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TWO CHEERS FOR BUSH'S CLEAN AIR PLAN

INTRODUCTION

George Bush recently unveiled his proposals for amending and improving the 1970 Clean Air Act.¹ Parts of his package indicate a bold – though not complete – departure from the current regulatory system of pollution control in favor of powerful market-based tools to reduce air pollution at the lowest economic cost. For this Bush deserves high marks, particularly for proposing a system of tradeable emission rights to combat the problem of “acid rain.” But other parts of the Bush plan are disappointing, such as his tighter controls on other air toxins. Here the President merely suggests more of the same expensive regulatory approach practiced for the last 20 years.

From those who believe that the environment can be protected without penalizing the economy or destroying jobs, Bush deserves two cheers. His plan is a bold and important step in the right direction. He would get the proverbial third cheer were not the powerful market tools which he proposes offset by his call for more stringent and costly regulations that in some cases are based on questionable scientific assumptions. To win the third cheer and make his plan even more effective to clean the air that Americans breathe, Bush and Congress should:

- ◆ ◆ ensure that Environmental Protection Agency regulations do not frustrate the operation of emissions markets;**
- ◆ ◆ allow wider use of markets to control acid rain;**
- ◆ ◆ extend the application of markets to other air pollutants; and**

1 The President's bill has been presented in general form. The specifics of the legislation will not be released until a formal bill is presented to Congress.

◆ ◆ recognize that the regulatory controls available under current law generally are sufficient.

Markets As Ally. The Bush proposals on clean air have won wide praise. They deserve most of that praise because the President has shown genuine concern for the environment and because he has emphasized that market mechanisms can be more potent for cleaning the environment than traditional command-and-control strategies. Many environmentalists now recognize that markets can be their ally, rather than their enemy, in achieving environmental goals. Congress has an opportunity, in amending the Clean Air Act, to build on the emerging consensus that Bush has mobilized with his plan.

THE BUSH PROPOSALS

The Clean Air Act was created by substantially amending existing air quality legislation in 1970, with the intention of protecting “the Nation’s air resources so as to promote the public health and welfare and the productive capacity of its population.”² Under the Act, the Environmental Protection Agency (EPA) – created in 1970 by Richard Nixon – was instructed to reduce air pollution by setting industrial emission standards for six major categories of pollutants: sulfur dioxide, particulates (small particles, such as dust or soot), carbon monoxide, nitrogen dioxide, ozone, and lead.

In each of these categories, there has been significant improvement since the Act was passed. Examples:

◆ ◆ From 1978 to 1987, total national sulfur dioxide emissions were reduced by 17 percent. Measurable air quality in residential and commercial areas improved 35 percent.³

◆ ◆ Total emissions of suspended particulates were reduced by 23 percent from 1978 to 1987.⁴

◆ ◆ Emissions of carbon monoxide were reduced by 25 percent from 1978 to 1987. This occurred despite a 24 percent increase in vehicle miles traveled during this period.⁵

2 The Act has seen several amendments since 1970. For example, in 1974 the EPA was directed to regulate the emissions of air toxins providing an “ample margin of safety” for public health. In 1977 the Act was amended to require urban ozone standards and to prohibit new coal-burning utility boilers from using low-sulfur coal.

3 From the “National Air Quality and Emissions Trends Report, 1987,” United States Environmental Protection Agency, Office of Air Quality, Planning and Standards Monitoring and Reports Branch, Research Triangle Park, North Carolina, March 1989.

4 *Ibid.*

5 *Ibid.*

◆ ◆ Emissions of nitrogen dioxide decreased 8 percent from 1978 to 1987. Only Los Angeles County still exceeds the federal standard for this chemical.⁶

◆ ◆ Emissions of the reactive chemicals that can form ground level ozone, known as volatile organic compounds (VOCs), were reduced by 17 percent between 1979 and 1987. The number of days during which any measurement exceeded the national standard for ground level ozone declined by 38 percent over the period.⁷ Unlike ozone at high altitudes, which helps screen out the sun's ultraviolet radiation, large doses of surface level ozone actually can damage individual health. Because it reacts so easily with other compounds, ground level ozone does not last long enough to rise to the upper altitudes.

◆ ◆ Emissions of lead fell 94 percent between 1978 and 1987. The emissions caused by vehicles (chiefly due to leaded gasoline) fell by 97 percent.⁸

In spite of the improvement achieved by the current Clean Air Act, pressure has grown to tighten emission standards and controls through new legislation to reauthorize and amend the Act. The President's plan accepts the view that existing air quality standards should be strengthened. His package, if enacted in its entirety, would add between \$14 billion and \$18 billion each year to the costs faced by business, public utilities, and automobile owners.

The Bush proposals address four main forms of pollution:

1) Acid Rain

Perhaps the most innovative element in the President's package is his plan to use markets to curb acid rain. Acid rain is the common term for emissions of sulfur dioxide (SO₂) and nitrogen oxides (NO_x). These generally are produced by the burning of fossil fuels, primarily coal, which release chemicals into the atmosphere. These chemicals ultimately are returned to the soil and water, usually as rain or snow, often far from the point of origin. Over a long period, acidic chemical buildup can alter the natural environmental balance of lakes and streams. Some lakes in the northeastern United States and southeastern Canada, for example, have deteriorated in recent years. The primary cause of this in many instances is believed to be acidic precipitation.

⁶ *Ibid.*

⁷ *Ibid.* The EPA adjusted its calibration system in 1979, which made it difficult to correlate earlier measurements.

⁸ *Ibid.* This remarkable success was achieved through a system incorporating marketable credit rights similar to Bush's plan for SO₂ and NO_x.

The President's plan calls for reducing SO₂ emissions by 10 million tons, by the year 2000.⁹ The White House estimates current SO₂ emissions to be approximately 20 million tons annually. This reduction would be achieved in two five-year phases. During the first phase, all major sources of SO₂ emissions¹⁰ would have to comply with a standard of no more than 2.5 pounds of SO₂ for each million btus of energy consumed.¹¹ In the second five years a more stringent standard of only 1.2 pounds per million btus would be imposed. Taken together, these new limits are intended to reach the Bush goal of a 50 percent reduction in SO₂ emissions.

During the second five-year period, the proposal also calls for a 2 million ton reduction from today's estimated 20 million ton emissions of nitrogen oxides (NO_x). Nitrogen oxides are formed when high-temperature burning of fossil fuels causes a reaction involving the nitrogen found naturally in the air. These emissions are suspected of contributing to acid rain and ozone production. Controlling NO_x output poses more technical difficulties than cutting back SO₂ emissions. Recognizing this, Bush would give firms the option of achieving modest reductions in NO_x, combined with deeper cuts in SO₂ emissions, provided the overall goal of a 12 million ton reduction in combined emissions of these pollutants is reached.

A Market for Emission Control. The advantage of the President's approach is that while it mandates specific levels of cleaner air, it resists mandating the particular technology to be used in reaching these levels. Rather than rely, as current policies do, upon a bureaucrat's arbitrary decision as to the technology to be used, the President offers incentives to stimulate the ingenuity of the individual plant operators to find ways of achieving the emissions reduction goals at the lowest overall cost. The aim here is to prevent programs for cleaner air from penalizing the economy, destroying jobs, and impairing American global competitiveness.

The President's flexible approach would enable private firms to work together, through the market, in achieving overall air quality goals as efficiently as possible. Just as companies react to price "signals" to turn raw materials, purchased in competitive markets, into finished products, firms would be able to create markets for any "credits" awarded to those firms able to reduce emissions below the levels required by the government. A market of this kind already has been successfully developed and tested in limited parts of the country, particularly Southern California.

This is how the Bush plan, still lacking some important details, is intended to work:

9 The White House has selected the year 1980 as its baseline for SO₂ emissions. Some emissions reductions have occurred since that time and would be credited against future compliance requirements.

10 Major being defined as a source of at least 100 tons per year.

11 According to the White House, 107 facilities in 18 states currently exceed this standard. A btu is a unit of energy. Burning 8 gallons of gasoline, or 90 pounds of coal, will produce approximately 1 million btus.

1) **The government would set national emissions limits targeted toward achieving air quality goals within specific deadlines.**

2) **A “credit” could be earned by exceeding the standards set by this national emissions control legislation. In other words, those firms that reduce emissions more than is required simply to reach the regulatory standard could earn a credit equal to some portion of the excess reductions.**

3) **Recognizing that these credits have no value unless they can be sold or exchanged for something else, the plan would permit firms that are unable to comply with the full emissions reduction requirements to acquire credits generated by firms that had improved upon the national emissions standard.**

4) **This exchange benefits both parties. The seller receives income for its efforts in additional emissions controls. The buyer, having paid less for the credits than the cost of equivalent emissions control technology or the cost of shutting down its facility, will have more resources available for maintaining jobs and production lines.**

Some firms may decide to accumulate credits and hold them to make it possible to expand future production without exceeding emissions standards. This short-term holding is called “banking” by the experts.

Thus, environmental goals will be achieved at a lower overall cost to the national economy. This will benefit not only the environment, but American employment and international competitiveness as well.

Incentives Not To Pollute. A market strategy is more effective at reducing pollution than a pure regulatory approach because it gives the incentive to firms to gain saleable credits by developing methods that actually exceed the emissions targets. Under the current law, over most of the nation a firm simply must meet the standard or face a penalty. There is no reward for doing better than the regulatory standards. But if, as with Bush’s proposals, a marketable credit can be received for improvements in controlling emissions, many firms would find it financially advantageous to develop new procedures or equipment that enable plants to improve upon the standards, since a portion of the credit for exceeding the target could be sold to other firms. Thus instead of simply fining heavy polluters – or putting them out of business – while giving no incentive to other firms to surpass the standard, as a regulatory control system does, the Bush market-based strategy would achieve the same environmental goals, but at a lower cost to the economy.

Remarkable Success. For example, lead levels in gasoline (lead is classified as toxic air pollutant) already have been reduced over 94 percent efficiently under a program of tradeable refinery permits introduced in 1982. The EPA estimates that savings under this program already exceed \$200 million.¹²

¹² See Robert W. Hahn, “Economic Prescriptions for Environmental Problems: How the Patient Followed the Doctor’s Orders,” *Journal of Economic Perspectives*, Spring 1989, pp. 95-114.

Without a market for tradeable credits, firms capable of unusually large reductions have no incentive to pursue them. And without the market for credits, firms that find it very difficult or expensive to cut pollution would have to cease operation. For example, even though two dry cleaners operate in the same area using similar equipment, if one operates at 80 percent of capacity for 24 hours each day, it may require a different emissions control technology from its competition, which may operate at 100 percent capacity for only 12 hours each day. No command-and-control approach could possibly account for the variety of situations in the economy.

Even with this built-in flexibility, however, the total costs of compliance would be substantial. The White House estimates that this portion of the President's Clean Air Act revisions would add \$700 million per year to business costs during the first five-year phase to the \$33 billion per year that it already costs business and consumers for meeting Clean Air targets. The even more stringent standards required in the second five-year phase would hike total costs an estimated \$3.8 billion annually.

During the first five years, the President's plan would create a market between plant sources within a single state or owned by a single utility company. In the second phase, trades would be permitted across state lines. Some potential savings will be lost because the plan apparently does not allow for trading between newly built sources and older, existing sources. By encouraging newly built facilities to compete in the market for emissions credits, greater innovation will be possible across an industry, with resulting cost savings for the economy.

Reducing Dependency. The Bush plan gives a three-year extension in meeting the deadline for the second phase's cutbacks to those firms introducing new cleaner burning coal technologies.¹³ Many such technologies are being tested or developed. They show great promise in reducing emissions when coal is burned while maintaining or even improving the efficiency of the plant. Coal is America's most abundant fuel, but also is the major source for SO₂ emissions. Thus encouraging the use of clean coal technologies would encourage the use of this huge domestic energy reserve and reduce dependency on foreign sources of energy while achieving the objective of a cleaner environment.

These new technologies could relieve firms of the current Clean Air Act's requirement that expensive coal "scrubbers" be used to remove sulfur from coal emissions. Only the U.S. requires scrubbers. Not only are they inefficient

¹³ Ronald Reagan entered into an acid rain agreement with Canada in 1986. This pledged the U.S. to a \$5 billion clean coal technology program. About half of this money will come from the federal government, the rest from private industry. Bush's proposals would speed the completion of this program.

and costly, but each ton of sulfur results in three tons of a "sludge" byproduct which must be dumped in a landfill.¹⁴

As long as the President's plan permits firms to choose among the options of fuel switching, clean coal technologies, emissions credit trades, or scrubbers, Americans will be assured of the least-cost approach to controlling SO₂ and NO_x.

2) Ozone

Ozone (O₃) is not emitted directly from pollution sources but is the result of reactions between various volatile organic compounds (VOCs) and nitrogen oxides in the presence of sunlight. Automobile emissions contribute significantly to ozone formation. Ozone is a major component of urban smog, but it also occurs naturally. Natural ozone, for instance, is the cause of the haze that gives the Great "Smoky" Mountains their name. Scientists only recently have begun to investigate the extent of natural VOC emissions, particularly from coniferous trees.¹⁵

Exposure to heavy concentrations of ozone results only in temporary and slight discomfort to healthy individuals. But asthmatics and other individuals with respiratory problems can react seriously to ozone exposure. Ozone also can damage crops and forests.

The current federal health standard for ozone is 0.12 parts of ozone per million parts (ppm) of air. The method for determining compliance with this standard has been to place monitors around an urban area. If the measured ozone level exceeds 0.12 ppm for one hour or more, in as few as four days in a three-year period, the entire metropolitan area is deemed to be in "nonattainment" of the ozone standard.

Distorted Measurement System. This method exaggerates exposure to ozone. On the basis of this measurement technique, for instance, it is claimed that over 100 million Americans live in metropolitan areas in which the ozone level exceeds safe standards. In truth, however, only southern California frequently exceeds the ozone level standards. This region has a serious air pollution problem due to heavy automobile traffic and unique natural conditions that trap emissions in the region. Almost all other "nonattainment" areas actually have ozone levels that meet federal standards for more than 99.5 percent of the hours monitored.

14 From page five of comments by the Clean Air Working Group dated April 27, 1989, concerning H.R. 144, The Acid Rain Deposition Control Act of 1989, currently pending before the House Energy and Commerce Committee.

15 See W.L. Chameides, R.W. Lindsay, J. Richardson, C.S. Kiang, "The Role of Biogenic Hydrocarbons in Urban Photochemical Smog: Atlanta as a Case Study." *Science*, September 16, 1988, p. 1473. The authors demonstrate the significant contribution the natural sources of these reactive chemicals can play in ozone formation and note that "[t]he apparent lack of success in U.S. efforts to reduce O₃ suggests that there may be flaws in our nation's O₃ abatement strategy or in its implementation." When former President Ronald Reagan cited an earlier, preliminary study he was ridiculed for suggesting that "trees cause pollution."

Ozone is thus much less a problem than the distorted measurement system indicates. Nonetheless, Bush proposes an extremely ambitious program to reduce VOC emissions even further, to bring into technical compliance the final one-half of one percent of monitored hours. These proposals include:

- ◆ ◆ more stringent standards for the evaporation rates of gasoline;
- ◆ ◆ nationwide adoption of California's standard for automobile tailpipe emissions;
- ◆ ◆ wide authority for the EPA to regulate consumer products, such as paint and solvents, that can emit VOCs;
- ◆ ◆ mandatory "stage II" controls on gasoline pumps by installing devices, already in use in some areas (like Washington, D.C.), that capture fumes while gasoline is being pumped; and
- ◆ ◆ a requirement on nine urban areas to replace a large percentage of gasoline and diesel-powered vehicles with vehicles that use other fuels, such as methanol and ethanol.

3) Carbon Monoxide

Carbon monoxide (CO) is a gas produced by the incomplete combustion of fossil fuels. The federal health standard for CO is 9 parts of CO per million parts of air (ppm) measured over an eight-hour period. If two or more eight-hour periods in a year show an excess of the standard, an area is held to be in nonattainment.

Automobiles contribute about two-thirds of CO emissions. New car emissions standards have reduced CO levels greatly. Cars bought before the 1981 model year account for over 86 percent of carbon monoxide emissions by automobiles, though they travel only 38 percent of the total vehicle miles driven each year. Tightening new car emission standards thus would not be as effective as reducing emissions by older vehicles. It is this that prompts the President to favor a mandatory "clean fuels" program for automobiles.

Questionable Strategy. The most commonly suggested substitutes for gasoline are methanol and ethanol, also referred to as "oxygenated" fuels because of their molecular structure. Such fuels can burn more completely in a vehicle's engine than gasoline or diesel and produce less carbon monoxide. Some areas exceeding the CO standard already have adopted programs to require oxygenated fuels during seasons when CO is readily produced. Denver was the first city to adopt such a program, requiring it during colder months because a cold car engine is more apt to produce high levels of CO.

Recent evidence, however, questions the effectiveness of the “clean fuel” strategy.¹⁶ Studies by Donald Stedman, a chemistry professor at the University of Denver, for instance, indicate that the promised emission improvements from oxygenated fuels have not met expectations. A sensor developed by Stedman can detect CO emissions from cars as they drive past an inspection point. This enables cities to identify the small number of older vehicles that create the CO. The city then can require just these vehicles to meet the relevant standards – rather than imposing expensive new controls on all cars.

Bush’s call for tighter inspection of automobiles does not appear to take full advantage of this recent measurement technology. Moreover, methanol is a highly toxic chemical that is water soluble – unlike gasoline. Thus, leaky underground fuel tanks containing methanol could pose a serious health and environmental risk. The National Capital Poison Center reports that methanol poisoning fatality rates are 25 times greater than the rate for gasoline.¹⁷

4) Air Toxins

The term air toxins, sometimes called “toxics,” encompasses hundreds of chemical compounds thought to pose some risk to public health.¹⁸ The EPA estimates that about 2.7 billion pounds of such pollutants are released into America’s air each year. This has prompted calls for action.

The Bush plan would try to reduce the emission of air toxins by focusing on the major sources. The proposal calls for the EPA to develop standards to which all major sources of emissions would be required to comply within ten years. The proposal calls for an emissions reduction of 75 percent over this period. The EPA estimates that the cost of compliance would be approximately \$2 billion per year. But until EPA adopts specific standards, it is impossible to say what the annual compliance costs actually would be.

Ironically, the President’s mandated alternative fuels program, intended to reduce ozone levels, potentially could create a major new source of formaldehyde, an air toxin. There has been no indication of how this will be handled under the President’s plan.

16 It is unclear that sufficient alternative fuels plants can be built in the short term – particularly in view of restrictive air emissions standards near most major markets. America is likely to be forced to rely on imports for a large share of its alternative fuel supply. In addition, federal and state emissions standards are further pressuring the already straining domestic petroleum refinery industry. If refineries must be shut down or relocated, American dependence on imports for refined petroleum products could greatly increase.

17 Toby Litovitz, M.D., “Prediction of the Incidence, Toxicity, and Acute Health Effects of Ingestion of Methanol Fuels,” paper presented before the South Coast Air Quality Management District and the California Air Resources Board, December 1, 1988.

18 Approximately 280 chemical compounds are considered potentially hazardous air pollutants, of which about 45 have been identified as potentially carcinogenic.

HOW CONGRESS COULD EARN THE THIRD CHEER FOR THE BUSH PLAN

To achieve the Bush goal of better air quality at the least economic cost, Congress should focus on legislation establishing powerful market incentives to do so. Markets are not a device to allow private firms to avoid a regulatory requirement. On the contrary, they give private firms a reason and way to comply with regulations at the lowest cost. Sensible and practical pollution control standards cannot be achieved without accurate data on the current environmental situation. Many current standards, even some of Bush's proposals, are based on measurement techniques that produce misleading results.

To assure Bush's objectives are achieved, new Clean Air legislation must:

1) Ensure that EPA regulations are flexible enough to allow markets to develop.

EPA failure to allow flexibility for private firms could mean a continuation of unnecessarily expensive pollution regulations. Permitting markets rather than bureaucrats to select appropriate pollution control technologies is crucial to a cost-effective Clean Air Act. Legislation should specifically direct the EPA to develop regulations incorporating this cost-effective flexibility within each area of the Bush program.

2) Allow credits for SO₂ emissions (acid rain) to be traded between new and existing sources.

By opening the market for these credits to new facilities, it will encourage greater innovation and reduce the total cost for any level of emissions control established by law.

A study prepared for the EPA this March, by ICF Resources, Inc., an environmental consulting firm, indicates that allowing intrastate emissions trading between new and existing sources could reduce annual compliance costs by between \$500 million and \$2 billion over twenty years.¹⁹

3) Extend the right to trade credits to all air toxins, providing public health is not threatened.

The Bush plan proposes a tradeable rights market only for acid rain precursors (sulphur dioxide and nitrous oxides) and for automobile manufacturers to achieve certain reductions from tailpipe emissions in "the most serious and severe non-attainment areas."²⁰ The same approach would

¹⁹ *Economic, Environmental and Coal Market Impacts of SO₂ Emissions Trading Under Alternative Acid Rain Control Proposals* at Regulatory Innovations Staff Office of Policy, Planning and Evaluation U.S. Environmental Protection Agency, March 1989.

²⁰ White House Fact Sheet: President Bush's Clean Air Plan. Released by the Office of the Press Secretary, June 12, 1989.

make sense for other air pollutants. The potential savings from marketable credits should not be limited to the powerful electric utility and automotive industries.

4) Avoid increasing controls without strong public health justifications.

Most of the current calls for increasing federal controls under the Clean Air Act ignore the fact that the current law already can control virtually any public health or environmental effect of air pollution. Southern California, for example, already has enacted more stringent standards than most of those proposed for a new Clean Air Act, yet it has done so under the very regulatory regime that is said to lack sufficient teeth. Since far less stringent measures would be needed to achieve clean air goals in other parts of the country, it is evident that sufficient authority exists under the current law.

5) Collect better data on all sources and effects of air emissions.

The success of the lead trading program has depended on the high quality of information available on leaded gasoline production. By contrast, data on the source and effects of many toxins are inadequate or misleading. Without accurate data on emissions and sources, no clean air program will reduce pollution except at heavy and unnecessary cost. In furtherance of this goal, the EPA should be required to fully coordinate the hundreds of current computer data bases so that a single source of national environmental data is created.

6) Consider fully the final report of the National Acid Precipitation Assessment Program.

This report, due in 1990, will be based on the ten-year study ordered by Congress in 1980. Such an important source of scientific data should influence environmental protection policies. The report will examine actual impacts on forests and lakes from acid rain. Interim reports have indicated that forests are not threatened and that protecting lakes and streams may be easier than currently assumed. Congress and the Administration should not commit the country to extensive new controls before this report is available.

CONCLUSION

George Bush vowed during the 1988 presidential campaign to improve America's environment. The vast majority of Americans applaud this commitment. Yet he also campaigned on a record of five years of economic growth. In his Clean Air Act proposals, Bush has tried skillfully to build a consensus by accepting the goals of many environmentalists while proposing market tools to allow these goals to be reached at the lowest economic cost to American workers and consumers.

When Bush introduces his detailed legislative proposal to Congress, expected soon after the Fourth of July recess, the real work will begin. The Senate Environment Committee and the House Energy and Commerce Committee should work with the Administration to keep the focus on the

objective — cleaner air at lower cost to the economy. The focus should not be on the specific methods for cleaning air. Nor should the focus be distorted by special interests or ideology.

Balancing Priorities. This will not be easy. In the politically charged atmosphere surrounding Clean Air revision, the battles over the particulars could divert attention from the President's goals. He has attempted to chart a middle course with many of his general proposals. This balancing of priorities earns him two cheers. Once details are revealed, Capitol Hill must then seek ways to build on Bush's innovative market ideas. Congress has been holding hearings on Clean Air Act revisions, with few satisfactory results, almost continuously since the original Act was passed in 1970. If George Bush and the Congress work together to fashion market-oriented policies for the Clean Air Act, together they will earn its third cheer.

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