



DOES THE CLEAN AIR ACT MEASURE UP?

Alan J. Krupnick

RFF Senior Fellow Alan Krupnick recently testified on the performance of the Clean Air Act before the House Subcommittee on Energy and Air Quality, part of the Committee on Energy and Commerce. The subcommittee is holding a series of hearings regarding the possibility of reauthorizing the Clean Air Act, with this hearing being the opening one, emphasizing accomplishments of the Act. The following article is based on Dr. Krupnick's formal remarks.

How much better off are we with the Clean Air Act than without it? Retrospective and prospective studies by the U.S. Environmental Protection Agency (EPA) show that on the whole, the nation has received high returns on its investment in air quality. From 1970 to 1990, estimated benefits exceeded costs by a factor of 40 or more; from the 1990 Amendments forward, benefits still exceed costs, although by much less. Though carefully executed and scrutinized, the EPA studies have some important shortcomings.

- They were conducted at an aggregate level, a very simple approach. Because EPA did not disaggregate the benefits by pollutant, sector, or subsection of the act, it is difficult to tell what is working and what isn't.
- EPA used some unrealistic assumptions—freezing control

technologies, holding constant the geographic distributions of people and economic activities, and assuming no state or local regulation or voluntary action in the absence of the Act.

- EPA's valuation of a statistical life—the critical variable in calculating benefits from averting premature mortality—may be too large by a factor of three, or perhaps even six.
- EPA did not address most ecosystem impacts or consider potential carcinogenic and certain other health effects.
- Costs did not include tax interaction effects—the economy-wide result of imposing additional abatement costs in the context of existing (distortionary) taxes.

Let's consider selected elements of the act.

SO₂ ALLOWANCE TRADING

The sulfur dioxide (SO₂) allowance trading program for electric utilities is a success: the expected benefits from reduced risk of premature mortality and other health benefits measure several times the expected costs. The environmental impacts from hotspots or rearrangement of emissions have not justified skeptics'

fears, and in fact, with trading, pollutant concentrations decrease and health benefits increase in the East and Northeast. The cost savings run \$700 million to \$800 million per year, primarily through innovation. The trading program provided the incentive and flexibility to accelerate and realize technological change.

Given those results, EPA now considers market-based instruments on equal footing with command-and-control methods when it contemplates new regulations—the nitrogen oxide (NO_x) trading program, for example. Nevertheless, there is room for improvement in both programs. The cap on total emissions could be tied to allowance prices, and as prices fall below some level the cap could fall to capture low-cost benefits. Conversely, if allowance prices rise to unanticipated or unjustified levels, the cap could rise to avoid higher than expected costs.

MOTOR VEHICLE EMISSIONS REDUCTIONS.

The measures to reduce emissions of hydrocarbons, carbon dioxide (CO₂), and NO_x from mobile sources are another success. Reformulated gasoline is relatively effective because it can be applied to the entire fleet; its cost-effectiveness in reducing emissions of



volatile organic compounds (VOCs) has been estimated at \$1,900 to \$3,900 per ton. By contrast, the tailpipe standards affect only new vehicles and, by making new cars more expensive, may have contributed to the lengthening lifetime of high-emitting used cars. Some of the additives used in reformulated gasoline have been troublesome, however. MTBE is now known to create groundwater pollution, and ethanol's high cost is disguised by a subsidy.

Another problematic issue is vehicle inspection and maintenance programs, required in some nonattainment areas. Such programs have generally achieved far less emissions reductions than projected, and estimates of cost-effectiveness range from \$4,400 to \$9,000 per ton of NO_x plus VOCs.

Accordingly, vehicle maintenance—the last potentially low-cost area for on-road emissions reductions—should be a top priority. One approach is to rethink the allocation of responsibility and put the onus on manufacturers through extended warranties, emissions repair liability, or expanded vehicle leasing.

More problematic still are programs that promote alternative-fueled vehicles. Projected costs per ton of reductions range from \$6,000 to nearly \$100,000 per ton of VOCs plus NO_x. Although costs are likely to fall with technological change and mass production, there may be cheaper approaches to explore first.

POINT-SOURCE EMISSIONS REDUCTIONS

Regulation under the New Source Review (NSR) program has spurred new abatement technology, but at a cost. Tighter standards on new sources create a bias against plant turnover, leaving possibly dirtier industrial capital in place. NSR has also led to considerable litigation. And with national and regional cap-and-trade programs in effect, NSR is simply redundant.

SIP PROCESS

The state implementation plan process has not worked well. When it was designed, long-range pollution transport was assumed to be minor.

Now we understand that ozone and its precursors, as well as fine particulates, can travel great distances. Holding nonattainment areas solely responsible for air quality becomes problematic when nearby states are contributing significantly to their pollution.

NAAQS

The centerpiece of clean air legislation has been the National Ambient Air Quality Standards. Despite the recent Supreme Court ruling against the use of cost-benefit analysis, the criteria for setting standards in the absence of a concentration threshold remain undefined, if not indefinable under current law. Tighter standards are not necessarily better. As EPA's Clean Air Scientific Advisory Committee (CASAC) itself suggested, it might be more efficient to have a new ozone standard no tighter than the current one. Recent epidemiological evidence suggests that a fine particulate standard even tighter than the new one could be justified, particularly if we understood more about the particle sizes and types that are most dangerous.



AMERICAN SECURITY TODAY: CHALLENGES FOR A NEW ERA

The terrorist attacks of September 11th revived debate about how best to deal with the complex and multifaceted challenges to U.S. national and economic security. This winter, RFF brought together senior policymakers and leading experts from the business, advocacy, and academic communities for two on-the-record symposia focusing on distinct and nontraditional threats to national security.

DEVELOPMENT POLICY IN THE NEW ERA: U.S. POLICYMAKING ON GLOBAL POVERTY AND HUNGER

The importance of global poverty and hunger to U.S. national security interests has become ever more apparent in the months following September 11. And the role of U.S. development policy has increasingly come into question. At RFF's food security symposium, held in late January, two clear themes emerged from the discussions: there is a need for order, structure, accountability, and leadership in food security policies, and those same policies need to be presented in such a way as to ensure political support. The symposium was divided into two panels: "Perspectives on How Development Policy is Made and Executed" and "Connecting National Interest, Domestic Politics, and the War on Hunger."

In the first session, Dan Glickman, the secretary of agriculture in the

Clinton administration, addressed the political realities that determined the Clinton food security policy, a subject Glickman's colleague from the Clinton administration, former Clinton Chief of Staff John Podesta also touched upon. "The dominant drive [of food policy] was probably assuaging the concerns of key political allies," said Glickman.

For the future, Glickman advocated fixing imbalances in food prices and the food market, emphasizing the need to integrate more order and structure into the policy development process. Podesta was in agreement with Glickman, later adding, "We need political accountability and political leadership."

Symposium organizer and RFF Senior Fellow Mike Taylor emphatically echoed this sentiment. Referring to his recent report on the U.S. response to the World Food Summit goal of cutting hunger in half by the year 2012, Taylor cautioned the audience that the agencies that monitor food security in the United States lack the authority to effect change.

Alan Larson, the current undersecretary for economics, business, and agricultural affairs at the U.S. State Department, looked forward in his presentation, suggesting that future policy could link food security with terrorism, thereby maintaining public interest in otherwise-obscure

food security issues. Larson also recommended applying technology to food security issues, an approach G. Edward Schuh, co-chair of the Food Security Advisory Committee, endorsed. Schuh also discussed impediments to food security, pointing out the need to "articulate what's in our best interests" to ensure support and success of programs.

Speakers in the second session also were very concerned with identifying what makes a food security program successful. Bill Nichols, State Department reporter and diplomatic correspondent for *USA Today*, spoke on the role of the media in promoting policies. He cautioned the audience that "doing good is not thought to be newsworthy."

Former Chief of Staff to the National Security Council Mara Rudman called for a sustainable constituency for food security programs. She suggested presenting food security issues in a global development context.

Congressman James McGovern (D-MA) seized upon Larson's suggestion to link food security and terrorism. McGovern said that giving food "is a way to give hope," adding that terrorists recruit "those without hope." He also agreed with Rudman that a broad constituency is needed, and suggested bipartisan efforts as a tool to reach that end.

David Beckman, president of Bread for the World, seconded the



need for bipartisanship, and cited the widespread support for President Bush and Secretary of State Colin Powell as a promising sign. Beckman also claimed that U.S. public opinion on food issues is more progressive than U.S. policy.

Robert Thompson, the World Bank's director of rural development, brought an international point of view to the discussion. He said the world's short-term food problems are poverty and food safety. However, the long-term issue, he said, was agricultural development. "If you don't have purchasing power," he told the audience, "you are susceptible to hunger."

Michael Hanlon, a senior fellow at Brookings Institution, worried that aid to help a country grow, without the right policies, won't work.

This symposium is part of a new RFF initiative to improve policymaking that affects poverty and hunger in developing countries (for more information, visit www.rff.org/AmericanSecurityToday/GlobalPoverty&HungerResources.htm).

U.S. ENERGY SECURITY: TRADITIONAL AND EMERGING CHALLENGES

There are no easy answers to solving our national energy security needs, according to the economists and energy experts who took part in an energy security workshop held in January at RFF. Price volatility and

power generation reliability are the predominant security issues, they said, but emerging concerns, from the threat of terrorism to the lack of electricity transmission capacity, also have to be considered.

The events of September 11, the war in Afghanistan, and the continuing political turmoil in the Middle East have heightened public concern about an already complex problem. But reducing U.S. dependence on foreign oil, the cornerstone of the president's energy policy, will not be easy, the experts agreed. Demand for oil is inflexible and short-term solutions for increasing domestic production are few. President Bush's call to allow oil drilling in the Arctic National Wildlife Reserve (ANWR) was met with skepticism. "Opening ANWR will do absolutely nothing for energy security and price volatility," said Robert Weiner, associate professor of business at George Washington University.

Simply put, the world is not running out of oil, said Paul Leiby, manager of fuel supply modeling and research at Oak Ridge National Laboratory. Energy security is not a matter of how much we import, nor whom we import from, but rather in how we respond to price shocks, he said. "So long as the system doesn't break down entirely, oil will move."

LIMITED OPTIONS

Price volatility has been and will continue to be a reality that must be acknowledged, the experts agreed. While the social costs are troubling in the short run — price hikes have frequently spurred the economy into recession over the past 20 years — shifting prices are also the mechanism by which the market straightens itself out, said Barry McNutt, senior policy analyst in the Office of Domestic Policy and International Affairs at the U.S. Department of Energy (DOE).

The federal government's primary policy mechanism for buffering oil price shocks, the Strategic Petroleum Reserve, has been stalled in ongoing debates about how to use it, several experts said. The current administration has repeated the mistake of its predecessors in forswearing use of the SPR just for dampening prices, when that is the key reason for having the reserve, said Michael Toman, an RFF senior fellow. "The SPR should be the first line of defense against oil policy gyrations — now at best, it's the last line of defense," he said. "If we can't figure out what to do with it, we should just empty it."

The long-term answer to oil security will be found by expanding the number of market-compatible fuel suppliers, such as Russia, and funding basic



research into new technologies, said Toman. “If we want to do more in the short run, it’s just a question of how much we are willing to pay.”

POWER GENERATION SECURITY

The security of our domestic power generation system is contingent on both reliability and security, said Howard Gruenspecht, an RFF resident scholar. Under traditional reliability criteria, electricity systems are designed to operate without disruption under high-demand conditions, even when the largest generator or transmission line serving a region is not available for use, he said. Now we must prepare for attacks seeking to disrupt power generation systems as well as attacks that use power-generating systems as

a weapon to achieve a larger goal, said Gruenspecht.

Lou Leffler, project manager at the North American Electricity Reliability Council said, “There’s an emerging consensus about what it will take to protect our critical infrastructure, including physical security over the long term, process controls, timely information sharing, common interpretation of threat levels, and secure and reliable communications.”

A second, emerging reliability concern has to do with transmission capacity, which has rapidly declined over the past two decades, according to Eric Hirst, a consultant on the technology and economics of electricity reliability. “It’s a critical, complicated issue involving markets and technologies,”

he said. Many types of entities own and operate transmission and generation systems, and reliability responsibilities are shared across several levels and institutions.

“Clearly, reliability standards are needed,” Hirst said, “but the question is whether they should be set at the national or regional level.” Transmission issues in the Midwest, where lines must cover long distances, are far different than those on the East Coast, he said. One solution would be the development of large, regional transmission systems that would be free of the bias in the current approach, where a system operator that also has generating capacity can limit outside access to transmission equipment in the name of reliability.

TOP USDA OFFICIAL, ON LEAVE AT RFF, WILL HELP LEAD FOOD SAFETY PROGRAM

Margaret Glavin is RFF’s newest visiting scholar. She is on a two-year leave of absence from the U.S. Department of Agriculture’s (USDA) Food Safety and Inspection Service, where she most recently served as acting administrator.

As the USDA’s top-ranking career food safety official, Ms. Glavin’s accomplishments include managing implementation of major food safety reforms in U.S. meat and

poultry plants, developing new initiatives to combat *Listeria* in foods, and initiating highly regarded management improvements within USDA’s food safety agency. In 1999, she was the recipient of the U.S. Presidential Rank Award for Distinguished Executive, the highest civil service award.

Glavin will be a leader here at RFF in the continued development and management of the food safety

program. Specifically, she will play a critical role in linking the program’s work on resource allocation models with the interests and concerns of the policy and stakeholder communities. RFF’s food safety program focuses on improving regulatory decisionmaking and the allocation of government food safety resources to reduce the risk of foodborne disease.