the regulatory scheme in H.R. 4. But both bills are conceptually based on regulating a specific list of chemicals with regulatory priority based on toxicity, volume and the number of chemicals emitted by an industrial category. Both

bills also require the regulation of specific industrial categories through deployment of technology-based standards, requiring maximum controls subject to economic and technical feasibility. Future follow-up actions would be required if the technologies prescribed do not reduce risk sufficiently within the allowed time frames. Exceptions to (or less stringent) regulations can be promulgated or permitted on an individual basis if the industrial sources can demonstrate negligible risk. Additional details of the above elements are in Attachment D and a comparison of the House and Senate bills is Attachment E.

The Current Program Will Not Work

The current law is unwieldy, fraught with contradictions, and provides such little regulatory discretion that it is impossible to administer. The statutory requirement to "protect the public health with an ample margin of safety" is inherently unworkable for carcinogens. There simply is no identifiable threshold at which carcinogens pose no health risk. Yet a zero emission requirement is tantamount to shutting down many of the largest and most vital U.S. industries.

As a result, over the past 15 years since enactment of Section 112 of the Act, EPA has promulgated only seven regulations controlling toxic air pollutants. Further, attempts by EPA to balance risk reductions with economic and even technical feasibility were undermined by a recent (1987) D.C. Appeals Court decision. The Court ruled that a safe level must be met without regard to costs or technical feasibility of the controls required. Meeting the test would obviously shut down or severely disrupt many industries. Under current law, plants must comply within 90 days of promulgation and can receive a one-time extension for only two years if it is technically (as opposed to economically) infeasible to comply.

Maximizing regulatory control under other Clean Air Act sections and other applicable statutes instead of regulation under Section 112 is also not viable -- even though a significant percentage of the problem (VOC's) is being addressed under other statutory authorities. Many toxic pollutants and sources would remain uncontrolled, since not all toxic pollutants can be addressed by other authorities. Second, EPA has already been subject to suits by NRDC to push forward under Section 112. Ultimately, without an active EPA program, the courts will only substitute their regulatory policies for that of the Executive Branch. Last, but not least, EPA would be in the impossible situation of justifying why it chose not to pursue controls over identified carcinogens.

In summary, the zero tolerance level mandated under current law is suboptimal and if continued would be extremely costly, politically difficult and would threaten the shut-down of many plants in several industries from court mandates.

Reductions of health risk occurring under other current programs and proposed legislation

There are several control measures already in existence and several others which could be accelerated, strengthened or initiated under current laws that would greatly reduce the health threat from toxic pollutants. Furthermore, much of the VOC emission problem will be addressed as part of the ozone non-attainment program -- at least in those areas that are in non-attainment. Nearly 50 percent of VOC emissions occur in non-attainment areas which will be subject to additional controls through the Administration's proposed legislation.

Of particular importance is the control of mobile sources, which will, alone, reduce 700 cancer deaths per year by 1995.

- (1) Control of diesel particulates - EPA estimates that particulate emissions from diesel engines are responsible for 520 cancers per year. By 1995, these standards already in place will reduce air toxics risks from diesel bus and truck emissions by 185 cancers per year and by roughly 400 cancers per year by 2005.
- (2) Control of hydrocarbon emissions - EPA estimates that emissions from gasoline-fueled vehicles are responsible for 700 deaths per year. By 1995, the replacement of older (1970 or earlier) cars in the fleet with new cars meeting the current tailpipe standards will reduce air toxics risks by 214 cancers per year. In addition, options to require oxygenated fuels and a neat fuels program to address non-attainment problems could yield a further reduction of 75 cancers per year.

Attachment F shows that toxic emissions from major stationary sources rank in the third tier of overall risks facing Americans today. Emissions from cars and trucks pose a far greater risk, and implementation of those programs will result in the greatest risk reduction.

Another group of control measures that can be implemented (in addition to options presented below) are those controllable under other current authorities, e.g., RCRA controls for hazardous waste treatment, storage, and disposal facilities. EPA estimates that its current rulemaking to limit air toxic emissions from these hazardous waste facilities would reduce the risks by 120 cancer deaths per year.

A listing of other EPA authorities, and the reduced health threat associated with their implementation, is Attachment G.

LEGISLATIVE REFORM PROPOSALS:

The remaining health risk that cannot be addressed under current laws or proposed legislation to control ozone is concentrated in large, stationary sources and a large number of small "area-wide" emitters. In developing new legislation to address these sources, there are five principal objectives that have guided the development of options.

Legislative Principles

1. To achieve reductions in toxic pollutants as soon as possible. As a nation we have reduced pollutants posing far less risk to a far greater extent. The early reduction of these significant risks should be a top priority.
2. To provide sufficient flexibility that risk reduction can be balanced against economic and technical feasibility considerations. Flexibility should also be maintained to ensure that neither over- or under-control is the ultimate result of the regulatory strategy adopted.
3. To set in place a comprehensive long-term strategy that could lead to additional reductions in risks as new pollutant compounds are identified, or technical and economic feasibilities are improved sufficiently to reduce existing risk further.
4. Encourage industries to make reductions on their own by crediting early non-mandated reductions against total reductions subsequently required in Federal regulation.

Program Reform Options

Adherence to the above principles presents a general framework for legislation. The short-term and long-term control objectives can be met by having two phases -- an initial phase that will lead to early but not complete reductions in risk and a second phase to deal with the admittedly far more difficult "residual risk" that could not be captured in the initial round of reductions.

Phase I

For the major industrial dischargers of toxic air pollution, early reduction and flexibility in control strategies can be achieved through one of three basic regulatory strategies.

Alternative 1: Shift the basis for regulation from solely health-based to an "unreasonable risk" standard. Factors to be considered in establishing the unreasonable risk level for industrial sources would include risks (e.g., aggregate health effects), costs and availability of substitutes. The unreasonable risk test would explicitly balance the benefits of regulation against the cost of regulation and free the Agency from the rigidity of a zero risk test under current law that has precluded regulation.

Furthermore, the standard could be coupled with a commitment to address a specific list of the industrial sources posing the greatest risk within, for example, the next three or five years and by implementing regulatory activities under other authorities as described on page 3.

Advantages of Alternative 1

- o Attachment H shows that, among stationary sources, the major risk is posed by one industry (electroplating), the control of which by itself would reduce 50 percent of all annual cancer deaths resulting from stationary sources.
- o The standards established in Federal regulation would target controls at the most significant health effects and avoid "control for control's sake." With a finite amount of financial resources available for this problem it is essential that capital be directed where benefits will be achieved.
- o It would minimize unnecessary economic dislocations and allow EPA to balance higher risk against higher costs of control.

Disadvantages to Alternative 1

- o This approach has many of the same inherent defects of the current program -- it requires extensive and detailed health and engineering data before decisions can be made. Further, by combining the base technology and residual risk decision, litigation over the admittedly imprecise "choice" will be extensive.
- o Experience with the balancing of costs and benefits under other EPA statutes (e.g., Toxic Substance Control Act) has proven that an unreasonable risk basis is slow and cumbersome.
- o Without some strategy for the residual risk the legislation would be criticized as not protective of public health.
- o The mobile source and RCRA controls included in this alternative can be done under any option.

Alternative 2: Implement a modified version of the the Maximum Available Control Technology (MACT) program provided currently in H.R. 4. Implement Federal regulations through a State permit program modeled after the Clean Water Act program to control toxic water pollutants.

Under this regulatory program, EPA would list about 125 industrial categories for control on schedules requiring controls by dates 5 to 12 years after promulgation. Another 125 would be discretionary for regulation and have compliance dates of 10-12 years from enactment.

For newly constructed sources, MACT would be defined as best achievable technology considering costs and technical feasibility. For existing sources, MACT would be defined as the maximum achievable "in common practice" by the "better performing sources," i.e., the "average of the best technologies." In either instance single national regulations would establish the specific performance standards for all sources within the regulated category.

Specifically, this option would require sources to use maximum available control technology economically achievable on source categories established by EPA, except:

- o Exempt sources or categories presenting negligible risk.
- o Exempt sources from controls where they have achieved 90 percent emission reduction for VOC's or 95 percent for particulates.
- o Area sources may use "generally available" control technology.
- o Exempt utility boilers from control until EPA performs a study and reports to Congress.
- o Sources emitting less than 10 tons per year of one chemical or 25 tons of a mixture are not included (except when area sources are listed).

Then each State (or EPA if a State does not accept delegation) will issue permits to individual sources. Based on negotiations with the source the States will set actual technology requirements needed to meet the Federal emission limits. Technologies may not be the same as referenced in the EPA regulation, but the emission limits would be met. This allows plants to meet Federal limits in the most cost-effective way, based on the unique production, site location, economic and environmental capabilities of the permittee.

Advantages of Alternative 2

- o Information on each community's exposure is now, by law, available in local public libraries. The availability of this information is increasing pressure on State and local governments to reduce community exposure to air toxics. Many of these governments lack resources and expertise to effectively regulate major industrial sources. The standards for industry as a whole should be Federal standards which take into account economic feasibility in defining our expectations of industry.
- o The performance requirements under MACT would be patterned very closely after the existing Best Available Control Technology (BACT) program currently in place for controlling non-toxic air pollutants. It is, therefore, familiar to the regulated community.
- o Establishes a regulatory framework that provides significant discretion to EPA and yet is consistent with the national Federal regulatory structure already in the Clean Air Act.
- o Is the most likely to obtain Congressional and state support since it is consistent with H.R. 4.

Disadvantages to Alternative 2

- o No early reduction can be achieved prior to the completion of the lengthy (5 to 10 years) and arduous task of promulgating the nearly 125 separate control regulations. It violates one of the principal legislative objectives -- to obtain early reductions.
- o Rigid technology-based standards have the highest likelihood of over-control, especially if combined with a percentage reduction requirement in Phase II as proposed by EPA.
- o Federal regulation can not address the large number and wide variety of small diffuse sources.

Alternative 3: Alternative II but, get early risk reductions through the State permit program before MACT is issued.

Under the toxic water pollution control program, prior to issuance of Federal regulations, permits were issued by States (or EPA if not delegated) in accordance with "best engineering" judgment. Since the Federal technology-based regulations for toxic pollutants took over a decade after passage of the Act in 1972 to develop), the vast majority of plants operated under these "BEJ" permits. They required, as a general rule, the "best of the average" technologies readily available and achieved roughly 75 percent reductions in emissions. When Federal guidelines were finally promulgated State-issued permits for each plant are then adjusted to accommodate the new limits.

Advantages of Alternative 3

- o The "BEJ" permit system can be implemented rapidly and can achieve significant (75 percent) reductions in toxic emissions before the lengthy, arduous, federal MACT regulatory scheme is promulgated and fought through litigation.
- o The permit system is already well established in other State environmental programs, (Water and Hazardous Waste) discharger, and should be easily adapted to air emissions. Industries are familiar with the permitting process and the chemistry of the pollutants being controlled.
- o From the start it places the policing power at the State level where it belongs and places in EPA its proper standard setting and oversight responsibility. However, the vast majority of the work would be done by the states and by the industries themselves which would be required to have rigorous monitoring programs and provide emission data to the State on a quarterly basis.
- o Can also deal with small diffuse "area-wide" sources in the same manner as in the Clean Water Act -- through the use of area-wide or general permits. These sources are so varied and diffuse that they will not likely be covered by Federal regulations

Disadvantages of Alternative 3

- o The water permit program had considerable difficulty in getting started, with large backlogs in the mid-1980's. Industry will be very concerned about a repeat of this process.
- o Due to its earlier inception, will increase State costs in the short run. States will demand additional Federal grant support or will refuse delegation, requiring additional EPA permit staff instead. This is only for the near term reductions, since after MACT regulations are issued, a permit program is envisioned.

Phase II

With the majority of risk reduced by Phase I controls the issue now shifts to the longer run control of emissions where the "residual risk" is still unacceptable. By definition, the costs of control to address the residual risk will increase dramatically and the technology will be far more sophisticated to install and operate. EPA estimates, however, that only a small percentage of major sources will have residual risks of concern. Therefore, the legislative framework that EPA must use to establish additional controls is as important as the level of control. Without flexibility, EPA runs the greatest risk of over-controlling sources.

Alternative 1. Evaluate the residual risk after controls are implemented and make legislative recommendations at that time.

Advantages of Alternative 1

- o Experience in other control programs has shown that well-operated technologies will often exceed the engineering estimates of performance and that industries often build in extra reduction capacity to ensure against violations. Therefore, actual remaining risk may well be less than the models predict.
- o Because EPA uses a very conservative risk model in estimating health effects of toxic air pollutants, establishing rigid deadlines or minimum further reductions to deal with residual risk now will most likely lead to over-controls. Given the cost of further controls, decisions should be based to the greatest extent possible on actual risk levels, not models.
- o Postponing mandatory action also allows sufficient time for needed research and development efforts by industry to develop new control methods or lower emitting production techniques.

Disadvantages of Alternative 1

- o Precludes EPA from acting on residual risks even where subsequent analysis demonstrates a need or subsequent controls become available.
- o Provides no incentive for industry to develop new or innovative control technologies.

Alternative 2: Require an average of 90 percent reductions of current emissions for pollutants that the Administration determines would continue to present a serious or widespread risk of adverse effects to health.

Determinations of the need for further reductions would be made based on post-MACT compliance. A five-year deadline for implementation of additional controls would be set. The strict 90 percent rule in H.R. 4 would be tempered by EPA's proposal to allow extensions of the deadlines for implementation if "reasonable further progress" is demonstrated. The definition of further progress would include appropriate private investment in controls and research and development leading to new controls.

Advantages to Alternative 2

- o Would have the greatest chance of obtaining Congressional support since it follows the model established in H.R. 4.
- o The 90 percent reduction in 5 years in H.R. 4 was arbitrarily selected and should be tempered by allowing more time for needed controls to be put in place.
- o Ensures that residual health risks are addressed nationally in a moderate, cost-effective way.

Disadvantages of Alternative 2

- o Leads to the greatest likelihood of either under- or over-control for the sake of regulatory convenience.
- o Any percentage requirement is arbitrary and can't reflect the purpose of the legislation, which is to achieve health-based goals.
- o The baseline data from which reductions take place is seriously flawed including incomplete data from some industries and no information from nearly 20 percent of the sources.
- o Places a tremendous burden on industry to demonstrate that arbitrarily set reductions are wrong or that risks are negligible. Further, waivers and exemptions will be litigated extensively, especially if the Federal EPA administers the program.

Alternative 3: Establish a risk threshold of between 10^{-4} and 10^{-6} (i.e., between one cancer death in 10,000 and one cancer death in a million individuals at risk). This concept would require emission reductions beyond MACT to whatever extent was needed to achieve the tolerable risk level. This may be more or less than the 90 percent requirement of Alternative 2. A range of 10^{-4} to 10^{-6} is selected because it is often used as a benchmark in other risk-based decisions in EPA, FDA and OSHA. EPA has recently extended the range to 10^{-7} (one in 10 million) for some Superfund and RCRA decisions but the 10^{-4} to 10^{-6} range remains the most common.

It is assumed that either MACT or the risk range threshold would apply whichever is the more stringent. This concept is consistent with other EPA technology-based regulatory programs. If the risk-based threshold could be achieved through the employment of less than MACT, plants nevertheless would be required to put MACT in place subject to the normal costs and technical feasibility tests. Therefore the health-based standard applies only to the residual risk and not the overall level of risk posed by the discharge.

Advantages of Alternative 3

- o Requires only as much additional reduction as needed to meet the health-based objectives. On the other hand, this may require more than the 90 percent reduction in Alternative 2. It prevents over-controls in the much more expensive second phase and yet ensures that the health objectives are met.
- o It can tailor deadlines for compliance to remaining risk levels allowing the Nation's finite resources to be concentrated on the most serious risk remaining and leaving lesser residual risks to be dealt with later.
- o Could incorporate the same flexibility for deadline extension system as in Alternative 2, based on a demonstration of reasonable further progress.

Disadvantages to Alternative 3

- o Unlike Option 1, which is based on actual risk, places entirely too much weight on risk assessment methodologies and entirely too much power in the hands of modelers.
- o Could just as easily require greater reduction than the admittedly arbitrary 90 percent required in Option 2 and therefore result in higher costs for some plants.
- o A range of 10^{-4} to 10^{-6} will likely end up at 10^{-5} , which could be technically infeasible. Interim additional measures need to be added to this option.

Costs of Controls

Total industry costs and economic effects can not be estimated with any accuracy. Such estimates would require knowledge of which industries would be regulated, and which control options would be available for each industry. The costs of different control options would then be evaluated against the economic and financial viability of the industry before one is selected and promulgated.

Phase I

In the clear absence of that knowledge several estimates have been generated with significant estimating error. These range from \$0.7 to \$2.6 billion per year. It is generally agreed that \$2 billion per year estimate is a reasonable point estimate for the Phase I program. Furthermore, the water pollution control program, which regulated the same industries and pollutants, and after which the toxic air control program is modeled, is costing \$1.5 - \$2.0 billion per year in 1988 dollars.

There will likely be no difference in costs between Alternative 2 and 3, since the issue is one of timing. A BEJ permit process will achieve much of the reductions sooner whereas Alternative 2 would postpone costs until Federal regulations are in place. Except for the time-cost of money, total costs can be assumed to be equal.

Alternative 1 would be less expensive because a reasonable risk strategy would certainly require no greater than MACT technology and may avoid regulating several industries entirely.

Phase II

There are even fewer estimates for Phase II, which would be far more difficult to predict. CMA estimates range from \$1 billion per year to as high as \$14 billion per year. An "order of magnitude" estimate of an additional \$2.0 billion per year over Phase I controls would represent restrictive health-based standard for a small percentage of those sources regulated under Phase I. The principal industrial emitter subject to Phase II controls would be coke ovens.

A summary of the costs and benefits of these options follow.

Costs of Controls

<u>Base Program Legislative Options</u>	<u>Annual Cost (\$ 1989)</u>	<u>Benefits (Cancer Deaths Avoided)</u>
Base Program	-	700-1200
<u>Phase I</u>		
All Options	\$0.7 to 2.6B	700-1500
<u>Phase II</u>		
Dowd 1/	\$1.4 billion	100-300
EPA	\$0.5 billion	0-50
CMA 1/	\$1-14 billion	100-300

1/ Assumes that risk reduction to 10^{-6} (one in a million).

Decisions

Phase I

- ☐ Alternative 1. National standards of unreasonable risk.
- ☐ Alternative 2. National standards of Maximum Available Control Technology (MACT).
- ☐ Alternative 3. Early reductions through permits, then MACT,

Phase II

- ☐ Alternative 1. Seek phase II legislation after evaluation of implemented controls.
- ☐ Alternative 2. 90 percent reduction from uncontrolled level where risk is serious.
- ☐ Alternative 3. Reduce to risk range threshold.

1987 Air Toxics Inventory
Top 25 Toxic Pollutants By Pounds Emitted Per Year

	Pollutant	M Lbs./Yr Emitted	Percent of Total	Cumulative Percent
*	1. Toluene	236	9.8%	9.8%
	2. Ammonia	233	9.7%	19.6%
	3. Acetone	186	7.8%	27.3%
	4. Methanol	183	7.6%	35.0%
	5. Carbon Disulfide	137	5.7%	40.7%
	6. Trichloroethane	131	5.5%	46.1%
	7. Methyl Ethyl Ketone	125	5.2%	51.4%
*	8. Xylene	120	5.0%	56.4%
**	9. Dichloromethane	112	4.7%	61.0%
	10. Chlorine	103	4.3%	65.3%
	11. Aluminum Oxide	73	3.0%	68.4%
	12. Ethylene	54	2.3%	70.6%
	13. Hydrochloric Acid	50	2.1%	72.7%
	14. Freon 113	49	2.0%	74.8%
*	15. Trichloroethylene	47	2.0%	76.7%
	16. Propylene	37	1.5%	78.3%
	17. Glycol Ethers	32	1.3%	79.6%
	18. Tetrachloroethylene	28	1.2%	80.8%
	19. M-Butyl Alcohol	27	1.1%	81.9%
	20. Methyl Isobutyl Keto	25	1.0%	82.9%
**	21. Benzene	25	1.0%	84.0%
	22. Styrene	25	1.0%	85.0%
**	23. Chloroform	24	1.0%	86.0%
	24. Chloromethane	21	0.9%	86.9%
	25. Carbonyl Sulfide	20	0.8%	87.7%

* Denotes known neurotoxin.

** Denotes known carcinogen.

**NIHAPS STUDY: PRELIMINARY APPROXIMATION OF ANNUAL INCIDENCE
AND MAXIMUM LIFETIME RISK**

Pollutants Having Some Evidence of Carcinogenicity*	Preliminary Estimate of Maximum Individual Individual Lifetime Risk**	Preliminary Estimate of Annual Incidence**
Acrylamide	7.4x10-5	0.01
Acrylonitrile	3.8x10-3	0.42
Allylchloride	1.3x10-6	<0.01
Arsenic	6.8x10-3	4.70
Benzene	8.0x10-3	32.30
Benzylchloride	3.0x10-5	<0.01
Beryllium	1.0x10-4	1.20
1,3 Butadiene	9.7x10-6	0.01
Cadmium	7.8x10-4	16.30
Carbon Tetrachloride	8.8x10-4	14.00
Chloroform	3.0x10-3	0.27
Chromium	1.6x10-1	330.0
Coke Oven Emissions	3.0x10-2	8.60
Diethanolamine	3.0x10-7	<0.01
Diethyl phthalate	9.8x10-6	<0.01
Epichlorohydrin	1.9x10-6	<0.01
Ethyl acrylate	4.7x10-5	<0.01
Ethylene dibromide	1.6x10-4	26.70
Ethylene dichloride	2.9x10-4	44.00
Ethylene oxide	6.8x10-3	47.80
Formaldehyde	6.1x10-4	1.60
Methyl chloride	1.3x10-5	<0.01
Methylene chloride	9.0x10-6	1.0
4,4 Methylene dianiline	1.8x10-3	0.02
Nickel	1.6x10-3	80.00
Nitrobenzene	1.2x10-6	<0.01
Nitrosodimethylamine	6.0x10-9	<0.01
Pentachlorophenol	1.7x10-5	0.12
Perchloroethylene	4.6x10-4	2.90
PCBs	3.0x10-4	0.21
Propylene dichloride	2.1x10-6	<0.01
Propylene oxide	3.0x10-2	0.97
Styrene	3.3x10-5	<0.01
Terephthalic acid	1.8x10-5	<0.01
Trichloroethylene	1.0x10-4	9.70
Vinyl chloride	3.8x10-3	11.70
Vinylidene chloride	4.2x10-3	0.04
Total		634.7

- * The weight of evidence of carcinogenicity for the compounds listed varies greatly, from very limited to very substantial. Further, the extent of evaluation and health review performed varies considerably among compounds. However, for the purposes of this report, a conservative scenario (i.e., that all compounds examined could be human carcinogens) has been assumed.
- ** Because of the uncertainties in the data used to make these estimates, they should be regarded as rough approximations of total incidence and maximum lifetime individual risk. Estimates of incidence for individual compounds are much less certain. These incidence and maximum risk estimates have been performed to provide a rough idea of the possible total magnitude of the air toxics problem, and will be used only for priority-setting and to provide policy guidance.
- Risk estimates assume that all species of chromium and nickel are carcinogenic, although only certain species have evidence of carcinogenicity. Current data do not allow differentiation among species.

**Regulatory Activities To Be Undertaken
in the Short Term Under a Modified Section 112**

<u>Pollutant/Source Category</u>	<u>Baseline Cancer Incidence</u>
<u>Benzene</u> Coke By-Products	3
<u>13-Butadiene</u> S-B Rubber	10
<u>Chloroform</u> Pulp and Paper	2
<u>Chromium</u> Chrome Electroplating Cooling Towers	120 55
<u>Coke Oven Emissions</u> Coke Ovens	7
<u>Ethylene Oxide</u> Sterilization	4
<u>Methylene Chloride</u> Solvent Use	4
<u>Perchloroethylene</u> Dry Cleaning Solvent Use	3 5
<u>Trichloroethylene</u> Solvent Use	6
<u>Multi-Pollutant Source Category (HON)</u>	
Sources of 13-Butadiene, Carbon Tetrachloride Chloroform, Ethylene Dichloride, Ethylene Oxide, Methylene chloride, Perchloroethylene, and Trichloroethylene	21

Withdrawal/Redaction Sheet

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01b. Report	Attachment D, re: "Elements." (1 pp.)	n.d.	~~P-5~~	

Collection:

Record Group: Bush Presidential Records
Office: Speechwriting, White House Office of
Series: Speech File, Backup
Subseries:
WHORM Cat.:
File Location: Clean Air Act Announcement 6/8/89 [4]

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Date Closed: 9/30/2004 FOIA/SYS Case #: Re-review Case #: 2004-2265-S P-2/P-5 Review Case #:	OA/ID Number: 06264
MR Case #: MR Disposition: Disposition Date:	Appeal Case #: Appeal Disposition: Disposition Date:

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 (b)(7) Release would disclose information compiled for law enforcement purposes [(b)(7) of the FOIA]
 (b)(8) Release would disclose information concerning the regulation of financial institutions [(b)(8) of the FOIA]
 (b)(9) Release would disclose geological or geophysical information

Elements

1. Chemical list
2. Source Categories List
3. Technology-based standard
4. Residual Risk follow-up
5. Negligible-risk variance and other correction factors
6. Permit system/permit fees

1. Chemical List

- o Used to identify and prioritize source categories for regulation; not for chemical-by-chemical regulation.
- o Cover credible amount of toxic air releases reported under Toxic Release Inventory (SARA 313).

2. Source Categories List

- o Identified as sources of chemicals on list.
- o Prioritized: Sources of most toxic chemicals released in largest amounts in urban areas are ranked at the top of the scale.

3. Technology-based standards

- o Based on cost and feasibility.
- o Apply to major sources (emit 10 tons per year of one listed chemical, or 25 tons of a mixture).
- o Achieve a good level of control for toxics emissions generally.
- o Findings not risk-based, corrections for high-risk under-control or low-risk, over-controls are separately applied.

4. Residual Risk follow-up

- o Check risk after technology-based controls are in place.
- o Further regulate as needed.

5. Negligible-risk variances and other corrections

- o Sources demonstrate negligible risk to obtain variance from regulation.
- o EPA discretion to drop source categories causing negligible risk.

6. Permits System/Permit Fees

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
01c. Report	Attachment E, re: "Comparison of H.R. 4 and S. 816." (3 pp.)	n.d.	~~P-5~~	

Collection:

Record Group: Bush Presidential Records
Office: Speechwriting, White House Office of
Series: Speech File, Backup
Subseries:
WHORM Cat.:
File Location: Clean Air Act Announcement 6/8/89 [4]

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Comparison of H.R. 4 and S. 816

Number of Categories Regulated

H.R. 4 (EPA)

- o First 50% of initial list to be regulated.
- o Second 50% of initial list to be discretionary with EPA.
- o EPA may drop any category presenting negligible risk.

Senate bill

- o 100% of initial list to be regulated.

Technology Standard

H.R. 4 (EPA)

- o Maximum achievable reduction considering cost and feasibility.
- o New sources: Most stringent achieved in practice by a source in the category or subcategory, considering cost and feasibility.
- o Existing Sources: may be less stringently controlled than new sources.
- o Variance from compliance when source presents negligible risk.
- o Enforced under operating permit.

Additional

EPA recommendations:

- o Variance for source achieving voluntary 90% reduction in emissions of listed pollutants in previous 5 years. (Particulates control credit may be based more appropriately on a different percent).
- o Modified sources should be under existing-source standards not new source standards.

This will limit new source stringency to those sources that are newly built (or more than half rebuilt) where industry says it designs state-of-the-art for business reasons.

Most of the industry concerns about the new source provision have had to do with modified, not newly-built sources. This would allay those concerns.

Senate bill

- o Maximum achievable reduction considering cost and feasibility.
- o New sources more stringently controlled than existing sources as under H.R. 4, but existing source benchmark of expected reduction is 90% reduction from uncontrolled emissions.
- o No variance for negligible risk.
- o Enforcement under operating permit.

Alternative

- o EPA would provide informational guidance on Best Practicable Control Technology (BPCT). BPCT would describe control technologies, their costs and what emission reductions they yield. The states would use BPCT information in writing permits for sources.

Residual Risk

H.R. 4 (EPA)

- o After-control "significant risk of serious or widespread adverse effects on health" would prompt further control (A high risk threshold).
- o Added control - up to 90% further reduction in emissions -- whatever percent protects from significant risk of serious or widespread effects.
- o Compliance period is 5 years.

Senate Bill

- o After-control risk of 10^{-4} or above prompts further control.
- o Added control to get below 10^{-4} .

- o Immediate compliance, but may obtain "extraordinary economic hardship" extension up to 5 years.

Alternative

- o EPA guidance on assessing residual risk.
- o States conduct source by assessment and decide on further control.
(Neighborhood epidemiology studies are not feasible)

Variances

H.R. 4 (EPA)

- o Variance from any added control for sources at negligible risk.
- o Grace period of 5 years from time any controls are installed for purposes of other Clean Air Act programs.

EPA recommended

- o Variance from relevant MACT requirements for sources achieving 90% reduction in emissions of listed pollutants in the 5 years.

Senate bill

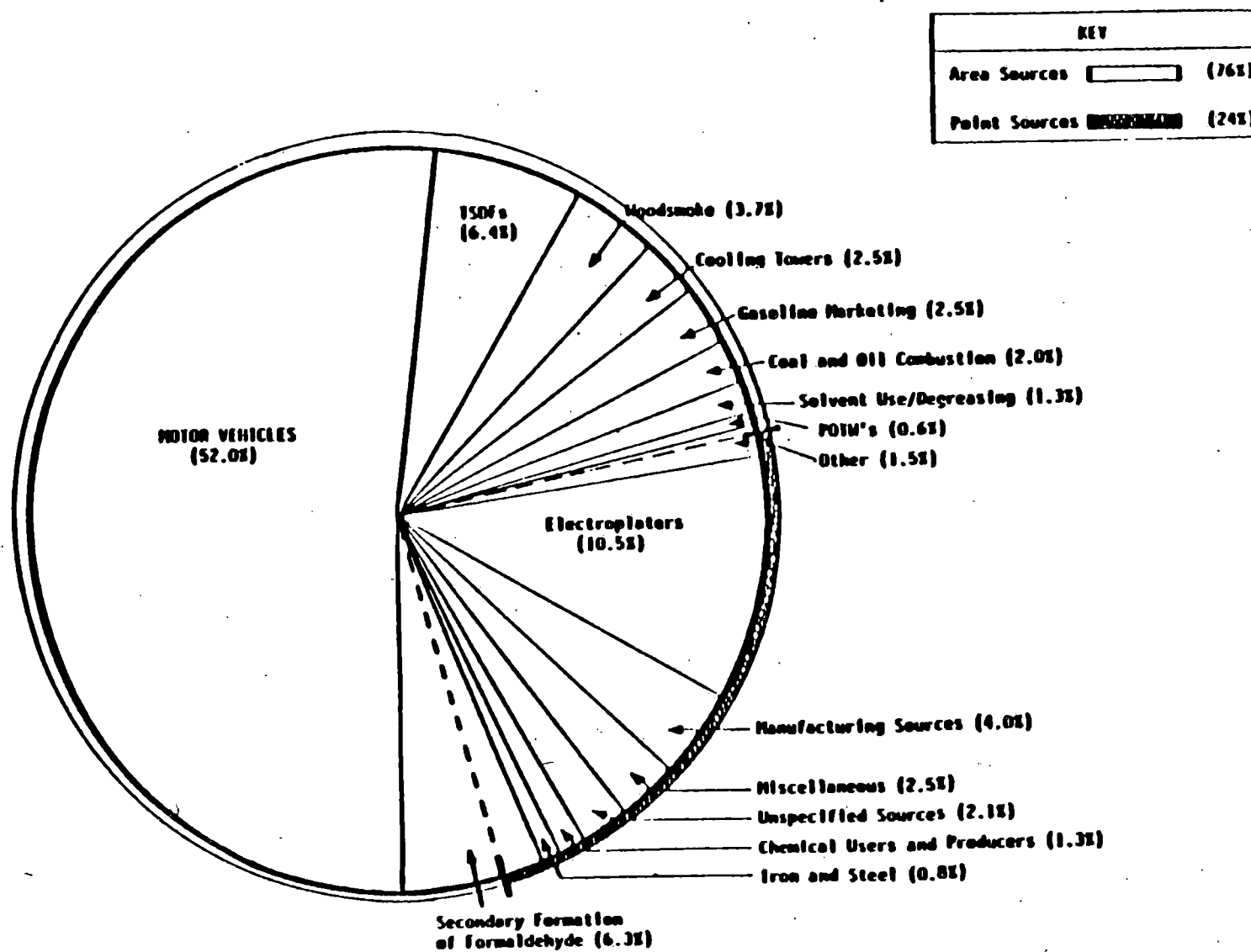
- o No variance from MACT for negligible risk.
- o Source undergoes review, feasible added control(s) and public hearings every 5th year as long as they are causing greater than 1 in a million risk to anyone (10^{-6}).
- o Variance from relevant MACT requirements for sources achieving 90% reduction in emissions of listed pollutants between 1987 and 1993.

ANNUAL RISK OF DEATH FROM CERTAIN ACTIVITIES AND CAUSES
Actual U.S. Deaths in 1983

Cause	Annual Deaths
Heart Disease	733,235
Malignant Neoplasms (Cancer)	403,395
Smoking	337,000
Cerebrovascular Disease (Stroke)	169,488
Motor Vehicle Accidents	53,524
Drowning	6,872
Fires	5,991
Construction Work	2,100
Agricultural Work	1,800
Emissions from Cars & Trucks	1,220
Boating	1,178
Major Stationary Sources	750
Appendicitis	682
Electrocution	500
Weather (tornadoes, floods, lightning)	440
Hunting	290
Snowmobiling	60
Bee Stings	40
Water Skiing	32
Hang Gliding	13
Football	9
Measles	6
Amusement Park Rides	6
Baseball	5
Ingestion of Toothpicks	1

**Air Toxics Regulatory Activities To Be Undertaken
Under Other Sections of the Clean Air Act or Other Statutes**

<u>Statute/Activity</u>	<u>Baseline Incidence (from existing sources)</u>	<u>Reduction from Control</u>
<u>Clean Air Act</u>		
Motor Vehicles	792 to 1,499	
Diesel Particulate Standards		185
Refueling and On-Board Controls		
HC Emissions for Light Duty Trucks		
Methanol Emission Standards		
Municipal Waste Incinerators	2 to 40	1 to 20
NSPA and 111 (d)		
<u>Resource Conservation and Recovery Act</u>		
TSDF Rule	140	120
<u>Clean Water Act</u>		
Sewage Sludge Incineraton	12	3-9



**Relative Contribution of Source Categories to Total
Nationwide Annual Incidence**

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02a. Report	Re: The Clean Air Act. (3 pp.)	n.d.	~~P-5~~	

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THE CURRENT LAW IS UNWORKABLE

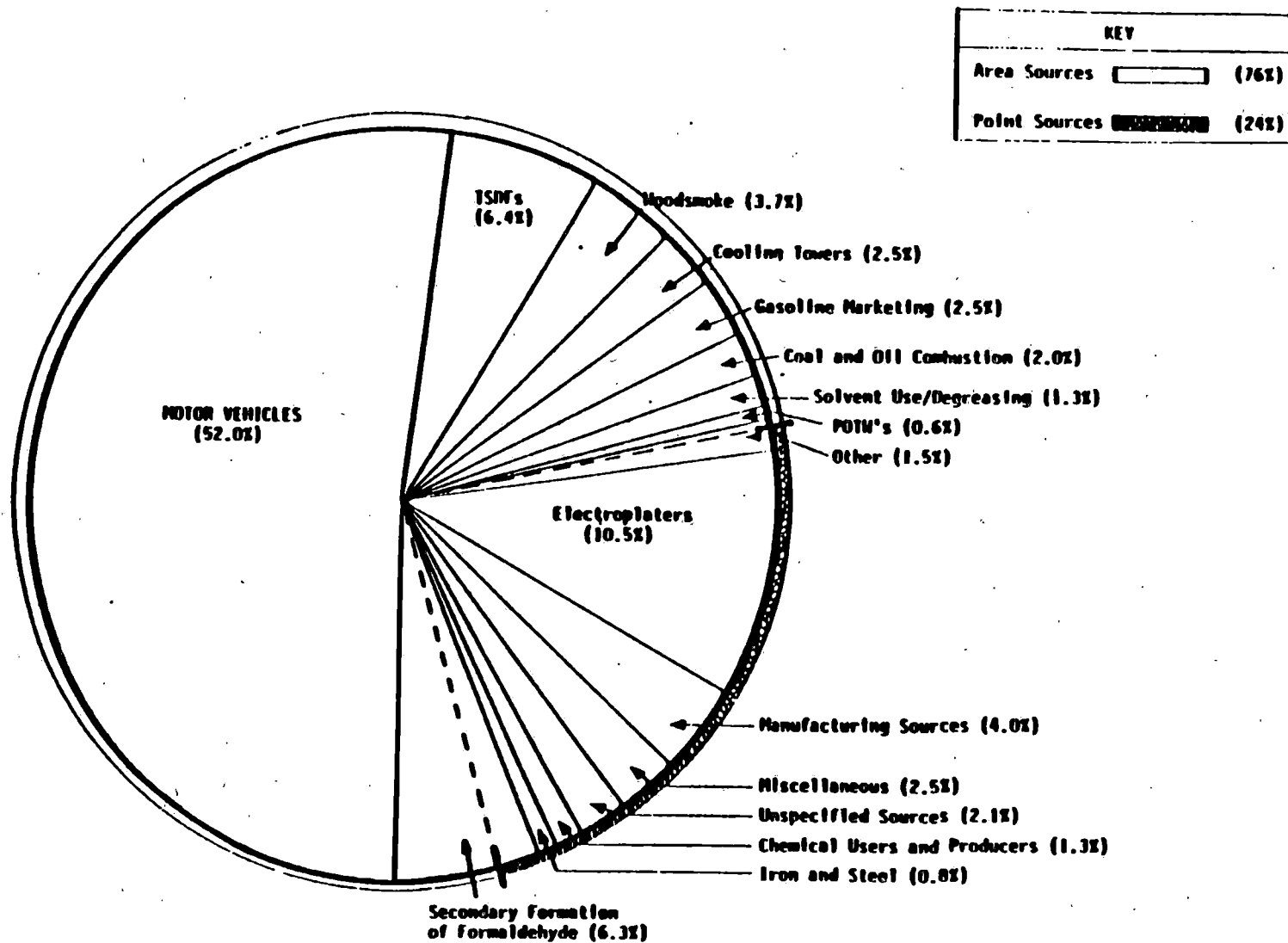
- o Section 112 of the Clean Air Act requires standards for hazardous air pollutants that protect the public health with an "ample margin of safety."**
- o The "Vinyl Chloride Decision" brought the program to a standstill since it required that "safe levels" be set without regard to cost.**
- o To implement the decision, EPA must either:**
 - establish a "safe level" of toxics exposure at zero risk that would shut down vital industries**
----- or -----
 - establish a "safe level" that avoids shutdowns but will be overturned by the courts.**
- o EPA's air toxics program has set only seven standards thus far.**

LEGISLATIVE PRINCIPLES

- o Achieve reductions in toxic emissions (and health risks) as soon as possible.**
- o Provide maximum flexibility to balance emission (and health risk) reductions and economic/technological feasibility.**
- o Adopt a strategy that continues to reduce risk over the long run as conditions merit.**
- o Encourage industries to make emission reductions on their own.**

MUCH IS ALREADY BEING DONE TO REDUCE EMISSIONS AND HEALTH RISKS

- o Half the emissions of air toxics are from mobile sources, which are already subject to controls under the Clean Air Act. These controls could avoid 700 cancer deaths:**
 - Diesel particulate controls**
 - Hydrocarbon emission controls**
 - Oxygenated and neat fuels programs in ozone and carbon monoxide nonattainment areas if included in Clean Air legislation.**
- o Hazardous waste site emissions will be regulated.**
- o The biggest remaining stationary source problem is largely due to one industry -- electroplating.**
- o Many States have already moved to reduce toxic pollutants imposing unacceptable risks.**



**Relative Contribution by Source Categories to Total
Nationwide Annual Incidence**

Withdrawal/Redaction Sheet

(George Bush Library)

Document No. and Type	Subject/Title of Document	Date	Restriction	Class.
02b. Report	Re: The Clean Air Act. (7 pp.)	n.d.	~~P-5~~	

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OPTIONS FOR CONSIDERATION

PHASE I

Option I. Set standards on the basis of reasonable risk. Balance health risk reductions against costs and the availability of substitutes.

Pros:

- o Avoids control for control's sake -- targets risk reduction where risk really occurs.**
- o Already is the underlying philosophy of TSCA and FIFRA, which control toxic substances.**
- o Minimizes costs.**

Cons:

- o Very difficult to administer -- requires extensive health and engineering data.**
- o Implementation would be very slow.**
- o Lack of a residual risk strategy will be widely criticized.**

Option II. Maximum Available Control Technology (MACT) regulations issued by EPA. Implemented by the States through a permit program modelled after the Clean Water Act.

Pros:

- o Regulatory framework needed to ensure consistency in reductions across States.**
- o Allows for economic/technological adjustments not permissible under current law.**
- o Allows State permit writers to adjust technology requirements to address specific production, location, and environmental situations.**

Cons:

- o Will not achieve reductions for nearly a decade -- violates first legislative principle (timely action).**
- o Rigid technology requirements carry with them the highest likelihood to overcontrol.**
- o More expensive than Option I.**

Option III. MACT, but obtain significant early reductions through a State permit program using Best Engineering Judgment to get reductions before MACT regulations are promulgated. Modelled after existing EPA water pollution program for toxics.

Pros:

- o Implements first legislative principle (timely action). Puts in place readily available technologies. Obtains up to 75% of the total reduction soon, and reduces the cost of compliance over the long run.**
- o Allows industries to get credit for voluntary reductions before Federal regulations take effect.**

Cons:

- o States (or EPA) will resist starting a permit program without additional resources.**
- o Industries will be concerned about potential permit backlogs, which occurred during the early years of the water permit program.**

PHASE II

Option I. Evaluate risk after controls are in place. Make legislative changes if needed.

Pros:

- o Most controls do better than estimated and overcontrol is common to ensure against violations.**
- o Risk models being used are conservative — overestimate risk.**
- o Less costly technologies through research.**

Cons:

- o Would not authorize EPA to take an action if serious residual risk.**
- o Industry given no incentive to develop new technologies.**

Option II. Require an average 90% reduction of residual risk if serious.

Pros:

- o Most consistent with Congressional intent (H.R. 4).**
- o Waivers/exemptions will provide relief where needed.**
- o Takes risks betw 10^{-2} and 10^{-3} and reduces them by one order of magnitude**

Cons:

- o Greatest likelihood of overcontrol -- for sake of regulatory convenience.**
- o Baseline health data to evaluate residual risk is seriously flawed.**
- o Waivers place a tremendous analytical and political burden on industry to demonstrate that arbitrary percent reduction is wrong. Burden belongs on EPA.**

Option III. Establish risk threshold at 10^{-4} to 10^{-6} .

Pros:

- o Reductions are based on remaining risk, not arbitrary percent reduction.**
- o Can target further reductions where risk is greatest.**

Cons:

- o Places too much weight on inaccurate risk models and risk assessment methodologies.**
- o Likely to require greater reductions and be far more expensive than Option 2. Could shut down industry if 10^{-4} can't be met.**

COSTS OF CONTROLS

<u>Base Program Legislative Options</u>	<u>Annual Cost (\$ 1987)</u>	<u>Benefits (Cancer Deaths Avoided)</u>
Base Program	-	700-1200
<u>Phase I</u>		
All Options	\$0.7 to \$2.6B	700-1500
<u>Phase II</u>		
¹¹ Dowd	\$1.4 billion	100-300
¹¹ CMA	\$1-14 billion	100-300
EPA (90% reduction of serious risk)	\$0.5 billion	20- 50

¹¹ Achieves risk reduction to 10⁻⁶ (one in a million).

DRAFT: May 15, 1989

CLEAN AIR ACT OPTIONS PAPER: ACID RAIN

I. BACKGROUND

"Acid rain" is the common name for a phenomenon which occurs when sulfur dioxide (SO₂) and nitrogen oxide (NO_x) emissions undergo a chemical transformation in the atmosphere and return to the earth as acidic rain, fog, or particles.

There is continuing debate over the nature and extent of damage caused by acid rain.

The Science: NAPAP

The National Acid Precipitation Assessment Program (NAPAP) is an interagency scientific committee established by Congress in 1980, with a 10-year mission to study the causes and effects of acid rain. NAPAP recently (1989) reported that:

"The only benefits generally agreed to be expected from new acid rain controls will be improvements in acidic and sensitive lakes and streams..."

and that:

"There is no evidence of widespread forest damage from acid rain, with the possible exception of mountain-top exposures to acidic clouds."

With respect to health risks, NAPAP stated:

"Possible health risks associated with the acid rain pollutants are currently being evaluated."

NAPAP will have spent about \$500 million to study acid rain by the time its final report is released in 1990.

Competing views:

On the other hand, the World Resources Institute (1988) has reported that:

"acid deposition and ozone are important contributors to the decline of several tree species in the East."

and the Congressional Office of Technology Assessment (OTA) reported in 1984 that:

"Acid deposition may be adversely affecting a significant fraction of Eastern U.S. forests, ... [and] ... Fine particles such as sulfates reduce visibility and have been linked to increased human mortality in regions with elevated levels of air pollution."

Sources of Acid Rain-Causing Emissions:

About 20 million tons of SO₂ are emitted annually in the U.S. This represents a reduction of 25% since peak emissions in 1973, despite a near doubling of coal consumption during that period.

Roughly three quarters of these emissions result from the burning of fossil fuels by electric utilities. Another 20% comes from various, more widely dispersed (and thus more difficult to regulate) industrial sources, and 5% comes from transportation sources.

New sources of SO₂ emissions were regulated by the Clean Air Act, first passed in 1971 and strengthened in 1977. Because of this, the source of most emissions -- and thus the focus of most legislative proposals -- is a relatively small number of old plants (pre-1971) not subject to the Act's "new source performance standards." For example, the 50 largest emitting plants are responsible for 50% of the SO₂ emissions in the country.

NO_x emissions are also about 20 million tons per year -- with transportation sources accounting for about half. The level has been fairly steady in recent years (only a 2 million ton increase since 1980), but without further controls, NO_x emissions will begin to increase in the mid-1990s.

Commitments by the President

During the campaign, then Vice President Bush said:

"On the question of acid rain, the time for study alone has passed. We know enough now to begin taking steps to limit future damage ... As President, I will ask for a program to cut millions of tons of sulfur dioxide emissions by the year 2000, and to reduce significantly nitrogen oxide emissions as well."

He followed up on that with the following statement in his February 9th statement to the Joint Session of Congress:

"I will send to you shortly legislation for a new, more effective Clean Air Act. It will include a plan to reduce, by date certain, the emissions which cause acid rain -- because the time for study alone has passed, and the time for action is now."

The book, Building a Better America, said:

"The Administration's program will include market-based approaches, supplementing and modifying the traditional command-and-control approaches. The goal is to get the Federal government out of the detailed regulation of industry decisions and reduce the need for elaborate EPA-approved, State-prepared emission reduction plans ... The legislation will provide flexibility to states and industry to adopt least cost compliance strategies (and) incentives for the early deployment of innovative emission reduction techniques."

Costs of Controlling Acid Rain:

Since 1970, the U.S. has spent over \$225 billion to control emissions of sulfur dioxide and nitrogen oxides. Current estimates are that American industry spends about \$33 billion per year on air pollution control -- and EPA estimates that the electric utility industry now spends about \$10 billion a year for such controls under the existing Clean Air Act.

On the other hand, Americans spend over \$160 billion per year on electricity -- and any of the legislative approaches currently under consideration would cost less than 5 percent of that.

According to EPA, a "least cost" strategy for reducing SO₂ emissions from utilities by 7 million tons from 1980 levels and NO_x emis-

sions by 2 million tons from current levels would be between \$2.0 and 2.4 billion per year (in 1988 dollars). Raising the required SO₂ emission reduction to 9 million tons raises the cost to between \$3.6 and 4.0 billion annually.

For discussion purposes, these two alternatives translate into bills which would reduce SO₂ emissions by 8 and 10 million tons respectively, because smelters and other industrial sources have already reduced emissions by 1 million tons since the commonly-used 1980 baseline date. At the same time, electricity demand is expected to grow, causing additional emissions which will have to be offset with further reductions. The exact amount of projected growth is open to some question, with EPA projecting 1.2 million additional tons of SO₂ emissions, and others projecting less.

To the extent that utilities are allowed to decide freely how to achieve the required reductions, or trade "emissions credits" with other utilities or industrial emitters, the cost goes down. Further, to the extent that clean coal technologies prove to be lower cost alternatives to utilities' generation needs, the costs of SO₂ reductions go down.

Contentious issues:

Historically, two major issues of contention have caused a stalemate on acid rain control legislation.

First is the impact such legislation might have on high-sulfur coal producers and coal mining employment. To the extent that utilities choose to switch to other fuels (natural gas, low-sulfur coal), high-sulfur coal mining jobs will be lost -- although ICF estimated that under a full freedom of choice bill introduced in the last session the impact would be 16,800 high-sulfur coal mining jobs lost. It should be noted that these losses would be offset by job gains in low-sulfur coal mining (plus 18,000 jobs under the same ICF estimate). It should be noted that some of the job gains would be in the same states -- albeit in different regions -- as the job losses. Northern West Virginia, for example, could be expected to lose 1,200 high-sulfur coal mining jobs, but southern West Virginia could gain 4,000 low-sulfur coal mining jobs.

EPA feels that under a full freedom of choice bill which requires a 10 million ton SO₂ reduction, the total high sulfur coal mining job loss (including non-coal mining jobs in high sulfur coal mining com-

munities) could be between 20,000 and 50,000 jobs. These would, as noted, be at least partially offset by gains elsewhere.

In any event, options which are designed to increase the use of scrubbers or encourage the deployment of clean coal technology will mitigate the effect of reductions on these high-sulfur coal mining communities. Scrubber technology, however, is quite costly.

The second oft-discussed issue is the impact that any acid rain control program will have on electricity rates in affected states. In general, most Congressional proposals to date would raise national average electricity rates by about 2% after the year 2000. For the legislative proposal which mandated the most costly approach, scrubbers on specifically named plants, the rate increases in the two most severely impacted states (Indiana and Ohio) would be about 7% -- although without trading it would be higher for individual utilities.

What follows is a brief discussion of the major decisions to be made in crafting an acid rain reduction bill, with options presented to resolve each choice. To the extent possible, the costs associated with choosing these options -- as measured from the two base cases discussed above -- are identified. Because there is significant variability in possible true future costs, the cost estimates listed will be the mid-point of the range provided by EPA estimates.

II. POLICY OPTIONS

AMOUNT AND TIMING OF REDUCTIONS

Amount of Reductions: Second Phase

This is the most visible element of any new Clean Air bill, and, according to Members of the House and Senate who have been consulted, will be the key dimension on which the Administration's proposal will be judged. All tonnage reductions are from 1980.

Amount of Reductions: Second Phase

<u>Option 1:</u>	7 million tons	Cost: \$1.8 B per year
<u>Option 2:</u>	8 million tons	Cost: \$2.2 B per year
<u>Option 3:</u>	10 million tons	Cost: \$3.8 B per year
<u>Option 4:</u>	10 million tons with credit (trading) for NOx reductions	Cost: \$2.7 B per year

(Totals under all options incorporate 1 million tons from smelters and other industrial sources)

Pros (of higher amount):

A broad consensus exists on Capitol Hill that the Administration must come forward with a "10 million ton" proposal in order to be "credible."

In general, greater reductions afford greater environmental benefits. The relationship may not be linear; NAPAP reports that benefits are less identifiable above 3-4 million tons.

Canada is on record as favoring a 10 million ton reduction.

Cons:

Cost curves are not linear; each additional incremental reduction is more costly than previous increments.

Potential health benefits of additional reductions, which are still being studied, cannot be precisely identified (at least not in dollar terms).

Amount of Reductions: First Phase

Most bills call for a first phase of reductions as a way of guaranteeing early reductions and thus maximizing the cumulative reductions achieved through any control program.

Amount of Reductions: First Phase

<u>Option 1:</u> 5 million tons	Cost: \$750 M per year
<u>Option 2:</u> 4 million tons	Cost: \$450 M per year
<u>Option 3:</u> No first phase	

(Totals for all options incorporate 1 million tons from smelters and other industrial sources)

Pros (of higher amount):

Higher amount of early reductions will be more "credible" with Hill and environmentalists.

Larger early reductions provide "insurance" against environmental and potential health effects.

Canadians favor 5 million tons.

Cons:

Higher amounts of early reductions drive up cost significantly.

Forcing larger early reductions could cause problems in siting new low sulfur mines to meet demand and siting and permitting retrofit technologies.

Timing of Reductions: Second phase

Option 1: 12/31/2000

Additional cost: EPA believes that annual cost will not rise with earlier date, although cumulative costs may rise.

Option 2: 12/31/2003

DOE points out that technology will continue to improve. CEA points out that annual costs simply will be incurred three years earlier with the earlier date.

Pros (of earlier date):

The year 2000, like 10 million tons, is a "magic number" with Capitol Hill, and is required to have "credibility."

EPA does not believe that earlier date will significantly raise costs annual costs; although CEA notes that billions of dollars are saved in the cumulative total for each year during which costs are deferred.

Canadians favor year 2000 deadline.

Cons:

DOE believes annual costs will be higher for earlier dates, because they could inhibit commercial deployment of new, potentially less costly clean coal technologies (unless extension is granted for CCT -- see below).

Extension for Clean Coal Technology

Should a three-year extension be granted for emission sources that use repowering clean coal technologies to achieve required reductions?*

Cost: Reduces annual cost by up to
- 1.5 B to 2.0 B after year 2000

Pros:

Takes advantage of U.S. government's planned \$2.5 billion investment in new clean coal technologies.

Provides incentive for utilities to accelerate and invest in commercial deployment of these new technologies.

Allows high sulfur coal, of which U.S. has substantial deposits, to continue to play a major role in firing electricity generation without requiring scrubbers or explicitly subsidizing coal producers and/or miners.

Cons:

Extending the deadlines may mean somewhat higher pollution during period of extension.

May allow some utilities who could achieve reductions earlier to wait until new deadline is expired.

- * Note: There is consensus among the working group and the DPC that the bill should include some incentives, as previously recommended by the President's Task Force on Regulatory Relief, for the deployment of Clean Coal Technology. This would include favorable rate regulation measures (such as "presumed prudence" of the CCT investment) to be promulgated by the Federal Energy Regulatory Commission (FERC) and/or state utility commissions.

Timing of Reductions: First Phase

Option 1: by 12/31/94

Additional cost: EPA believes annual cost will not rise relative to Option 2, but will be incurred one year earlier.

Option 2: by 12/31/95

(baseline cost)

Pros (of earlier date):

An earlier date will be seen as more credible by environmentalists.

Earlier date maximizes cumulative reductions.

Cons:

Earlier date leaves less time for technology advances to help in achieving reductions; drives up cost.

Earlier date leaves less time to develop trading system (see below); drives up cost.

Disruption to high sulfur coal producers will be more dramatic.

Earlier date limits fuel switching (and thus dictates scrubbers) because of time involved in opening and permitting low sulfur mines.

CONTROL STRATEGY -- TRADING AND EMISSIONS ALLOCATION

Emissions trading and "marketable permits":

One important way of reducing the cost of any required emissions reductions is to allow utilities to trade allowed emissions -- thereby allowing whichever source is able to achieve the reductions at least cost to undertake the actual reductions.

There is consensus among those who favor "least cost" solutions that a full trading scheme between utilities in all states affected should apply in Phase II of the bill. However, there is some debate as to whether to allow trading in the first phase and, if so, how to structure the trading scheme.

Emissions Trading: First Phase

Option 1: Allow trading of permits between all utilities within a state and within a utility system (even if the system is interstate).

Additional cost: This is used as the "least cost" baseline.

Pros:

Easy to implement, could be regulated by state public utility commissions.

Only slightly more costly than full interstate trading.

Cons:

Could allow some of the dirtiest plants to continue emitting SO₂.

May not be able to implement right away; could require some rule making process.

Emissions Trading: First Phase

Option 2: Provide State's Governors with authority to make re-allocations of any reductions allocated in the bill, plus allow trading within a utility system.

Additional cost: \$0 to \$.5 billion per year
(versus intrastate trading).

Pros:

Retains role for the states in determining how best to manage the effects of air pollution control programs.

Could be easier to implement than other trading schemes because many states already have acid rain control programs in place.

Allows Governors to take into account all economic effects of acid rain controls and to seek to mitigate them.

Cons:

Less fair than trading system, provides arbitrary allocation power to state governments.

Adds additional layer of bureaucracy to trading/allocation system.

Places Governors in difficult situation *vis a vis* competing interests; Governors may prefer Federal control.

By definition less efficient than open trade.

Emissions Trading: First Phase

<u>Option 3:</u> Full interstate trading	Additional cost: -\$100 million
--	------------------------------------

Pros:

Most flexible and least cost of all options.

Cons:

Extremely difficult to implement; would require lengthy rule-making procedure.

Probably not workable in first phase.

Emissions Trading: First Phase

<u>Option 4:</u> No trading.	Additional cost: \$0.7 - \$1 B (per year, v. full trading)
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Pros:

Afford protection to high-sulfur coal producers by effectively dictating some minimum amount of scrubbing.

Easiest to implement.

May be difficult to establish trading scheme in short time of Phase One because rule-making procedure could be lengthy.

Cons:

By far most costly of all alternatives.

Dictates scrubbing.

Control Strategy: How to allocate required reductions

Once a trading system is agreed to, it is possible to understand more fully the implications of any allocation strategy to achieve the reductions called for in any bill. There are several options for how to allocate initially the reductions that will be required -- although the actual execution of the reductions will also be affected by the trading strategy adopted.

Allocating Required Reductions

Option 1: Require all plants larger than 100 megawatts nationwide to meet a standard adequate to achieve reduction in first phase (4 million ton reduction would require 2.5 lbs./million BTU). (This would affect 107 plants in 18 states.)

Then require all plants nationwide to meet lower standard needed to achieve required reduction in second phase (9 million tons might require about 1.0 lbs/million BTU standard, again subject to continuing debate and analysis).

Pros:

Fairest of all the options -- requires all plants to meet the same standards.

Creates broader market for emissions trading and thus reduces costs.

Does not create a disproportionate burden for any one region or set of utility companies.

Low cost, since it allows individual plants to meet requirements in any way they choose.

Cons:

More difficult to implement, since it requires regulation of many more plants.

Will engender more widespread political opposition, since 107 plants in 18 states would be affected.

Allocating Required Reductions

Option 2: Require top 20 polluting plants (in phase one) to meet a certain average emissions standard (e.g. enough to achieve 4 million ton reduction -- approx. 1.1 lbs/million BTU). (This would affect 20 plants in 9 states.)

Then require all plants to meet average emissions standard in phase two (e.g., enough to achieve 9 million ton reduction -- estimated to be about 1.0 lbs. per million BTU, although this number is the subject of continuing debate).

Additional cost: \$.1 to \$.5 B per year
(without broad trading)

Pros:

Easy to implement (in 1st phase), because we know who biggest emitters are.

Arguably more palatable politically, because this regime would only affect 20 plants in 9 states -
- thus generating less widespread opposition.

These plants tend to be in regions whose electric rates are somewhat lower than certain other regions.

Cons:

It seems unfair to subject some plants to one standard, other plants to another, less stringent standard.

Designed to force greater use of scrubbers because of narrow focus.

Concentrates cost effects on narrow geographic sector, increasing the political pressure for subsidies.

Reduces effectiveness of any trading scheme, because it creates less of a market for emissions reductions. Thus it drives up costs.

Allocating Required Reductions

Option 3: Allocate equal percentage of reductions to all sources greater than 100 MW with average emission rates of over 0.5lbs/MBTU. Thus all utilities covered would have to reduce emission by say 15 percent, regardless of current emissions.

Additional cost: \$100 - 500 million

Pros:

Spreads the pain -- required reductions spread evenly to all states and not focussed on a particular region.

Provides incentives for all utilities to continue reducing emissions.

Creates a broad market for emissions reductions and thus facilitates trading and drives down costs.

Cons:

Unfair to those states and utilities which have already taken steps to reduce emissions -- still requires further costly reductions in "clean" states, before "dirtier" states have controlled to a comparable level.

Utility rates in high emitting regions (e.g. the Midwest) are lower than those in some with lower emissions -- so it is fair to concentrate required reductions there.

Not entirely consistent with "least cost" control strategy.

Trading to encourage early reductions:

EPA has suggested offering 2 for 1 reduction credits for above-required reductions to sources which achieve greater than their reduction requirements in phase one.

Pros:

This helps achieve early reductions.

Mitigates against negative effect of fuel switching on coal mining producers.

Reduces overall cost of bill, because it obviates the need for some later reductions.

Cons:

Environmental benefits in the aggregate are lessened because total level of emissions reductions is reduced.

Acid rain damage is occurring at a slow enough pace that goal should be to maximize overall reductions, not necessarily encourage early reductions at the expense of later reductions.

Could reduce use of Clean Coal technologies in later phase by encouraging use of scrubber technologies in first phase.

By altering cost-effectiveness calculation with respect to scrubbers, reduces the cost-effectiveness of reductions actually achieved. (Although EPA argues net annual cost of bill is the same.)

Requiring NOx Emissions Reductions:

The focus of this paper heretofore has been SO₂ reductions. Most legislation on the Hill would also require reductions in emissions of NO_x.

Requiring NOx Reductions

Option 1: Require no NO_x reductions below current baseline.

Pros:

Least cost option.

Cons:

Likely to be criticized heavily by environmentalists.

Some NO_x reductions are easily achievable.

Requiring NOx Reductions

Option 2: Require NO_x emission reductions of 2 million tons below current EPA baseline projections.

Additional cost: \$.3 to \$.5 B

Pros:

First 2 million ton reduction can be achieved rather easily through low NO_x burners and combustion modifications.

Will help US comply with NO_x Protocol.

Cons:

Merely maintains NO_x emissions at roughly current levels-- could be seen as inadequate.

Requiring NOx Reductions

Option 3: Require NOx emission reductions of 4 million tons below current EPA baseline projections.

Additional cost: \$1.5 - 2.56 Billion

Pros:

Affords most environmental protection, since NOx emissions contain more acidity than do SO2 emissions.

Will help US comply with NOx Protocol.

Cons:

Costs of NOx reductions escalate sharply above 2 million tons.

Required NOx Reductions

Option 4: Allow SO2/NOx Trading:

Some have suggested that, in that the goal is to reduce overall emissions of acid rain precursors, trading between SO2 and NOx emissions should be allowed.
(See Option 4, Page 6.)

Pros:

Allows more flexibility in achieving overall reductions

Cons:

Depending on amount of SO2 reductions required, could be accused of weakening the bill.
(Alternatively, could require higher SO2 reductions as well as trading.)

Old/New Source Emissions Trading:

All of the trading schemes above assume that trading would be allowed only between "old", or existing sources of SO₂ emissions. Some have suggested that trading should be allowed between "old" and "new" sources.

Additional cost: -\$.3 to -\$.5 Billion
(relative to least-cost "old-old" trading)

Pros:

Least costly of all schemes

Allocates reductions in way deemed most efficient by marketplace.

Cons:

Re-opens the debate on new source performance standards, and in particular, percentage reduction (as applied to new sources), which was a major issue in the 1977 legislation.

Would be criticized by environmentalists.

Note: Another often discussed issue is whether to allow trading with non-utility industrial sources (which account for 20 percent of SO₂ emissions), if those sources can achieve the reductions more cheaply and certify that they have taken place. The DPC and the working group believe that this trading should be allowed.

Controlling emissions from oil-fired plants:

Some have suggested that oil-fired utility boilers should be subject to a 0.8 lb. per million BTU emission requirement.

Additional cost: \$400 M. per year

Pros:

Spreads the pain by requiring those regions most likely to benefit environmentally from acid rain legislation (e.g., the Northeast) to share in the required reductions.

Can add 1 million tons at low cost to reductions achieved since 1980, since 700,000 ton reduction has already taken place.

Cons:

Unfair to subject utilities in one region to a different, lower standard.

Achieves only 300,000 tons in actual reductions.

Not a cost-effective means of achieving reductions -- cost per ton removed higher than for comparable reductions from coal plants.

Allowing Emission Reduction Credits for Conservation Measures:

Some have suggested that some sort of credit be given to utilities for measures undertaken to promote conservation.

Option 1: No credit.

Option 2: Allow credit of 1 ton reduction for each \$1,000 spent by a utility on conservation measures.

Pros (of credit):

Promoting conservation has other benefits -- such as those on reducing global warming.

Easy to monitor -- utilities in many states already report conservation expenditures to state public utility commissions.

Cons:

Conservation initiatives may not actually contribute to achieving the desired emission reductions.

Depending on level at which credit is granted, may not be a cost-effective way of achieving reductions.

Option 3: Allow credit of 1 ton for those utilities that make expenditures of \$1,000 on conservation AND engage in least cost energy planning and load management practices approved by EPA and state environmental agencies.

Pro:

Helps certify that conservation measures undertaken by utilities really are effective.

Least cost energy planning is a proven way of ensuring cost-effective expenditures.

Cons:

Could raise Federalism issues.

Heavily bureaucratic and potentially inflexible way of achieving conservation.

ACID RAIN OPTIONS

At the request of the Domestic Policy Council, the individual issues presented in the attached discussion paper have been packaged into several options for consideration. The main parameters of five possible options are summarized below.

OPTION A:

* PHASE TWO:

Ten million ton reductions by the year 2000, with a three year extension for clean coal technology. Reductions would be allocated by setting an average emissions standard at approximately 1.0 lbs. per million BTU and requiring all plants in affected states to meet that standard. Full interstate trading would be allowed.

* PHASE ONE:

Five million ton reductions within 5 years from the date of enactment. Emissions would be allocated by requiring the all plants greater than 100MW in affected states (18 states) to meet a standard of 2.5 lbs. per million BTU. Full trading would be allowed between plants within a state, as would trading between plants within a utility system.

COST: \$0.7 billion per year Phase I
\$3.8 billion per year Phase II

OPTION B:

* PHASE TWO:

Same as Option A; except that oil-fired utilities would also be required to make reductions. They would be held to annual average emissions standard of 0.8 lbs/million BTU.

* PHASE ONE:

5 million tons by 1994. Emissions would be allocated by requiring top 20 SO₂ emitting plants (9 states) to meet a standard of 1.1 lbs. per million BTU. Trading by plants within a utility system would be allowed, and Governors would be given authority to re-allocate reductions. Oil plants would held to the same standard as in Phase II. A two for one credit would be allowed for reductions in this phase above those required by the bill, so as to minimize impacts on the coal market.

The principal differences between this and Option A are the narrower allocation scheme in phase one (20 plants vs. 107), the slightly less open trading scheme, the requirements on oil plants, and the early reduction credit designed to help coal.

COSTS: \$0.8 to \$1.3 billion per year in Phase I
\$3.8 billion in per year Phase II

OPTION C:

* PHASE TWO:

10.5 million tons by the year 2000, with a 3 year extension for clean coal technology. Allocation identical to Option A. Trading between "old" and "new" sources would be allowed, however.

* PHASE ONE:

5.5 million tons by 1994. Allocation identical to Option A, but full interstate trading and trading between "new" and "old" sources would be allowed.

The theory behind this option is to allow greater reductions at the same price as Options A and B by having the most open trading scheme possible.

COSTS: \$0.8 billion per year in Phase I
\$3.8 billion per year in Phase II

OPTION D:

PHASE TWO:

Seven million tons by the year 2000, with a three year extension for clean coal technology. Reductions allocated by requiring all plants in affected states to meet an annual average emissions rate of 1.8 lbs. per million BTU. Full interstate trading and trading between "old" and "new" sources permitted.

PHASE ONE:

None.

COSTS: none in Phase I
\$1.0 to \$1.8 billion per year in Phase Two.

OPTION E:**PHASE TWO:**

Ten million tons required by the year 2003, but no NOX reductions required. Since NOx/SO2 trading would be allowed in this option (as in all options), this is likely to translate into roughly 8 million ton SO2 reduction and 2 million ton NOx reduction. To achieve 8 million ton SO2 reduction by annual emissions standard, plants would need to achieve a rate of 1.4 lbs per million BTU. Full Interstate trading allowed.

PHASE ONE:

Four million tons by the year 1995. Reductions would be allocated by requiring all plants in affected states (107 plants, 18 states) to meet an emissions standard of 3.0 lbs. per million BTU. Full interstate trading and trading between "old" and "new" sources would be permitted.

COSTS: \$0.3 to \$0.4 billion in Phase I
\$2.7 to \$3.4 billion in Phase II

ACID RAIN OPTIONS

	<u>Option A</u>	<u>Option B</u>	<u>Option C</u>	<u>Option D</u>	<u>Option E</u>
<u>Phase II Requirements</u>					
Amount.....	10 M Tons	10 M Tons	10.5 M Tons	7 M Tons	10 M Tons
Timing.....	2000	2000	2000	2000	2003
CCT Extension.....	3 Years	3 Years	3 Years	3 Years	N.A.
<u>Phase I Requirements</u>					
Amount.....	5 M Tons	5 M Tons	5.5 M Tons	None	4 M Tons
Timing.....	5 Years from Enactment	1994	1994	None	1995
Targeting in Phase I...	2.5 lbs for top 107 plants	1.1 lbs for top 20 coal plants and 0.8 lbs for oil plants	2.5 lbs for top 107 plants	None	None
Targeting in Phase II...	1.0 lbs for all plants	1.0 lbs for all plants and 0.8 lbs for oil plants	1.0 lbs for all plants	1.8 lbs for plants	1.4 lbs for plants
<u>Trading Requirements</u>					
Phase II.....	Full Inter- state	Full Inter- state	Full Inter- state	Full Inter- state	Full Inter- state
Credits.....	None	2:1 Credit for Phase I reduction	None	None	3.0 lbs for top 107 plants

ACID RAIN OPTIONS

	<u>Option A</u>	<u>Option B</u>	<u>Option C</u>	<u>Option D</u>	<u>Option E</u>
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Trading Requirements (Cont)

Phase I.....	Intrastate (and Intra-Utility)	Intra-Utility plus Gover- nors given Intrastate Allocation Authority	Full Inter- state	N.A.	Full Inter- state
Existing/New Sources..	No	No	Yes	Yes	Yes
With Non-Utilities....	Yes	Yes	Yes	Yes	Yes
<u>NOx Reductions</u>	2 M Tons Nox/SO ₂ trading allowed	2 M Tons NOx/SO ₂ trading allowed	2 M Tons NOx/SO ₂ trading allowed	2 M Tons NOx/SO ₂ trading allowed	0 (But NOx/SO ₂ trading allowed)
<u>Conservation Credits</u>	1 Ton for \$1,000	1 Ton for \$1,000 with least cost energy planning requirements	None	None	None

Costs (Annual) (\$ in Billions)

Phase I.....	\$0.7 B	\$0.8-\$1.3 B	\$0.8 B	None	\$0.3 B
Phase II.....	\$3.8 B	\$3.8 B	\$3.8 B	\$1.0-\$1.8 B	\$2.7-\$3.4 B

THE WHITE HOUSE
WASHINGTON

CABINET AFFAIRS STAFFING MEMORANDUM

Date: May 22, 1989 Number: 490,802 Due By: _____

Subject: Domestic Policy Council Meeting #11: Wednesday, May 24, 1989

2:00 PM, Roosevelt Room, Re: Non-Attainment of Air Quality Standards.

	Action	FYI		Action	FYI
ALL CABINET MEMBERS	☐	☐	CEA	☒	☐
Vice President	☒	☐	CEQ	☐	☐
State	☒	☐	OSTP	☒	☐
Treasury	☐	☒	_____	☐	☐
Defense	☒	☐	_____	☐	☐
Justice	☒	☐	_____	☐	☐
Interior	☒	☐	_____	☐	☐
Agriculture	☒	☐	Scowcroft	☒	☐
Commerce	☒	☐	Porter	☒	☐
Labor	☒	☐	Breeden	☒	☐
HHS	☒	☐	Cicconi (For WH Staffing)	☒	☐
HUD	☒	☐	BATES	☒	☐
Transportation	☒	☐	_____	☐	☐
Energy	☒	☐	_____	☐	☐
Education	☒	☐	_____	☐	☐
Veterans	☒	☐	_____	☐	☐
OMB	☒	☐	_____	☐	☐
USTR	☒	☐	_____	☐	☐
Chief of Staff	☒	☐	Executive Secretary for:		
UN	☐	☐	DPC	☐	☐
CIA	☐	☐	EPC	☐	☒
National Drug Policy	☐	☐	_____	☐	☐
EPA	☒	☐	_____	☐	☐
GSA	☐	☐	_____	☐	☐
NASA	☐	☐	_____	☐	☐
OPM	☐	☐	_____	☐	☐
SBA	☐	☐	_____	☐	☐

REMARKS: Attached are an agenda and discussion paper on the subject of Clean Air (Non-Attainment). Administrator Reilly will present the paper at the DPC meeting on Wed., May 24, 1989 at 2:00 PM in the Roosevelt Room. Please note that this is a CLOSE HOLD DOCUMENT, and no copies should be made.

It is requested that you phone Justine (456-2800) by COB, TUESDAY, MAY 23, as to whether or not you will attend the meeting.

RETURN TO:

☐ David Q. Bates
Cabinet Secretary
456-2174
(1st Floor, West Wing)

☐ Associate Director
Office of Cabinet Affairs
456-2800
(Room 235, OE0B)

THE WHITE HOUSE

WASHINGTON

May 22, 1989

MEMORANDUM FOR THE DOMESTIC POLICY COUNCIL

FROM: KEN YALE ^{5/24}
Executive Secretary

SUBJECT: Eleventh Meeting of the Domestic Policy Council,
Wednesday, May 24, 1989

The Domestic Policy Council will hold its eleventh meeting, on Wednesday, May 24, 1989 at 2:00 P.M. in the Roosevelt Room on the subject of Clean Air (Non-Attainment). An agenda, along with a copy of the discussion paper, are attached for your information.

Please note that the attached paper should be treated as a "CLOSE HOLD DOCUMENT", and no additional copies should be made.

Administrator Reilly of the Environmental Protection Agency will make a presentation on Non-Attainment, after which a discussion will follow.

Please phone Justine D'Andrea (456-2800) by C.O.B. TUESDAY, MAY 23, as to whether or not you will attend the meeting.

Attachments

THE WHITE HOUSE
WASHINGTON

DOMESTIC POLICY COUNCIL

Wednesday, May 24, 1989

2:00 P.M.

Roosevelt Room

AGENDA

1. Non-Attainment of Air
Quality Standards

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CLEAN AIR ACT OPTIONS PAPER: OZONE NONATTAINMENT

I. BACKGROUND

The Clean Air Act requires attainment of air quality standards (NAAQS) that protect public health with an adequate margin of safety. The Act assumes that all cities would have attained the ozone and carbon monoxide standards no later than 1987, and gives no guidance on how Federal, State and local governments should respond to post-1987 nonattainment. This has left the Federal Government vulnerable to lawsuits that can force EPA to take over State and local responsibilities by developing Federal implementation plans (FIPS) to attain the standard. Legal actions of this sort are already underway in various parts of the country and more are likely.

Congress has attempted to enact a nonattainment bill for the past several years. All Congressional proposals would have extended attainment deadlines. However, these bills would also have required nonattainment areas to implement a variety of control measures -- some expensive and potentially requiring major lifestyle changes -- in return for extension of the deadlines.

Because of the controversial nature of the control measure requirements, none of the proposals has ever moved close to enactment. Last year's Senate bill (S. 1894), sponsored by Sen. Mitchell, is the most stringent bill. It included tight deadlines, the most stringent control measures, and the largest number of Federally mandated controls. On the House side, the Waxman bill (H.R. 3054) was similar to the Mitchell bill in stringency, but was marginally less costly and less prescriptive. The "Group of Nine" Democrats in the House proposed a still more moderate bill with longer deadlines, lower cost, and fewer Federally mandated control measures than either Mitchell or Waxman.

Formation of ozone

Unlike other NAAQS pollutants, ozone -- the major component of urban smog -- is not emitted directly. Instead, it is formed when volatile organic compounds (VOCs) are mixed with nitrogen oxides (NOx) in the presence of sunlight. Heat speeds up the reaction, and therefore concentrations are usually higher in the summer months. Areas with hotter climates, such as Los Angeles and Houston, are especially susceptible to ozone problems.

EPA's ozone control strategy focuses on VOCs. NOx controls generally reduce ozone but can increase its formation in certain situations. Since

ozone reacts upon contact with surfaces, ozone exposure is not a problem indoors.

Sources of VOCs

The major sources of VOCs are motor vehicles (40%); small "area sources", e.g., bakeries, dry cleaners, and consumer solvents (40%); large point sources, e.g., petroleum refineries (15%); and gasoline refueling (5%). Many large point sources have already been required to reduce emissions by roughly 80% from uncontrolled levels under the Clean Air Act, and tailpipe emissions from new vehicles have been reduced by 90%. The smaller "area" sources are largely uncontrolled.

Trends in emissions and ambient levels

VOC and NO_x emissions have decreased nationally since 1978 --VOCs by 17 percent and NO_x by 8 percent -- despite growth in population, travel, and industrial activity. As a consequence, the trend in ambient ozone concentrations was actually down by 9 percent from 1979 to 1987. Increases did occur in 1987 and 1988, although it should be noted that those increases occurred in years with abnormally high summer temperatures.

The downward trend in VOC emissions is largely due to growth in the share of newer, more stringently controlled vehicles in the vehicle fleet. These "fleet turnover" reductions have been achieved despite a 25% growth in vehicle miles travelled (VMT). Over the next decade, however, both EPA and the Federal Highway Administration estimate that VMT will begin to outpace fleet turnover and that VOC emissions will increase after 2000. EPA projects a 60 percent increase in VMT by 2005, although the Federal Highway Administration expects a lesser 40% increase.

Effects

The current ozone standard is 0.12 parts per million (ppm) over a one-hour period. The health-based standard is designed to protect healthy exercising individuals from acute respiratory symptoms (coughing, chest pain, shortness of breath) that are usually temporary and reversible. Ozone is also suspected of playing a role in the long-term development of chronic lung diseases, permanent lung structure damage, and in initiating asthma attacks. EPA's Clean Air Science Advisory Committee is currently debating whether the standard should be *tightened* to create a more appropriate margin of safety, based on chronic effects. The Committee is unanimous that the standard should not be relaxed.

In addition to health effects, ozone has "welfare" effects on vegetation, including crops such as soybeans, wheat, and corn; is damaging forests in southern California; and is suspected as a contributing agent in damage to forests in the Southeastern U.S.

Nonattainment

An area is classified as being in nonattainment if the 0.12 ppm standard is exceeded at the highest reading monitor more than three hours on separate days over a consecutive three-year period. The so-called "design value" is the fourth-highest reading over a running three-year period. The design value reading is frequently used as a proxy for the severity of the ozone problem in an area. It is also the primary basis for categorizing areas according to severity in Congressional bills.

Based on 1988 data, 81 cities, with an aggregate population of 100 million people, are in nonattainment for ozone. While individuals usually are exposed to levels that exceed the standard only a small percentage of the time, over 30 cities exceeded the standard 10 or more days in the hot summer of 1988.

The degree to which urban areas do not attain the standard varies dramatically, from Los Angeles with readings 200 percent above the standard and exceedances 140 days of the year, to Kansas City which exceeded the standard four times in a two-year period. Los Angeles is a special case -- it has four times the number of exceedances of any other city in America. Appendix A shows the 1987 design values and the number of exceedances for nonattainment areas.

Chart 1 shows the number of cities that will remain out of attainment (absent additional State control measures) for different levels of VOC reductions beyond the current program.

Chart 1

Number of Non-Attainment Areas Remaining After Applying
Additional Control Measures

	<u>1995</u>	<u>2000</u>	<u>2005</u>
Current Program	58	58	72
+15%	32	33	51
+20%	26	26	32
+25%	14	18	26
+30%	9	10	14
+35%	4	4	9
+40%	2	2	4

NOTE: Projections are very sensitive to vehicle miles travel (VMT) projections, which vary widely.

Benefits of VOC reductions

EPA has evaluated health benefit categories for which it could value the effects in the Northeast. These categories include primarily short-term respiratory effects. They do not include the more serious categories such as potential long-term chronic effects and structural changes in lung function. This evaluation indicates that the value of these limited categories ranges up to \$2600/ton with a "best guess" point estimate of \$480 per ton. This does not include additional benefits that would be gained by reductions in air toxics from mobile sources, which are estimated to range up to \$750/ton. Recent estimates are that the economic consequences of ozone effects on crops approach \$2 billion per year. This does include damage to forests or materials.

Costs of VOC reductions

EPA's current vehicle tailpipe standards, along with State vehicle inspection/maintenance programs and other State control measures, will reduce VOC emissions by about 9% in 2005, net of growth. One analysis done for EPA estimates that these measures will add about \$7 billion in annual costs to the economy by the year 2000.

EPA estimates that requiring certain Federal control measures that together achieve a 29% reduction in VOC emissions (38% including current gasoline volatility controls) beyond the base program would cost about \$3-4 billion per year beginning in the early 1990s. According to EPA, reductions beyond this amount -- which the Agency proposes to achieve through a requirement for 3% annual VOC reductions -- would cost an additional \$5-9 billion per year beginning in the late 1990s, resulting in a total additional cost above the current program of **\$8 to \$13 billion annually** in order to bring all cities into attainment. Estimates by other sources of the cost of achieving attainment are even higher. This is due to higher estimates of the cost of specific control measures and to the assumption of higher costs for additional, unidentified controls that States would have to develop and implement to reach attainment.

Current program

Federally mandated ozone control measures already in place include: vehicle tailpipe emission controls; gasoline volatility restrictions (Phase I); vehicle inspection & maintenance programs for certain nonattainment areas; emission limits for various VOC source categories; and State controls on existing stationary sources for which EPA has issued "Control Technology Guidelines" (CTGs).

State Implementation Plans (SIPs) also already include additional controls measures developed and implemented by the States in order to demonstrate attainment. For example, areas with relatively severe ozone problems may include controls on stationary sources of VOCs not covered by Control Technology Guidelines.

EPA also has several regulations under development that will further reduce VOC emissions: vehicle evaporative emission controls; light duty truck emission standards; hazardous waste facility air emissions regulations; vehicle refueling controls and additional gasoline volatility restrictions (Phase II).

Additional measures

Based on EPA's estimates of VOC emissions, VMT growth, and stationary source growth, the current and proposed measures discussed above will not be sufficient to bring all areas into attainment by 2005. Together, these measures are expected to achieve a percentage reduction in VOC emissions of about 29 percent (above and beyond the 18 percent reduction from base programs already underway or planned under current law). Eighteen of the areas will need percentage reductions beyond the base program of more than 29 percent to achieve attainment in 2005 and the four areas with the worst ozone problems will need to achieve reductions of 50% or greater.

Potential measures for achieving attainment in those areas needing controls beyond current and proposed measures can be divided into three categories: 1) nationwide controls Federally mandated, 2) nonattainment area controls Federally mandated, and 3) nonattainment area controls developed by the States through SIPs.

While one way to achieve attainment might be to simply extend attainment deadlines and let States develop and implement all additional controls measures, this approach has several drawbacks. First, many States have failed thus far to implement the measures committed to in SIPs because of their cost and/or disruption of lifestyles. Second, several control measures with the potential to achieve large, relatively cost-effective reductions are more appropriately implemented at the national level.

Some also argue that additional controls should include Federally mandated requirements specifically for nonattainment areas. While controls in this category would limit State discretion in designing control measures and would risk over-control for some nonattainment areas, such controls would provide a better guarantee (recognizing previous experience) of progress toward attainment. To correct for the problems inherent in mandating State action, some have suggested that States be allowed to "opt out" of Federally mandated measures if they can demonstrate that a substitute measure would achieve at least the same VOC reduction.

Finally, even if every control measure discussed within the working group were included as part of the Administration proposal, the percentage reduction achieved would still not be sufficient to bring all areas into attainment. Those nonattainment areas requiring over 29 percent reductions in VOCs by 2005 beyond the base program would still need to develop and implement additional control measures. Such

measures might include restrictions beyond Federal emission limits on new sources, tighter restrictions on existing stationary sources, tighter enforcement of existing regulations, transportation control measures designed to reduce VMT and market based strategies.

Nationwide control measures

Nationwide control measures would affect both areas in and out of attainment. If a neat fuels program is included in serious and severe nonattainment areas, the percentage reductions achieved in these areas by the other mobile source measures on the list will decrease, and vice versa.

The table below provides estimates of the cost-effectiveness and percentage reductions achieved by potential nationwide measures. Some of the percentage reductions would be smaller if a neat fuels program is included. *Those proposals which sparked considerable discussion in the working group are marked by asterisks. Separate discussion papers on these subjects follow.*

	<u>% VOC Reduction</u>	<u>2005 Cost Effectiveness \$/Ton</u>	<u>Nationwide Annual Costs (\$M)</u>
1.* Onboard Controls	2.6	0 - 2,500	0 - 1,500
Would require automobile manufacturers to put canisters on every vehicle to prevent refueling emissions. The same refueling emissions could also be captured by Stage II controls installed at service stations only in nonattainment areas. (See next page.)			
2.* Extended Useful Life	1.0	525	130
EPA would promulgate regulations extending the design life of emission control devices from 50,000 to 100,000 miles. State/local governments in-use testing/inspection of vehicles for compliance would cease after 75,000 miles and the manufacturer's warranty would continue for 50,000 miles as currently required.			
3. Light Duty Truck Emissions	0.2	650	33
Requires light duty trucks (e.g., pickups, mini-vans) to meet the same 0.41 grams per mile (gpm) standard currently being met by automobiles. Heavier trucks would have to meet a 0.50 gpm standard. Although small reductions are obtained, the growth in small trucks as a substitute for automobiles is expected to continue and on equity grounds alone similar emission standards should be met.			
4. Commercial/consumer Products	2.5	0 -2,000	640
EPA would be authorized to regulate VOC emissions from a variety of smaller sources such as consumer solvents, paints, barge loading and municipal landfills. This would be a new Clean Air Act authority for EPA.			
5. Automotive Tailpipe Controls	0.4	1,200	114
EPA would promulgate a regulation to tighten the VOC emission standard to the level currently required on all California vehicles (from .41 to .25 grams per mile). This represents a 98% reduction from uncontrolled levels, and a 2% reduction beyond current tailpipe standards.			

Federally Mandated Control Measures for Nonattainment Areas Only

Below is a list of Federal mandates which States could be required to implement unless they could demonstrate alternative local measures with commensurate VOC reductions.

	<u>% VOC Reduction</u>	<u>2005 Cost Effectiveness \$/Ton</u>	<u>Nationwide Annual Costs (\$M)</u>
1.* Neat Fuels Programs	7.4 (2005)	390 - 11,000	244
EPA Proposal - 50%	12.4 (2010)	390 - 11,000	N/A
With Other Measures	1.7 (2005)	1,200 - 11,000	244
	4.2 (2010)	1,200 - 11,000	N/A
One option would require that, beginning in 1995, 50% of all vehicles in severe and serious nonattainment areas use neat fuels (methanol, ethanol, compressed natural gas) and that service stations provide neat fuels in these areas at prices competitive with gasoline. Another option would require neat fuels only for urban buses and centrally fuelled fleets of 10 or more vehicles. The figures above are for the former option.			
2.* Stage II Controls	1.5	450 - 1,000	60 - 135
Would require service stations in nonattainment areas to install special nozzles to prevent refueling emissions. The same refueling emissions could also be captured by onboard controls imposed on vehicles nationwide.			
3. Control Technology Guidelines (CTGs)	3.5	0 - 2,000	430
EPA would issue, subject to the normal regulatory review process, stationary source guidelines for states to use in controlling existing major emitters in nonattainment areas. EPA would issue the most cost-effective CTG's first so that states will always be assured that least-cost control strategies are being implemented.			
4.* Enhanced I/M	1.2	1,200	90
EPA would mandate that states improve and expand their inspection programs in non-attainment areas. This would include increasing the stringency of inspections and requiring added tampering and fuel switching checks to existing programs.			

Graph 1 (below) shows the number of cities brought into attainment by individual control measures.

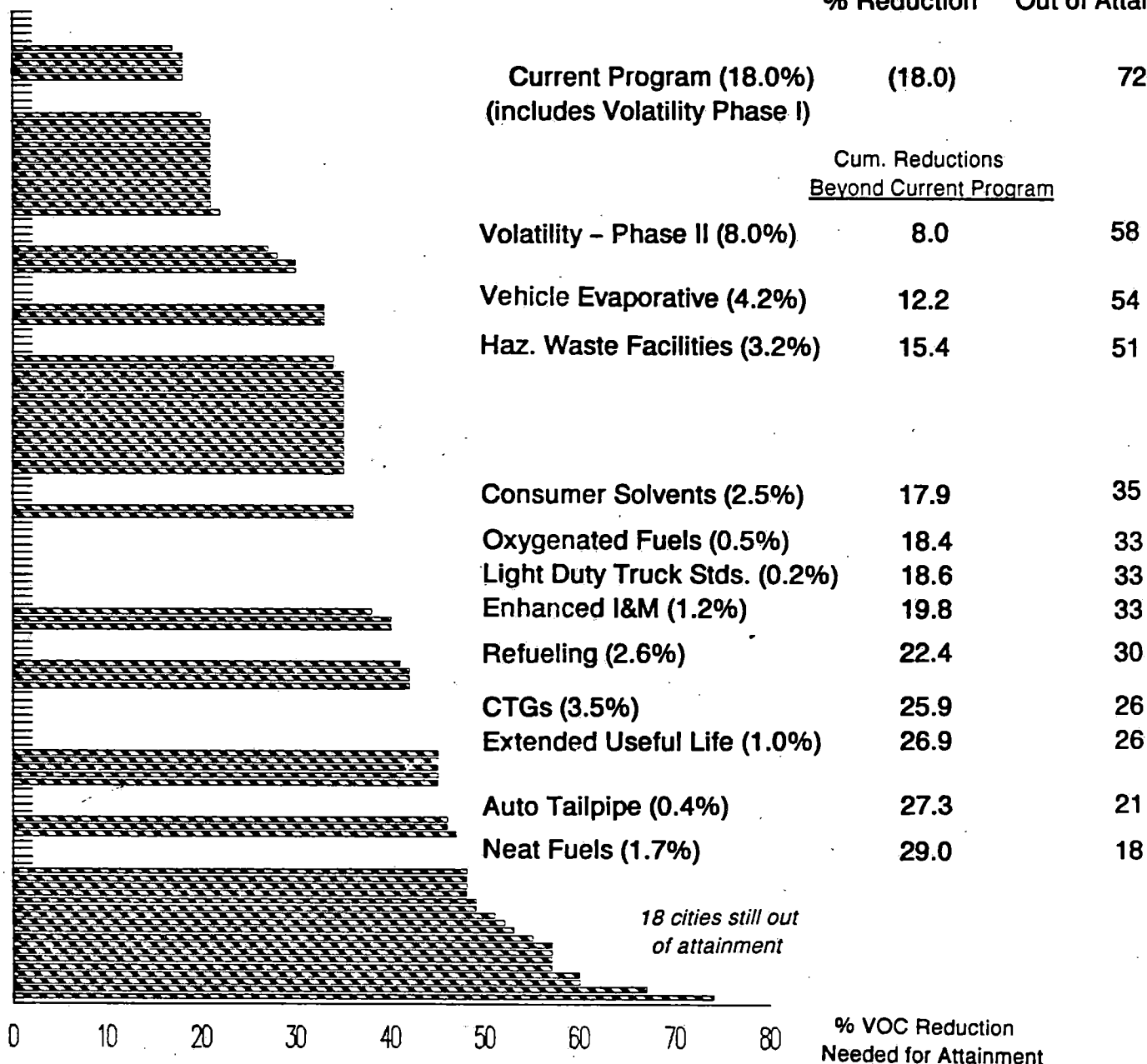
Graph 1

EFFECT OF VOC CONTROL MEASURES ON # OF CITIES BROUGHT INTO ATTAINMENT IN 2005

This chart shows how many cities will be brought into attainment by achieving incremental reductions of VOCs; the reductions could be achieved by the kinds of measures listed.

Cities

Cum. VOC
% Reduction Cities Remaining
Out of Attainment



II. ISSUES ON CONTROL OPTIONS

Issue 1. Should the Administration propose a program to encourage and/or require the use of "neat fuels" in buses, fleets, and private automobiles.

- Options:
1. Require "neat fuels" in all urban buses and fleets of 10 cars or more.
 2. Require that 50% of the fleet in "serious" and "severe" nonattainment areas be neat-fueled vehicles.
 3. Let States "opt out" of the 50% requirement if they can demonstrate commensurate reductions in the nonattainment areas through other measures.

Discussion: The President has long been an advocate of removing barriers to market entry for alternative fuels and of promoting their use. During the campaign, he stated:

"One of my priorities as Vice President has been to lead the search for alternative fuels -- so-called 'clean fuels' such as methanol made from remote natural gas and ethanol made from grain -- and to promote their use."

(Speech at Scripps Institution, San Diego, CA, October 14, 1988).

Current automobiles are capable of using blends of gasoline and alternative fuels such as methanol and ethanol. While these blends can achieve major CO reductions, achieving major VOC reductions from mobile sources would require "neat fuels", such as compressed natural gas (CNG), and pure ethanol or methanol. The use of these alternative fuels would also reduce aromatic emissions from gasoline, especially benzene, a known carcinogen. HHS has argued that the most important issue from a public-health perspective is to reduce potentially harmful vehicle aromatic emissions. Aromatics currently constitute over 25 percent of hydrocarbon emissions from gasoline-powered vehicles (3 percent benzene, 22 percent other aromatics).

Neat-fueled buses are now operating in several cities and prototype neat-fueled passenger cars have been successfully demonstrated. However, for neat-fueled vehicles to come into widespread use, neat fuels must be priced competitively with gasoline. At present, neat fuels generally are not competitive, but this is due in part to economies of scale currently achieved by the gasoline production and distribution system.

In addition, according to one industry estimate, it would require the construction of 90 world scale methanol plants to provide enough methanol to meet the motor vehicle needs of California alone. There are currently 16 world scale methanol plants in the non-Communist world.

Neat fuels proponents argue that the environmental benefits of neat fuels outweigh the costs of ensuring their availability at competitive prices through Federal mandate and that these costs will diminish over time as neat fuel vehicle and fuel systems begin to achieve economies of scale. Skeptics contend, however, that ensuring the availability of neat fuels would be much more costly than proponents assume and would inappropriately require extensive intervention into both the fuel and vehicle markets.

Because of the disagreement over the desirability and feasibility of a neat fuels program, the option of letting States with ozone nonattainment areas "opt out" of a mandatory Federal program and the option of requiring a program limited to buses and centrally fueled fleets of ten or more are also presented.

Option 1: Require the use of neat fuels in all new urban transit buses and all urban fleets of 10 cars or more in 25 severe and serious nonattainment cities beginning in 1992.

Advantages of Option 1

- o Follows up on the President's promise to enhance the use of neat fuels. Dirty buses and black soot they emit are a symbol of urban pollution; clean buses would be a highly visible start of a neat fuels program.
- o Bus fleets are centrally fueled so that fuel availability is not a major problem.
- o Allows for gradual introduction of neat fuel vehicles to help resolve outstanding concerns (e.g., safety) and demonstrate benefits of these vehicles.

Disadvantages of Option 1

- o Would not be cost-effective since only 0.6% VOC reductions would be achieved and cost would be about \$10,000 per ton. A larger program is needed to be both cost-effective and environmentally effective.
- o Would substantially increase the cost of acquiring buses and other fleet vehicles.
- o Would not help neat fuels overcome the formidable barriers to entry since Federal mandate would create a de minimis market.

Option 2: In addition to Alternative 1, require beginning in 1995 that 50 percent of all new vehicles, including passenger cars, buses, and commercial cars and truck fleets in 25 of the worst ozone areas have the capability of using neat fuels. In addition, require fuel wholesalers and retailers in these areas to make neat fuels available at prices competitive with gasoline.

Advantages of Option 2

- o Creates a broad market for neat fuels and neat-fueled vehicles while still allowing the marketplace to choose the type of neat fuel that best suits local economic and environmental circumstances.
- o Could be a major component of the President's toxic air pollution control strategy. It provides substantial reduction in urban air toxic emissions such as benzene, 1-3 butadiene, polycyclic organic matter and diesel particulate. While direct formaldehyde emissions increase somewhat, indirect formaldehyde decreases even more due to the lower reactivity of methanol emissions.
- o Represents the largest and most dramatic control measure for automobiles, thus obviating the need for other more costly automobile controls.

Disadvantages of Option 2

- o If other motor vehicle control measures are adopted, provides only small VOC reductions (1.7% by 2005).
- o Requires the Federal Government to impose new extensive, regulation on vehicle manufacturers and refineries in order to artificially create new markets. In the short term, most methanol would have to be imported from the Mideast, the Caribbean, and perhaps some Pacific nations.
- o May not be workable. Issues of how to induce consumers to purchase neat fueled vehicles and to assure that neat fuels will be sold at prices competitive with gasoline remain unresolved. The imposition of gasoline prices controls by local governments may be required. Moreover, many technological issues regarding the development of neat fueled vehicles remain unresolved.
- o Methanol is not economically competitive with gasoline, costing 30% or more at current prices, and may not be so in the next ten years. OTA (April 1988) estimated a cost-effectiveness of \$38,000/ton based on a projected 50% price differential.

Option 3. Same as Alternative 2 but allow individual States to "opt out" of the alternative fuel mandate in exchange for other ozone controls (not otherwise required by law) that result in equal or greater air quality improvements than alternative fuels in these nonattainment areas.

Advantages of Option 3

- o Both opponents and proponents argue that this option will prove their case.
- o All of the benefits of Options 2 and more cost-effective, because States could substitute other ozone control measures if they are cheaper than the alternative fuels option.
- o Allows some "targeting" of alternative fuels to the cities that would benefit most.
- o Allows at least partial local decision-making, and thereby avoids imposition of Federal mandates with no flexibility.

Disadvantages of Option 3

- o Reduces economies of scale and size of the Federally established market.
- o Adds considerable uncertainty concerning the size and scope of the program, which will delay implementation and raise concerns over long-term commitment to a serious shift to these fuels.
- o If other Federally mandated mobile source control measures are not required by legislation, it is very unlikely that many states can make the necessary showing that other ozone controls resulting in equal or greater reductions are available.

Note: If a neat fuels program is included in severe and serious nonattainment areas, the percentage reductions achieved in those areas by the other mobile source measures on the list will decrease, and vice versa. Therefore, the reduction achieved by each mobile source measure is presented in Chart 2 in two ways: first, assuming that neat fuels measures are not adopted; second, assuming that all measures, including neat fuels are adopted.

Chart 2

COMPARISON OF VOC REDUCTIONS ACHIEVED BY VARIOUS MOBILE SOURCE CONTROL MEASURES

VOC Reductions by Year 2005

<u>Neat Alternative Fuels (Methanol or Compressed Natural Gas)</u>	<u>With Baseline 1/ Controls but Without Other Federal Mobile Source Measures</u>	<u>With (or After) 1/ Baseline Controls & Other Federal Mobile Source Measures</u>
1. 50 percent mandate in 25 serious and and severe non- attainment cities with local opt-out (2005)	7.4	1.7
2. Same mandate in 2010	12.4 (2010)	4.2 (2010)
3. Gas Volatility (Phase II) (RVP from 10.5 to 9.0)	8.0	5.2
4. Stage II Vapor Recovery	1.5	1.1
5. Enhanced Inspection and Maintenance	1.2	0.8
6. Extending Useful Life of Catalysts	1.0	0.7
7. Hydrocarbon Tailpipe	0.4	0.3

1/ Note: These reductions are relative to the year 2005. The neat fuel reductions would be higher if based on 2010.

Issue 2. To what extent should the Act allow States to opt out of a neat fuels program by implementing other control activities instead?

Option 1. States opting out would impose alternative controls based on their own (rather than EPA) baseline projections and estimates of reductions achievable from such controls. States would be required to notify EPA within 18 months if they plan to "opt out," and must adopt an alternative program (including any necessary enabling authority) within 12 months after notification to EPA. An alternative program must achieve the same resulting emissions levels as would be obtained through the implementation of a mandatory neat fuels program using EPA baseline projections. EPA would retain authority to rebut and overturn a State alternative plan through a rule-making action. Any State whose alternative control plan was overturned by EPA would then automatically become subject to the mandatory neat fuel requirements.

Option 2. States may opt out of a neat fuels program if EPA approves replacement controls that provide equal or greater long-term environmental benefits (including toxic air emissions) than those achieved by neat fuels. Alternatives must be over and above those required by the Act and must be approved by EPA within 18 months of adoption of Clean Air Act amendments.

Discussion: While all members of the working group believe that States should have flexibility to substitute alternatives, such as local transportation plans or additional stationary source controls, in lieu of a neat fuels program, the amount of flexibility is a significant issue.

Advantages of Option 1

- o Provides States with more flexibility than Option 2 to pursue less costly alternative control measures, but would still achieve the same emissions levels as the mandatory neat fuels program.
- o EPA's mobile source estimates are based on questionable assumptions. This alternative gives States the flexibility to make revisions to the estimates.
- o States would be fully responsible for defending VOC estimates and alternative measures, relieving the Federal Government of any legal risk or responsibility if States impose unpopular measures.

Disadvantages of Option 1

- o EPA will be in the undesirable position of initiating a rule-making action if there are unresolved disagreements with a State.
- o If some States' estimates are found to be faulty, then those States would be forced to adopt a neat fuel program at an accelerated pace.
- o These provisions would radically deviate from the current Clean Air Act which requires that EPA approve all reduction estimates made by States to achieve ambient health standards.

Advantages of Option 2

- o Provides ample flexibility consistent with the current statutory requirement that EPA either approves a proposed State action or implements a Federal program necessary to achieve the health standard.
- o Avoids the obvious tendency to seek short-term non-controversial measures that avoid exceedances but do not result in long-term reductions.
- o The 18 month rule forces States to declare their intentions early so that the fuels industry will know the extent of neat fuels requirements nationwide and can begin to establish refining and distribution networks.

Disadvantages of Option 2

- o Requiring that alternative controls be subject to EPA approval will preclude their implementation. EPA assumptions clearly favor a neat fuels program.
- o Continues the overly inflexible and intrusive Federal intervention in State/local government affairs that exists throughout the Clean Air Act.
- o It is unfair to require air toxics reductions as a condition of an opt out that would not be required in areas not subject to the neat fuels program.

Issue 3. Require that all serious and severe ozone and CO nonattainment areas implement enhanced vehicle Inspection and Maintenance (I/M) programs.

National Cost: \$90M; Cost/ton: \$1,200/ton; %VOC Reduction: 1.2%

Discussion: Essentially all areas that would be required to have enhanced I/M already have basic I/M programs. Enhanced I/M would require a more thorough check of the car, i.e., tampering and fuel switching checks in addition to the existing exhaust check.

Advantages:

- o With many of the administrative overhead and consumer inconvenience costs already in place, enhancements via a more thorough inspection and repair can be made cost-effectively.
- o The option avoids confrontation on the issues that are most sensitive with state legislatures (new programs and expanded coverage area), and allows states to make local decisions on those points.

Disadvantages:

- o Inspection and maintenance programs have been enormously controversial and have met with stiff consumer resistance. Even the suggestion of more rigorous inspections would be controversial.
- o At \$1200 per ton removed, this is one of the least cost-effective measures under consideration.
- o Technology improvements in future vehicles will make I/M less effective. For example, vehicles that can self-diagnose problems, alert the driver and direct a mechanic to properly repair the problem will go a long way to alleviating the very problems that I/M programs catch. Also, the disappearance of leaded gas at many service stations will reduce mis-fueling.

Issue 4. Extend the statutory definition of "useful life" for passenger cars from 5 years/50,000 miles to 10 years/100,000 miles.

National Cost: \$130M; Cost/ton: \$525/ton; %VOC Reduction: 1.0%

Discussion: The current law restricts the useful life of cars to 5 years or 50,000 miles, whichever comes first. This provision effectively limits the auto manufacturers' liability to design and produce emission control systems that are durable only for this length of time. Of course, cars are operated for much longer periods of time.

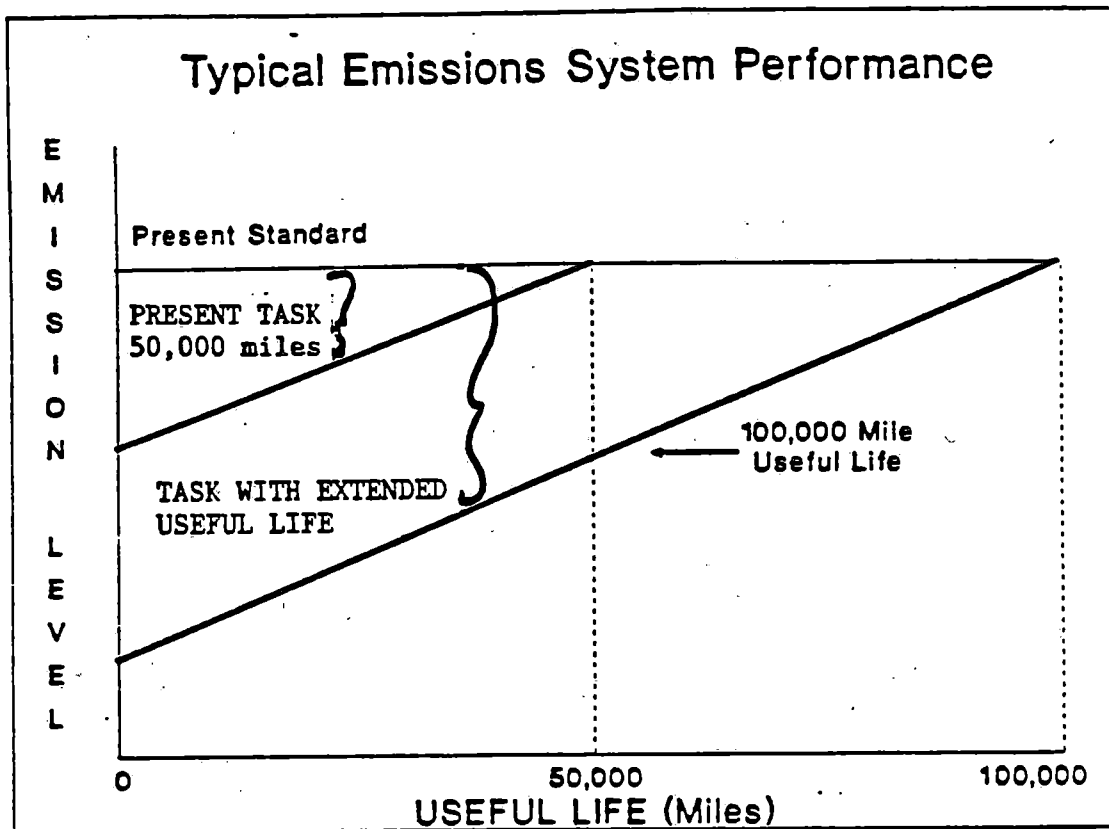
The useful life definition for passenger cars would be 10 years/100,000 miles as it applies to the certification and in-use (recall) requirements; however, recall test vehicles would be limited to 75,000 miles. The warranty requirements, which are the most politically contentious because of the strong opposition of the aftermarket service industry to any extension, would remain at 5 years/50,000 miles.

Advantages:

- o Provides one of the more cost effective reductions, affecting all passenger car tailpipe and evaporative pollutants by requiring more durable emission control equipment; affected pollutants are tailpipe hydrocarbons, carbon monoxide, oxides of nitrogen, and evaporative gasoline vapors, and mobile source toxics.
- o An extended useful life for cars is clearly not a technical problem. For other vehicle classes EPA has the authority to set the appropriate useful life. Vehicle manufacturers since 1984 have had to build light trucks to comply with standards for 120,000 miles. Heavy trucks and buses have useful lives, depending on weight classification, that extend up to 290,000 miles. Only for automobiles does the Clean Air Act restrict the useful life to 50,000 miles.

Disadvantages:

- o Greatly increases performance requirements on the automobile industry, which is already being hit hard by other proposed control measures.
- o Will cost \$25 per vehicle for a total cost of about \$250 million per year.
- o Most excess emissions above 50,000 miles may be maintenance related. A longer useful life will only slightly help that problem.



Source: Ford Motor Company

EPA Note: The above theoretical chart, provided by the auto companies, conflicts with emissions data from those same companies. Since, 1984, light trucks have had a full (120,000 mile) useful life requirement. The data submitted to EPA by vehicle manufacturers when certifying light trucks indicate a deterioration curve which flattens out (not continues to increase) after 50,000 miles. This shows it is technically feasible to improve emission control system durability while not having to lower the "zero-mile emissions level.

Issue 5. Form of Refueling Requirement

Refueling Options:

1. Require "Stage II" devices on gasoline pumps at service stations in ozone non-attainment areas only.
2. Require onboard controls on all future gasoline-powered vehicles nationwide.

Gasoline vapors escape during vehicle refueling. These VOC vapors can be controlled by either ensuring that gas pump nozzles fit tightly over gas intake tubes or installing onboard canisters to capture vapors that would otherwise escape during vehicle refueling.

An EPA regulation known as Stage I required that many non-attainment cities install controls on gasoline storage tanks at service stations during in the late 1970s and early 1980s. The debate over further control of refueling emissions, if any, has been raging ever since that time. Hence, the term "Stage II." In the absence of new legislation, environmental groups have filed successful suits against large non-attainment cities to require Stage II controls. California, St. Louis, New York, New Jersey and Washington, D.C., have or will put Stage II controls in place. Others such as Massachusetts and Connecticut are awaiting the outcome of the legislative debate, but may be forced by the courts to implement these controls anyway.

The automobile and petroleum industries are naturally divided on this issue. In addition, non-industry estimates also vary widely and are contradictory. Therefore, high and low estimates for each are presented below.

<u>Control Technique</u>	<u>%reduction VOC</u>	<u>Cost Effectiveness \$/Ton</u>	<u>Annual Costs Nationwide \$M</u>
1. Onboard	2.6	Credit - 2,500	
Proponents		Credit	720
Opponents		2,500	900
2. Stage II	1.5	450-1,000	
Proponents		450	170
Opponents		1,000	870

Advantages of Stage II devices at gasoline pumps (Refueling Option 1)

- o Stage II can be targeted to non-attainment areas. Thus, Stage II provides a limited, regional control program in areas where the benefits of controlling gasoline vapors are high.
- o A Stage II system will achieve major VOC reductions much earlier than on-board devices within two or three years. On the other hand, less than 60 percent of the vehicle fleet will have on-board systems in place by the year 2000.
- o Reduces toxic air-related cancer deaths in non-attainment areas by the same degree and sooner than onboard option. VOCs are toxic pollutants with direct local exposure to individuals. This option is far more consistent with principle of early reduction under the Administration's toxic air pollution legislative strategy than on-board canisters.
- o An analysis for the Office of Technology Assessment concluded that Stage II was substantially more cost-effective than on-board (\$548 per ton v. \$2,425 per ton.)
- o No safety concerns are associated with Stage II devices. The safety of an on-board control system has been questioned by critics. Last October, the National Highway Traffic Safety Administration (NHTSA) reported unresolved safety concerns.
- o Several major cities already have Stage II in place and more will have them soon, thus reducing the benefits of on-board controls.

Advantages of "on-board" canisters in all automobiles:

- o Onboard canisters are more convenient than the Stage II devices and would improve fuel economy, thereby offsetting vehicle hardware costs.
- o Reduces benzene and other "air toxics" nationwide, thus providing health benefits in these areas not provided by Stage II. Given the significant toxic benefits to people refueling their cars, it makes no sense not to protect motorists nationally.
- o Would relieve States from the responsibility of having to implement a difficult to operate, controversial system (Stage II), that has been the source of great consumer dissatisfaction.
- o Without onboard canisters, the major burden of national non-attainment controls will have to be borne by the petroleum industry. The auto industry should bear their fair share of the burden.
- o On-board will relieve State and local enforcement.

Issue 6: Require states that will remain in nonattainment after implementing Federal measures achieve 3 percent annual progress towards meeting environmental goals.

Discussion: Even if all measures discussed on previous pages are adopted, some areas will remain out of attainment of the ozone standard. The question then becomes whether further progress should be mandated without specifying specific actions and if so, what annual rate of "progress" is appropriate. EPA would provide an exemption to the 3% requirement if an area can demonstrate attainment with lesser reductions, show that a three percent reduction is infeasible, or show that equivalent NOx control would be more cost-effective. If an annual reduction option is rejected, the normal State implementation planning program would remain in effect as the mechanism for ultimately achieving compliance with the ozone standard.

Advantages

- o A requirement for steady further progress will make other less stringent provisions (compared to Congressional bills) in the Administration's bill more acceptable. In particular the ability to obtain an extension of attainment deadlines will be politically tied to a strategy for reductions beyond Federal measures.
- o Provides a escape valve for States if a reduction requirement turns out to be unnecessary. Reductions attributable to measures such as CTGS, hazardous waste rules and I/M would count toward 3% and may be enough in many areas. Adds flexibility to include NOx controls if these prove to be more cost-effective.
- o States have been unwilling to implement tough, politically sensitive controls without a strong Federal mandate.

Disadvantages

- o Additional State controls could add \$5 - 9 billion per year to cost of the bill. The 3% per year approach is the more costly way to achieve additional reductions because the approach is less flexible and achieves reductions sooner.
- o Automatic 3% reduction would force the States to adopt draconian measures based on inaccurate speculative models. NOx controls, controls over smaller sources, transportation controls or other contentious controls may be required before the effects of various other Federal and State control actions are known.
- o The current SIP process will allow for long term more cost-effective solutions rather than the constant search for the next 3% to get by one more year.

III. ALTERNATIVES FOR OZONE CONTROL

From the lengthy and vigorous debate within the DPC working group, there emerged a consensus on several principles that have subsequently framed the selection of control alternatives.

1. The goal is to make a major effort toward bringing non-attainment areas into attainment with health standards. Federal leadership in the form of some national measures will be needed to address and resolve problems that transcend State boundaries or to achieve more efficient or cost-effective solutions nationally.
2. Control measures to achieve progress toward attainment of the standards should be selected on the basis of the extent to which they achieve the greatest reductions at the least cost.
3. The Clean Air Act's principle of Federalism should be retained where possible and economically appropriate. Cities and States should have maximum flexibility to tailor and fashion individual control strategies. States should have the option where possible of substituting local measures not required in the Act for Federally-mandated local measures as long as commensurate reductions can be achieved.
4. States should be given reasonable time to implement controls.
5. The selection of control measures should reflect consideration of their ability to reduce emissions of toxic air pollutants.

Range of Alternatives

Four alternatives are presented on the following pages that include a package of controls for addressing the ozone problems. Table 1 provides a summary of the controls included in each option. There are four consensus control measures agreed to by all members of the working group. These measures are:

- o Volatility Phase II (8.0% VOC Reduction; \$390 per ton)
- o Vehicle Evaporative Controls (2.9% VOC Reduction; \$140 per ton)
- o Hazardous Waste Facility Controls (3.2% VOC Reduction; \$900 per ton)
- o Commercial/Consumer Product Controls new authority (2.5% VOC Reduction; \$2,000 per ton)

Reductions and costs for these measures will be included in each alternative but not mentioned further in the text. The cost of the

additional State controls cannot be estimated for most alternatives. The cost of a 3% annual reduction after all identifiable controls are applied (29% VOC reduction beyond current program) is \$5 - 9 billion per year.

Table 1: Summary Comparison of Alternatives

<u>Consensus Controls</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
Volatility Phase II	X	X	X	X
Vehicle Evaporative	X	X	X	X
Hazardous Waste Facilities.....	X	X	X	X
Commercial/Consumer Products.....	X	X	X	X
<u>Additional Measures</u>				
Neat Fuels				
a. Buses.....	X			
b. Fleets and Buses....		X		
c. 50% with opt-out....			X	X
d. 50% with opt-out and fuel pooling....	X			
Refueling Controls				
a. Stage II.....	X	X		
b. Onboard.....				X
Vehicle Emission Trading.....	X	X		
Light Duty Trucks.....		X	X	X
Extended Useful Life...		X	X	X
Auto Tailpipe Stds....				X
Enhanced I&M.....		X		X
CTGs.....		X	X	X

<u>Results of Alt's:</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>
% VOC Red. 2005	21	25	27	29
Ann. Cost (\$ B)	2.4*	3.2-3.3*	3.0-3.1*	3.1-4.6*
Remaining Nonattainment Areas in 2005	34	26	25	23

* Cost estimates do not include the cost of the neat fuels program.

DECISION:

— — — —

Additional State Controls

a. Current SIP Process.	X	X		
b. 3% Progress Mandate..			X	X
c. Neat Fuels for Other Areas.....	X			

DECISION:

— — — —

Alternative 1

Description

o Neat Alternative Fuels program

- Mandate alternative fuels for metropolitan buses.
- Require the 25 most serious non-attainment areas with a total population of 80 million to reduce emissions by an amount equivalent to a 50% implementation of alternative fuel vehicles in the year 2005. Areas would either be required to use such vehicles or demonstrate that equivalent reductions could be achieved through reductions of emissions from any other sources.
- Set average standards for fuel cleanliness and allow refineries the flexibility to "fuel pool" (i.e. meet the standards by selecting the least cost mix of very clean alternative fuels and cleaner refined oil products).

o Mobile Source Controls - Allow complete vehicle emissions trading for all new vehicles sold in the United States within one year after enactment of the Act. Such trading would allow automobile manufacturers flexibility to meet new emissions standards on average), rather than for every vehicle or class of vehicle.

o Additional State Controls - Require a neat fuels program for other cities that require additional controls to come into attainment, even after imposing the consensus controls.

Cost and Percent VOC Reduction for Identifiable Controls

VOC Reduction 1995: 12%; 2000: 17%; 2005: 21%

Annual Cost: \$2.4 billion. Does not include cost of neat fuels.

Advantages

- o Fulfills the President's commitment to neat fuels by creating a broad market for clean alternative fuels and vehicles capable of using those fuels. Allows the marketplace to choose the mix of clean fuels that best suits local circumstances.
- o The local opt-out allows States to substitute cheaper ozone control measures if they obtain greater VOC reductions, thereby targeting neat fuels to the cities that benefit most and allowing at least partial local decision-making.
- o Represents the largest and most dramatic reduction of automobile VOC emissions, obviating the need for other more costly automobile controls.
- o **Fuel pooling**, California's innovative measure to reduce aromatic levels of gasoline, directly addresses the most serious health risks (benzene and other aromatic emissions) while obtaining low-cost, flexibly-achieved reductions in ozone reactive hydrocarbon emissions.

Disadvantages

- o Failure to include any control measures for gasoline vehicles will be viewed as a serious weakness by environmentalist and many members of Congress.
- o The neat fuels program may not be workable as a sole Federal vehicle control measure and EPA cannot verify that fuel pooling is feasible. A 50 percent share will be difficult to guarantee and the issue of how to induce consumers to purchase neat fueled vehicles remains unresolved.
- o Neat fuels are not economically competitive with gasoline. Opponents claim that neat fuels cost 30% more than regular gasoline at current neat-fuels prices, and are not likely to be economically competitive in the next ten years. (The differential is less for premium gasoline.)

Alternative 2

Description

- o Neat Alternative Fuels for Buses and Fleets - Beginning in 1992, require the use of neat fuels in severe and serious non-attainment areas for new buses and centrally fueled fleets of 10 cars or more.
- o Refueling Controls - require Stage II controls at service stations in non-attainment areas only.
- o Mobile Source Controls - Require Light Duty Truck Standards to be equivalent to current auto standards, Extend Useful Life of automobile catalysts, and require Enhanced Inspection and Maintenance for non-attainment areas.
- o Stationary Sources Controls - Require EPA to publish a schedule within 6 months promulgating Control Technology Guidelines, but do not mandate a specific number.
- o Additional State Controls - Developed through existing SIP process. States would be given 4 years to develop new SIPs including 2 years to develop revised emissions inventories. EPA would retain the current array of sanctions for failure to plan or implement a plan, but all sanctions would be discretionary.
- o Other - The National Research Council would be required to undertake a study of exposure rates to ozone and to quantify health improvements for VOC reductions at levels near the standard.

Cost and Percent VOC Reduction for Identifiable Controls

VOC Reduction 1995: 19%; 2000: 23%; 2005: 25%

Annual Cost: \$3.2 - 3.3B. Does not include the extra cost of neat fuels.

Advantages

- o Fulfills the President's pledge to encourage the use of neat fuels, but proposes a limited program designed to build public acceptance and provide further information on costs and benefits.
- o Avoids major implementation problems of the 50 percent requirement which may not work and may be extremely costly (OTA has estimated \$38,000/ton VOC removed) depending on the price of methanol.
- o Using the current SIP process will allow more cost-effective solutions than the constant search for the next 3% reduction

Disadvantages

- o The current SIP process is not sufficient to achieve additional reductions. States have already proven that they are not willing to implement tough, politically sensitive controls without a strong Federal mandate.
- o A failure to include vehicle tailpipe standards will be viewed as a serious weakness by environmentalists and many members of Congress.
- o Misses the opportunity to take a bold stand to promote acceptance of alternative fuels. A bus and fleet program will not develop the infrastructure needed for general use of neat fuels.

Alternative 3

Description

- o Neat Alternative Fuels with State "Opt-Out" - Beginning in 1995, require 50 percent of all vehicles in non-attainment areas including passenger cars, buses and commercial car and truck fleets use clean fuels and require that service stations provide neat fuels in these areas. States would have the ability to "opt out" of the requirement if they can demonstrate commensurate reductions in the non-attainment areas through other measures.
- o Refueling Controls - Require Stage II controls at service stations in nonattainment areas only.
- o Mobile Source Controls - Require Light Duty Truck Standards to be equivalent to current auto standards and Extend Useful Life of automobile catalysts.
- o Stationary Source Controls - Issue additional Control Technology Guidelines to use in controlling existing major emitters in non-attainment areas.
- o Additional State Controls - Mandate 3 percent per year reduction in all except marginal nonattainment areas. The percent requirement will be averaged over a 5 year period. Serious and severe areas would have to continue this reduction for a longer time but could seek a waiver if additional reductions were unnecessary or infeasible. Federal measures except for volatility and current vehicle emissions standards could count against this target.

Cost and Percent VOC Reduction for Identifiable Controls

VOC Reduction 1995: 18%; 2000: 23% 2005: 27%

Annual Cost: \$3.0 - 3.1B. Does not include the extra cost of neat fuels.

Advantages

- o Provides almost the same level of control as Alternative 4 except for the two controls (auto tailpipe standards and enhanced I&M) that are the least cost-effective.
- o Fulfills the President's commitment to neat fuels by creating a broad market for clean alternative fuels and vehicles capable of using those fuels. Allows the marketplace to choose the mix of clean fuels that best suits local circumstances.
- o The local opt-out allows States to substitute the cheaper ozone control measures if they obtain greater VOC reductions thereby targeting these fuels to the cities that benefit and allows least partial local decision-making.

Disadvantages

- o Neat fuels currently are not economically competitive with gasoline and a 50% share will be difficult to guarantee. Further, the program will cause a substantial disruption of the economy for only an additional 1.7% VOC reduction in 2005.
- o The 3 percent requirement provides less flexibility than the SIP process to implement more cost-effective long term control options, which could unnecessarily drive up costs due to the search for the next 3 percent.
- o Failure to include tailpipe standards will be viewed as a serious weakness by environmentalists and many members of Congress.

Alternative 4

Description

- o Neat Alternative Fuels Program - same as Alternative 3 (i.e. 50 percent of new vehicles purchased after 1995 in serious ozone attainment areas required to use neat fuels) except the "opt out" provision would be somewhat more restrictive.
- o Refueling Controls - require Onboard Canisters nationwide on every vehicle to prevent refueling emissions.
- o Mobile Source Controls - Require all mobile source controls under consideration including: 1) tighter Light Duty Truck Standards; 2) Extended Useful Life of automobile catalysts; 3) tighter automobile tailpipe standards; and 4) Enhanced Inspection and Maintenance in non-attainment areas.
- o Stationary Source Controls - Issue additional Control Technology Guidelines as in Alternative 3.
- o Additional State Controls - same as Alternative 3. Mandate 3 percent per year reduction in all except marginal nonattainment areas. The percent requirement will be averaged over a 5 year period. Serious and severe areas would have to continue this reduction for a longer time but could seek a waiver if additional reductions were unnecessary or infeasible. Federal measures except for volatility and current vehicle emissions standards could count against this target.

Cost and Percent VOC Reduction for Identifiable Controls

VOC Reduction	1995: <u>18%</u> ;	2000: <u>24%</u> ;	2005: <u>29%</u>
Annual Cost: \$3.1 - 4.6 B.	Does <u>not</u> include the extra cost of neat fuels.		

Advantages

- o Obtains the greatest degree of reductions and a better guarantee than the current SIP process that all areas will achieve attainment by the revised deadlines.
- o Balances state and Federal roles. National controls will address mobile sources, which cannot be regulated on a State by State basis. States would retain authority for designing control plans and selecting specific additional controls.
- o Fulfills the President's commitment to neat fuels by creating a broad market for clean alternative fuels and vehicles capable of using those fuels. Allows the marketplace to choose the mix of clean fuels that best suits local circumstances.

Disadvantages

- o Neat fuels currently are not economically competitive with gasoline and a 50% share will be difficult to guarantee. Further, the program will cause a substantial disruption of the economy for only an additional 1.7% VOC reduction in 2005.
- o Most costly option. Tailpipe controls, in particular, are not very cost-effective particularly since they would apply and impose costs in areas that need no controls.
- o Provides the least flexibility to states and, therefore, is the least consistent with the Federalism objective. Further, the 3 percent requirement could unnecessarily drive up costs due to the search for the next 3 percent.

Appendix A

Ozone

Areas with 1985-87 ozone expected exceedances greater than 1.0

EPA Region	Metropolitan Area (CMSA/MSA)	1985-87		1987	
		Design Value	Avg. Est. Exc.	2nd Daily Max Exc.	Est. Exc.
I	Boston, MA (CMSA)	0.16	2.2	0.14	4.3
I	Conn./Mass., CT-MA (Note #4)	0.17	3.8	0.17	11.6
I	*Hannock County, NE	0.13	1.3	0.12	1.1
I	*Kearney County, NE	0.12	1.2	0.09	0
I	*Knox County, NE	0.15	4.4	0.13	6.5
I	*Lincoln County, NE	0.13	2.4	---NO DATA---	
I	New Bedford, MA	0.14	2.4	0.12	1.0
I	Portland, ME	0.16	3.4	0.14	4.0
I	Portsmouth-Dover, NH-ME	0.13	3.2	0.13	3.2
I	Providence, RI-MA (CMSA)	0.16	6.5	0.16	7.8
I	Worcester, MA	0.13	2.1	0.11	0
I	*York County, ME	0.15	4.2	0.14	4.9
I	*Atlantic City, NJ	0.14	3.4	0.14	4.0
II	*Jefferson County, NY	0.13	4.7	0.13	4.7
II	New York, NY-NJ-CT (CMSA)	0.19	7.5	0.19	19.2
II	Allentown-Bethlehem, PA-NJ	0.13	1.4	0.13	3.2
III	Baltimore, MD	0.17	7.9	0.17	11.1
III	Huntington, WV-KY-OH	0.16	3.8	0.14	5.2
III	*Kent County, DE	0.13	1.8	0.15	3.2
III	Roanoke, VA	0.13	2.0	0.13	2.0
III	Portersburg, WV-OH	0.13	1.5	0.15	3.5
III	Philadelphia, PA-NJ-DE (CMSA)	0.16	13.6	0.18	23.2
III	Pittsburgh, PA (CMSA)	0.13	1.7	0.14	4.1
III	Richmond, VA	0.13	1.3	0.14	3.0
IV	Washington, DC-ND-VA	0.15	6.2	0.16	10.5
IV	Atlanta, GA	0.17	13.5	0.17	15.0
IV	Birmingham, AL	0.15	3.2	0.14	3.1
IV	Charlotte, NC-SC	0.13	3.0	0.14	4.0
IV	Jacksonville, FL	0.16	2.1	0.12	1.1
IV	Lansing, MI	0.13	1.6	0.11	1.1
IV	Louisville, KY	0.16	4.0	0.13	2.0
IV	Memphis, TN-AR-MS	0.13	2.0	0.15	2.0
IV	*Miami-Mialeah, FL (CMSA)	0.15	2.1	0.15	3.1
IV	Montgomery, AL	0.14	2.2	0.14	4.3
IV	Nashville, TN	0.14	3.2	0.13	3.2
IV	*Raleigh-Durham, NC	0.13	1.4	0.13	3.2
IV	Tampa, FL	0.13	2.1	0.16	4.2
V	Chicago, IL-IN-WI (CMSA)	0.17	7.4	0.18	12.8
V	Cincinnati, OH-KY-IN	0.14	1.6	0.15	2.1
V	Cleveland, OH	0.13	1.8	0.13	2.2
V	Detroit, MI (CMSA)	0.13	2.0	0.13	2.1
V	Grand Rapids, MI	0.13	1.3	0.14	3.0
V	*Indianapolis, IN	0.13	1.3	0.12	1.1
V	*Keweenaw County, WI	0.13	1.9	0.14	5.8
V	*Milwaukee, WI (6 Sheboygan, WI)	0.17	3.7	0.20	12.9
V	Muskegon, MI	0.14	6.0	0.18	11.0
VI	Baton Rouge, LA	0.14	3.0	0.16	5.1
VI	Beaumont-Port Arthur, TX	0.13	2.1	0.13	3.2
VI	Dallas-Fort Worth, TX (CMSA)	0.16	6.1	0.14	5.2
VI	El Paso, TX	0.16	9.0	0.17	11.1
VI	Houston, TX (CMSA)	0.20	19.1	0.18	20.8
VI	*Iberville Parish, LA	0.13	2.4	0.13	2.1
VI	Tulsa, OK	0.12	1.1	0.12	1
VII	St. Louis, MO-IL	0.16	5.4	0.17	8.0
VIII	*Salt Lake City, UT	0.15	3.8	0.11	1.0
IX	*Bakersfield, CA (Note #5)	0.16	35.1	0.16	47.6
IX	*Fresno, CA	0.17	30.5	0.17	42.6
IX	*Kings County, CA	0.13	5.6	0.13	5.6
IX	Los Angeles, CA (CMSA)	0.35	143.5	0.32	141.2
IX	Modesto, CA	0.15	16.2	0.15	20.8
IX	Phoenix, AZ (Note #5)	0.14	2.4	0.11	0
IX	Sacramento, CA (Note #5)	0.17	9.7	0.17	14.6
IX	San Diego, CA	0.18	12.5	0.18	26.8
IX	San Francisco, CA (CMSA)	0.14	3.4	0.15	4.1
IX	Santa Barbara, CA	0.14	1.7	0.13	3.4
IX	Stockton, CA (Note #5)	0.14	8.1	0.12 (inc.)	
IX	Vernal, CA (Note #5)	0.15	11.9	0.15	21.6
X	Portland, OR-WA (CMSA)	0.15	1.8	0.11	1.2

*Not a metropolitan statistical area.

SOURCE: U.S. EPA, "Environmental Revs." press release, May 3, 1988.

Note: In 1988 more areas were out of attainment and other areas had greater exceedances.

Explanation: This table shows the average number of days each area was out of attainment in 1985-1987.

CLEAN AIR ACT OPTIONS PAPER: CARBON MONOXIDE NONATTAINMENT

CARBON MONOXIDE

I. BACKGROUND

The second major air quality "non-attainment" issue is carbon monoxide (CO).

There are currently 52 areas out of attainment with the EPA's carbon monoxide standard. The CO non-attainment situation, however, is much less intractable than the ozone non-attainment situation since ongoing EPA programs under the Clean Air Act will help reduce CO emissions over the next decade.

Carbon monoxide is a colorless, odorless gas that tends to reduce the oxygen carrying capacity of the blood. It is a particularly serious health threat to individuals who suffer from cardiovascular disease, especially those with angina or heart disease. There is limited information, derived from animal studies, suggesting that CO may adversely affect development of the fetus.

Unlike VOC emissions which come from a wide range of sources, two-thirds of CO emissions come from mobile sources. Other major sources of CO are industrial processes and wood stoves.

The carbon monoxide standard is nine ppm measured over an eight-hour period, based on the second maximum eight-hour period in one year. If an area exceeds the standard for two or more eight-hour periods, it is classified non-attainment. Fifteen of the 50 carbon monoxide non-attainment areas are moderately out of attainment. An additional six are seriously out of attainment.

Carbon monoxide ambient levels decreased 32 percent from 1978 to 1987 and the number of eight-hour exceedances decreased by 91 percent during that same period.

Emissions of carbon monoxide decreased 25 percent from 1978 to 1987 largely due to reductions in mobile sources emissions, despite a 24 percent increase in vehicle miles traveled in the last 10 years. Some improvement from controls on automobiles will continue, due to fleet turn-over. For example, cars purchased before 1981 amount to only 38 percent of the vehicles miles traveled (VMT), but they account for over 86 percent of CO emissions.

This improvement is expected to level off in the 1990s, however, because EPA projects continuing sharp increases in VMT. EPA estimates that VMT nationwide will grow 51 percent by the year 2000.

Initial EPA estimates project an additional 24 percent reduction in total CO emissions by the year 2005 due to fleet turnover under the current program after taking increased VMT into account. EPA estimates that this will bring 24 of the 51 non-attainment areas into attainment with the CO standard.

In addition, several of the provisions being contemplated in the ozone non-attainment section of the bill will also help reduce CO. A description of these, plus other envisioned controls on mobile sources, follows:

o Light duty truck CO standards

Within 12 months, EPA will issue regulations under existing law requiring lower-weight light trucks to meet a 3.4 grams per mile standard in the 1992 model year. This will reduce CO emissions by about two percent.

o Auto cold temperature CO standards

Within 12 months, EPA will issue regulations under existing law for a cold temperature standard and test procedures. This will reduce CO emissions by 7 to 12 percent.

o Extended definition of "useful life"

Auto manufacturers currently must certify that emissions control devices for passenger cars will meet the CO standard at 5 years or 50,000 miles. EPA would amend the Clean Air Act to change this to ten years/100,000 miles for certification at time of production. However, EPA would not require a change in vehicle warranties and would limit recall testing to 75,000 miles. This will reduce CO by up to 10 percent.

o Enhanced inspection and maintenance

An enhanced inspection and maintenance (I&M) program would allow some State flexibility in design, but generally would include: (1) tightening of definitions for vehicles exempt from current I&M programs; (2) tightening pass/fail limitations; and (3) increased sophistication of the emissions test. Programs would be required for CO non-attainment areas with population over 200,000 and

CO design values of 17 ppm or higher. This would reduce CO emissions by four to five percent.

In total, according to EPA, the current program plus these measures will reduce CO emissions by 45.6 percent by the year 2005. This will still leave six cities out of attainment without additional measures. Moreover, because some national measures targeted at automobiles will take some years to implement fully, EPA estimates that as many as 10 cities could remain out of attainment in the year 1995.

In order to bring these areas into attainment, EPA is proposing a major new initiative in oxygenated fuels.

II. ALTERNATIVES FOR CONTROLLING CARBON MONOXIDE

Issue: Should an oxygenated fuels program be mandated to control carbon monoxide.

- Option 1: No Federally mandated oxygenated fuels program.
- Option 2: Require serious CO nonattainment areas to use oxygenated fuels of their choice (with no specific oxygen requirement) on a seasonal basis as needed, but allow areas to "opt out" if they can demonstrate that other control measures are sufficient to achieve attainment.
- Option 3: Require at least 2.7 percent oxygenation of fuels in moderate and serious CO nonattainment areas, but allow areas to "opt out" if they can demonstrate that other control measures are sufficient to achieve attainment.
- Option 4: Require at least 2.7 percent oxygenation of fuels in moderate and serious CO nonattainment areas, as well as in other CO nonattainment areas with serious and severe ozone problems. Allow no "opt out".

Discussion: Oxygenated fuels are blends of gasoline and ethanol, methanol, MTBE, or ETBE. Current technology vehicles can use oxygenated fuels of up to about 3 % oxygen content without engine modifications. Oxygenated fuels accounted for about 30 percent of total U.S. gasoline sales in 1988.

According to EPA estimates, a broad oxygenated fuels program (Options 3 and 4) would reduce CO emissions by 18% in 2005. Oxygenated fuels can also help reduce emissions of benzene, a proven carcinogen. On the other hand, they can produce higher NOx emissions that contribute to ozone formation.

The cost of a broad oxygenated fuels program depends on assumptions as to Federal ethanol subsidies. If the current 60 cents per gallon subsidy were repealed, it is probable that MTBE (a blend of gasoline, methanol and ether) would be used exclusively to meet a Federal mandate for oxygenated fuels. This would result in a cost-effectiveness figure of \$235 per ton in 1992.

It is not likely, however, that the Federal ethanol subsidy will be repealed. Under this assumption, ethanol would probably be cost-competitive with MTBE and could account for about 50 percent or more of the blends used to meet a Federal oxygenated fuel mandate.

This would result in a cost-effectiveness figure of \$390 per ton in 1992 and \$800 per ton in 2005.

Cost Estimates: \$235/ton in 1992 (no gasohol tax exemption);
\$390/ton in 1992 and \$800/ton by 2005 (with continued gasohol tax exemption).

Option 1: No Federally mandated oxygenated fuels program.

Advantages of Option 1

- o Allows nonattainment areas maximum flexibility in selecting control measures for achieving attainment with the CO standard.
- o The Federal government would not be picking "winners and losers" among fuels. Commercial development of ETBE and other new oxygenated fuels would not be hindered.
- o Recognizes that if enhanced I&M, extended useful life, and light duty truck control measures are selected, there will be less need for a mandatory oxygenated fuels program.

Disadvantages of Option 1:

- o Would not provide as much assurance relative to other options that attainment would be achieved.
- o Does not support the President's commitment to alternative fuels.
- o May forego possible gains in air toxics risk reductions from alternative fuels.

Option 2: Require serious CO nonattainment areas to use oxygenated fuels of their choice (with no specific oxygen requirement) on a seasonal basis as needed, but allow areas to "opt out" if they can demonstrate that other control measures are sufficient to achieve attainment.

Advantages of Option 2:

- o Compared to Option 1, this Option allows nonattainment areas almost as much flexibility in selecting control measures for achieving attainment with the CO standard.
- o Allowing oxygen percentages less than 2.7 would expand consumer fuel choice. A 2.7 percent requirement would preclude the use of ETBE and would severely curtail the use of MTBE without further EPA waivers. Allowing a seasonal strategy (such as Denver's) would reduce costs and lower the risk of exacerbating the ozone problem.
- o Provides some support for the President's commitment to alternative fuels.

Disadvantages of Option 2:

- o Would not provide as much assurance relative to Options 3 and 4 that attainment would be achieved.
- o May not be sufficient to make good on the President's commitment to the farm (ethanol) constituency.
- o May forego possible gains in air toxics risk reductions from alternative fuels.

Option 3: Require at least 2.7 percent oxygenation of fuels in moderate and serious CO nonattainment areas, but allow areas to "opt out" if they can demonstrate that other control measures are sufficient to achieve attainment.

Advantages of Option 3:

- o Provides more assurance, relative to Options 1 and 2, that CO attainment will be achieved.
- o Consistent with the President's campaign promise to establish a 3 percent oxygen standard for CO nonattainment areas.
- o Promises more air toxics risk reductions than Options 1 or 2.

Disadvantages of Option 3:

- o Would limit fuel choice, especially if an "opt out" is made difficult to obtain.
- o To the extent that ethanol and ETBE are subsidized, the cost to the Treasury (Highway Trust Fund) will increase -- potentially \$1.7 billion per year.

Option 4: Require at least 2.7 percent oxygenation of fuels in moderate and serious CO nonattainment areas, as well as in other CO nonattainment areas with serious and severe ozone problems. Allow no "opt out".

Advantages of Option 4:

- o Provides the greatest CO, air toxic, and VOC reductions of any option.
- o Consistent with the President's campaign pledge to establish a 3 percent oxygen standard in CO nonattainment areas.
- o May be an ineffective environmental strategy in the later years as newer vehicle controls reduce the effectiveness of an oxygenated fuels program.

Disadvantages of Option 4:

- o Provides the least flexibility for nonattainment areas of any Option which will result in unnecessary costs for some areas.
- o Will result in increased NOx emissions and may be an ineffective environmental strategy in the later years as newer vehicle controls reduce the effectiveness of an oxygenated fuels program.
- o Most expensive Option in terms of Federal subsidies.

Oxygenated Fuels Decision:

- / / Option 1: No Federally mandated oxygenated fuels program.
- / / Option 2: Require serious CO nonattainment areas to use oxygenated fuels of their choice (with no specific oxygen requirement) on a seasonal basis as needed, but allow areas to "opt out" if they can demonstrate that other control measures are sufficient to achieve attainment.
- / / Option 3: Require at least 2.7 percent oxygenation of fuels in moderate and serious CO nonattainment areas, but allow areas to "opt out" if they can demonstrate that other control measures are sufficient to achieve attainment.
- / / Option 4: Require at least 2.7 percent oxygenation of fuels in moderate and serious CO nonattainment areas, as well as in other CO nonattainment areas with serious and severe ozone problems. Allow no "opt out".