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The Clean Air Marketplace
A periodic newsletter on business opportunities created by the Clean Air Act Amendments

The Economy vs. the Environment: Working Toward a Win-Win Solution

Environmental regulation does not have to hinder the international competitiveness of U.S. industry. Indeed, for many companies the Clean Air Act Amendments of 1990 (CAAA) and other environmental requirements can create new economic opportunities. This idea was the central message and challenge delivered to participants in EPA's Clean Air Marketplace Conference and Exhibition, held September 8-9 in Washington, DC.

The conference, which over 550 industry, government, academia, and environmental group representatives attended, provided a forum for the discussion and promotion of new business opportunities the CAAA created. Participants joined in 19 panel discussions on such topics as new clean air technologies, export opportunities, and the role of government in supporting the clean air marketplace. The most intriguing insight from the conference was that CAAA regulations and the regulatory process can promote innovation and increase competitiveness in affected industries.

Max Baucus

Four of the most influential people in today's environmental marketplace gave thought-provoking speeches at the Clean Air Marketplace Conference. EPA Administrator Carol M. Browner and Senator Max Baucus, Chairman of the Senate Environment and Public Works Committee, each presented the government's plans for designing a regulatory regime that supports the clean air marketplace. Donald A. Deieso, President and CEO of the Research-Cottrell Companies, emphasized the role of government in keeping U.S.-based environmental industries atop the world environmental market. Professor Michael E. Porter of the Harvard Business School introduced conference participants to what he called a new paradigm of innovation underlying the environment-competitiveness issue.

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Motor Vehicle Emission Control Programs

Bruce Bertelson, Executive Director of Manufacturers of Emission Controls Association, discusses the successes of the U.S. motor vehicle emission control program. *See Page 5*

Public/Private Clean Air Partnerships

Steven Howards, President of Environmental Strategies: Consultants in Pollution Prevention, describes the success of public/private partnerships in Denver. *See Page 8*

A Note To Our Readers

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Environmental Regulations, the Economy, and Competitiveness

It is commonly accepted that economic prosperity is a prerequisite for a robust environmental industry. Environmental issues typically do not become priorities until a country achieves a relatively high standard of living. Representatives of some sectors of the economy, however, argue that pursuit of a clean environment hinders efforts to maintain a healthy economy, especially in periods of weak economic performance. In opening the conference, Administrator Browner flagged this argument saying, "The most common, but false debate that I hear — and I hear this again and again — is that people believe we must make a choice between environmental protection on the one hand and economic growth on the other hand."

Clearly, environmental regulations cost a lot of money. However, a significant percentage of these expenditures become revenues for the environmental products and services industry, with an annual value currently estimated at approximately $100 billion.

Based on their own companies' experiences, many conference participants stated that the technological innovations developed to assist companies in complying with stringent pollution regulations have helped U.S.-based companies dominate the global market for pollution control equipment and other environmental technologies. Because they need to comply with air quality regulations, for example, U.S. companies have developed and marketed clean diesel-engine technologies, clean fuels, improved monitoring techniques, alternative fuel vehicles, and cleaner paints and solvents.

But what about the regulated companies who, to comply with CAAA requirements, have to invest scarce resources in pollution prevention and control equipment? Professor Porter, recognized as an international leader in the field of competitive strategy, maintains that pollution is basically wasteful. Pollution "involves incompletely using a resource, throwing something away, or burning something out. Therefore, it seems inherently inefficient." Rather than counting on controlling pollution once it has been created, for example by placing scrubbers on smokestacks, companies should seek alternatives that improve production efficiency to use raw materials completely and, consequently, reduce the creation of pollutants. In Porter's view, the extent of pollution generated in any manufacturing process suggests the extent of opportunities for improving efficiency and saving money, including regulatory compliance costs.

> *"Pollution involves incompletely using a resource, throwing something away, or burning something out. Therefore, it seems inherently inefficient."*
>
> —Michael Porter

Technological innovation is a key to improving efficiency. Innovation can be the development of new technologies such as better scrubbers that minimize the costs of compliance. Another, wider-reaching form, is innovation that not only addresses environmental regulations or problems, but also leads to improved and competitively superior products and services. For example, hydroponic growth of plants enables optimal plant development and eliminates

Conference participants examine the various exhibits at the conference

groundwater pollution from pesticides and fertilizers. Such innovations reduce the cost of compliance and may yield benefits that exceed initial compliance costs. Professor Porter calls such improvements "innovation offsets" because they partially reduce or completely eliminate compliance costs.

In addition to solving environmental problems, innovation can increase a company's competitiveness.

Carol Browner

Companies that can recognize new market segments, develop improved process technologies and products, and get their products to the market first, will win. Because other countries often adapt U.S. environmental regulations, U.S. companies are given a head start on developing superior products for which there will be global demand. When viewed in this light, environmental issues and regulations can be seen as strategic opportunities rather than burdensome requirements.

If the potential for innovation offsets is so great, why don't companies recognize this potential on their own? Why do they need a regulatory push? Professor Porter notes that many companies have not focused on environmental considerations in the past and are, therefore, relatively inexperienced in estimating the benefits of both reduced compliance costs and increased efficiencies gained by preventing pollution.

Regulations identify specific issues that companies should pay attention to, ensure demand for environmental solutions, push companies to address environmental problems, and level the playing field so that no company will have a marketplace advantage over companies that are pursuing environmentally friendly strategies.

Rethinking Regulations and the Regulatory Process

Regulations must be designed correctly if these benefits are to be realized. Stringent but flexible regulations will best encourage rapid innovation. Stringency guarantees environmental improvement by forcing companies to take aggressive steps. Flexibility allows companies to find least-cost pollution prevention and control approaches best tailored to their own operations.

Conference attendees agreed that for the economy to continue growing as environmental standards become stricter, future regulations must provide flexibility to regulated companies. Administrator Browner remarked that she frequently hears, "It's not the standards per se that are causing the problem, it's the methods by which they have to be achieved."

Regulations must move from "command and control" to market-based incentives; from reliance on best available control technology to encouraging development and dissemination of new, innovative control technologies; and from a single-medium to a multi-media approach.

Administrator Browner and numerous other panelists highlighted the emphasis on flexibility in the CAAA, citing as an example the system of trading allowances that was developed as the key to reducing acid rain emissions. Emissions trading provides economic incentives to companies to cut their sulfur dioxide emissions below the legal limit. Browner also announced the Opt-In Rule that will allow non-utility companies to participate in this emissions credit trading system. This will extend the program's environmental and economic benefits to other sectors of the economy.

Professor Porter agreed that EPA should be regulating outcomes, not technologies. Industry should be

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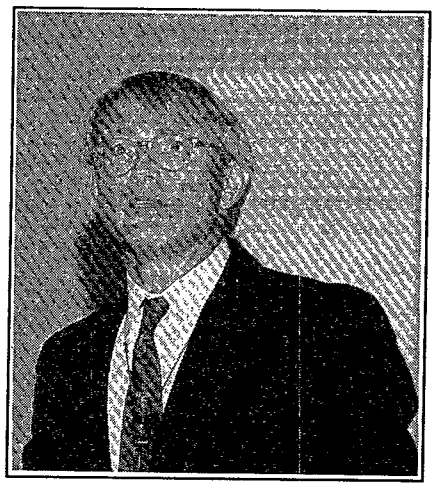

Michael Porter

Donald Deieso

given tough standards to meet and allowed flexibility in meeting those standards. Under the current regulatory structure, Porter says, the practice of relying on a specific, "best available technology" ensures that innovation will not happen. Best available technology approaches create disincentives for companies to try some other, more innovative way of controlling pollution. If technology options are left unspecified by regulations, but standards are stringent and consistently applied, a competitive market for innovations that meet the standards at lowest cost will evolve in response.

In designing flexible regulatory approaches, regulators need to look at the big picture to understand the entire range of problems confronting industries. Senator Baucus believes that regulations must use a multimedia approach that considers the total emissions of all pollutants into all media. Porter also emphasized the need to go beyond the "medium by medium" outlook.

One way to achieve this broader regulatory approach is to focus environmental improvement efforts on specific industries. To identify and achieve innovative solutions requires a thorough understanding of each industry, its processes, its technological limitations, and all of the environmental issues it confronts.

Government, Industry, and Environmentalists Must Work Together

Of equal importance to how regulations are structured is the process through which they are developed. Professor Porter described the current system as an arm-wrestling match involving government, industry, and environmental groups, in which substantial resources are consumed developing and responding to litigation over the standard, rather than being used to clean up the environment. The resources and energy consumed in the current struggle need to be transferred to improving both the environment and the economy.

"There's one thing that I want you to take away from my remarks this morning: It's that in the environmental debates that lie ahead, we really need to enlist your help." —Carol Browner

Increasing regulatory flexibility and reducing the costs consumed in the environmental struggle necessitates altering the roles of government, industry, and environmentalists. Instead of "feinting and dodging," using Porter's terms, about what the standard should be, all sectors of the marketplace must work together. Administrator Browner recognized the importance of this cooperative effort when she closed her speech by saying, "There's one thing that I want you to take away from my remarks this morning: It's that in the environmental debates that lie ahead, we really need to enlist your help."

She and Senator Baucus pointed out that EPA has already taken steps in this direction and is planning to take more. EPA is promoting innovation through the development of more flexible regulations as well as through funding, partnerships, and public information. For example, President Clinton has provided $36 million to EPA this fiscal year for the Environmental Technology Initiative; greater funding is projected in the future, including $80 million for 1995. According to Browner, this initiative "is expected to provide significant impetus to the environmental goods and services industry by spurring the development and marketing of innovative technologies for pollution prevention and control."

Administrator Browner stressed that she recognizes that many small businesses will be affected by the CAAA. She wants to help businesses

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The U.S. Motor Vehicle Emission Control Program: Cleaning Up the Air and Stimulating Economic Growth

by Bruce Bertelson, Executive Director, Manufacturers of Emission Controls Association

The U.S. motor vehicle emission control program has rightly earned the reputation as one of this century's great environmental and technical success stories. New cars emit only a small fraction of the harmful pollutants that were emitted from cars made in the 1960s, and lead, one of the most insidious pollutants, has been virtually eliminated from gasoline. Of equal importance, the strategies and technologies that have been designed to achieve these significant pollution reductions have contributed to a dramatic increase in fuel economy. And they have fostered a new, multi-billion dollar American industry employing thousands of highly skilled workers who produce control technologies that are sold around the world.

Despite the significant gains in reducing per vehicle pollution levels, the number of vehicle miles traveled has doubled since 1970 to nearly three trillion miles annually. As a result, significant air quality problems persist. To address these problems, Congress enacted comprehensive revisions to the mobile source program in 1990. Meeting the challenges of the 1990 CAAA and achieving our goal of healthy air calls for innovative strategies — and the U.S. motor vehicle emission control industry will continue to play a critical role in meeting our air quality objectives.

Congress Enacted Controls

Automobile pollutants have caused concern for decades. Smog in Los Angeles on some days in 1955 was worse than it is in Mexico City today, and during the late 1950s it became clear that motor vehicles were a primary source of air pollution. In 1970, the U.S. Congress targeted cars by requiring more than a 90 percent reduction in hydrocarbon (HC) and carbon monoxide (CO) emissions over uncontrolled levels by the 1975 model year, and approximately a 90 percent reduction of oxides of nitrogen (NOx) by the 1976 model year. Congress recognized that the technology needed to meet those standards did not yet exist, but it also knew that without the "incentive" of statutory requirements, the automobile industry would not develop the technology needed to clean up auto emissions. So Congress adopted technology-forcing standards.

The original deadlines were postponed several times, less stringent interim standards were set, and the original goal for NOx control was modified. But emission control technologies evolved at a much faster pace than would have occurred without the technology-forcing provisions of the 1970 law. In 1977 Congress mandated that all gasoline-powered cars meet stringent standards by the 1983 model year.

Bruce Bertelson

In 1970 when Congress was considering whether to adopt technology-forcing standards, many said the technology needed to meet those new standards could not be developed, and even if it could, it would be prohibitively expensive and fuel economy, vehicle performance, and model selection would all suffer. The doomsayers, however, were wrong; the control technology was developed to reduce pollution to a fraction of the levels emitted by pre-1970 vehicles, fuel economy has doubled since the late 1960s, and a wide variety of high performance vehicles continue to be offered.

Motor Vehicle Pollutants Have Been Substantially Reduced

Current emission standards for cars require a more than 96 percent reduction in HC and CO emissions and a 76 percent reduction in NOx from the levels emitted by uncontrolled vehicles in the 1960s. Today,

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vehicles are equipped with modern emission controls that also reduce mobile source air toxics such as benzene. Finally, lead, which presents human health hazards and damages emission control devices, has virtually been eliminated from gasoline.

Emission Controls Have Been a Technological Triumph

The centerpiece of motor vehicle emission control technology is the catalytic converter, or "catalyst", which was first introduced in 1975. This sophisticated technology accelerates the chemical reactions that convert HC, CO and NO_x to CO_2, N_2 and water vapor without the catalyst itself being consumed.

Some of the engine and fuel management developments that enable catalysts to function more effectively also improve fuel economy and performance. Since the catalyst was introduced in 1975, fuel economy has shown a dramatic and continuous rise. The success in improved fuel economy is largely because of the maximum engine efficiency made possible by catalytic converters.

By 1983, when tougher emission standards went into effect, the corporate average fuel economy for new cars had reached 27.4 mpg, an improvement of 83 percent over the 1967 level. Even correcting for vehicle weight reductions, the improvements, compared to pre-controlled cars, are dramatic—about 47 percent.

Catalyst technology has been hailed as one of the great automotive engineering developments. *Car and Driver* magazine called the catalytic converter one of the century's ten best automotive breakthroughs.

The 1970 Clean Air Act Created the U.S. Motor Vehicle Emission Control Industry

When Congress established technology-forcing standards in 1970, it created a regulatory incentive for auto manufacturers to act, and provided the justifcation for companies to spend millions of dollars in research and development and capital investments to bring control technologies into commercial production. Armed with the certainty that a market would exist for those products meeting statutory standards, many companies responded to the challenge and the motor vehicle emission control industry was created.

A recent survey of members of the Manufacturers of Emission Controls Association (MECA) revealed that during the period 1975 to 1992 sales of catalysts and diesel filter technology in the U.S. and Canada exceeded $7 billion.

Sales are projected to grow by an additional $8 billion by the end of the decade. And as impressive as these figures are, they represent only a portion of the total sales of motor vehicle emission controls.

U.S. manufacturers are recognized as world leaders in developing and producing mobile source control technologies such as the catalytic converter. U.S. companies got the jump in developing motor vehicle emission control equipment because the United States led the rest of the world in requiring reductions of pollution from cars and trucks. Now, as the rest of the world seeks to control motor vehicle emissions, U.S. companies with extensive experience are poised to supply the world market with motor vehicle emission control products.

Since the passage of the first Clean Air Act Amendments in 1970, MECA members have spent over $500 million in capital investments and nearly $300 million in research and development to commercialize and manufacture catalytic converters and diesel filters.

To meet the growing domestic and foreign markets, these companies are predicting that they will spend an additional $350 million in capital investments and $200 million in R&D during the 1990s.

Revenues realized in the U.S. from sales of catalysts and diesel filter technology outside the U.S. and Canada already exceed $1 billion and are expected to total an additional $1.5 billion by the end of the decade. By the year 2000 these revenues are expected to exceed $400 million annually.

Expanding markets will create more than 2000 full-time jobs for the U.S. workforce; over 50 percent of these positions will be filled by skilled professionals. And this figure does not include additional jobs generated by the multiplier effect. The motor vehicle emission control industry is one of a growing list of industries that has prospered as a result of environmental control programs.

Technology Forcing vs. Market-Based Incentive — Are They In Conflict or Compatible?

Technology-forcing standards are the cornerstone of the successful U.S. motor vehicle emission control program. These standards created an incentive for both auto and emission control manufacturers to develop and commercialize the technology which has become a showcase to the world. But some would argue that technology-forcing concepts have outlived their usefulness and that market-based incentives are more efficient and potentially more effective. Market-based incentives offer some promising possibilities, but they have a limited track record in the environmental arena.

To meet the significant air quality challenges facing this nation in the next decade and beyond, the optimal strategy is to combine the best elements of technology-forcing performance-based standards and market-based incentives.

Performance-based standards create the necessary regulatory incentive for sources of pollution to act, and provide certainty to those prepared to commit the resources to develop and commercialize the technology necessary to comply with the standards.

Market-based incentives can provide flexibility by encouraging the development of creative solutions that will achieve the required emission reduction.

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Global Market for Vehicle Pollution Controls Could Reach $29 Billion by 2000

A recent market study forecasts that by the year 2000, the motor vehicle pollution control market will nearly triple from an estimated 1993 level of $12.5 billion to over $29 billion. The report, "Motor Vehicle Pollution Control: The Global Market," was prepared by Michael P. Walsh, an expert on international motor vehicle emission control issues.

The motor vehicle population worldwide has been increasing tremendously for several decades: automobiles by ten million per year, trucks and buses by three and one half million per year, and motorcycles and mopeds by approximately 4 million per year. One by-product of this growth is a substantial increase in emissions of hydrocarbons, carbon monoxide, nitrogen oxides and such toxic substances as fine particles and lead. Rising motor vehicle-related emissions have caused governments around the world to adopt stringent control programs to reduce this air pollution.

Catalyst technology has played a key role in helping motor vehicles meet increasingly stringent emission standards worldwide. Propelled by a rapid increase in catalyst usage in Western Europe, and supplemented by modest gains in Asia and Latin America, the global catalyst market has grown from approximately 50 percent of all new cars in 1990 to over 80 percent in 1993. Further, incremental gains are expected as standards become increasingly tighter in individual countries in Asia, Latin America, and Eastern Europe.

As a result of tighter emissions standards and continued growth in motor vehicle sales, the market forecast predicts:

- The light duty motor vehicle pollution control market should rise from approximately $11 billion in 1993 to almost $16 billion by the year 2000;
- The light- and heavy-duty truck and bus pollution control market is anticipated to rise from a current $1.2 billion market to more than $2 billion in the next several years and to climb to $7 billion by the end of the decade; and
- The motorcycle and moped pollution control market, while much smaller than the automobile and truck markets, is no longer insignificant and should grow to a $400 million market during the decade.

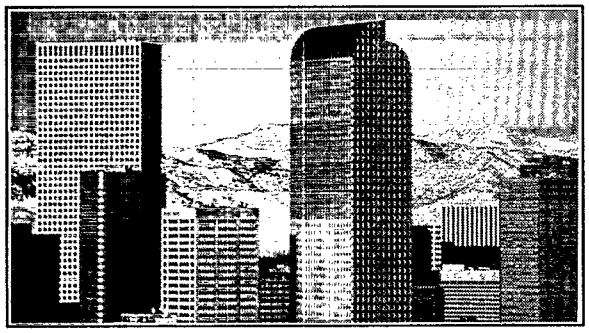
Copies of the full report can be obtained from Michael Walsh at telefax (703) 241-1418.

Building Public/Private Partnerships for Clean Air: Models From the Denver Experience

by Steven Howards, President, Environmental Strategies: Consultants in Pollution Prevention

Large segments of U.S. industry will benefit from the implementation of stronger controls mandated by the Clean Air Act Amendments of 1990 (CAAA). A growing number of state and local air quality administrators are learning how to marshall these considerable forces into helping them develop and implement key programs. These partnerships between the public and private sectors may include the thousands of companies vending alternative fuels, pollution control products, technologies, processes and services, as well as those who support stronger controls on certain types of emitters. These partnerships are formed in the hopes of minimizing the need for more expensive programs.

Public/private partnerships boast an impressive record of accomplishment in helping state and local officials to expand their resource and political bases and to implement programs that might not otherwise have been possible. These partnerships are often custom-crafted to meet the specific program needs targeted by the agency responsible for implementing CAAA requirements, a fact that has complicated adoption of existing programs by other states or localities. This article examines three types of partnerships successfully tested in the Denver metropolitan area and describes how these experiences might be used to create models for other metropolitan areas.



The Denver skyline

Three Models

Model 1: Partnerships for Conducting Key Research

The Opportunity. Research can be instrumental in helping air quality planners design appropriate control programs. Research findings can also be of direct interest to diverse elements of the private sector, helping sources targeted for emission reduction to better understand why proposed programs are needed and how costs should be allocated.

Results of key research can also be used to guide the development of control programs that create expanded markets for clean energy products, technologies, services, and alternative manufacturing processes. A carefully crafted research process that marshals the involvement of these interests can leverage private resources to help conduct research, build consensus, and lead to programs that enjoy broad support.

The Model. The "Brown Cloud" study was initiated by the Governor of Colorado in response to growing pressure from state and local air quality officials and the public, all of whom were seeking stronger controls on coal-fired utilities. Progress was stalled by growing dissension over the projected costs and benefits of reduction. The cost of research needed to resolve these issues was estimated at nearly one million dollars. With limited public funding available, the Governor convened a meeting of senior level representatives of the major polluting sources, clean energy product vendors, and major public sector interests.

Companies pledged funding and their participation in designing a research methodology to determine the cause of metropolitan Denver's visibility problems, and to identify cost-effective solutions. To protect research credibility while insuring private sector representation in all aspects of decision-making, a Technical Advisory Committee representing major regional interests was appointed by the Governor and staffed by the state air agency. Its recommendations were conveyed to a three-person oversight group that included delegates of the Chamber of Commerce, the EPA Regional Administrator, and the Governor.

Steven Howards

The Reward. It is unlikely that this research or the programs it spawned could have been completed without a public/private partnership. The entire project encompassed three phases with a total cost of almost $2 million. Over 90 percent of this funding came from the private sector.

While the third and final research phase is scheduled for completion in Summer 1993, earlier findings documenting the pollutant contribution of motor vehicles, wood burning units, and coal-fired boilers have led to a host of initiatives by state and local governments and the private sector. These initiatives include local ordinances banning wood-burning units in new home;, state and local laws requiring the purchase of alternative fuel vehicles by public fleets and providing subsidies to defray the cost of private sector conversions; and decisions by the Public Service Company of Colorado to test the use of gas return technology at one of its Denver area coal-fired plants and to avoid coal as an option in converting its Fort St. Vrain nuclear facility.

Model 2: Partnerships for Building Consensus in Developing Programs

The Opportunity. Both the public and private sectors have much to gain by working cooperatively to develop the most cost-effective programs for reducing pollution from targeted sectors. Potentially affected sources want to ensure that all reasonable options have been adequately considered and that programs minimize costs. Companies vending clear air products, processes, or services need strong programs to create maximum market opportunities. Air quality officials must anticipate and address points of contention, building consensus while developing programs that secure needed reductions.

The Model. The Governor's Diesel Task Force was established in 1987 at the recommendation of regional air quality officials. Its purpose was to create consensus for developing and implementing programs to reduce particulate emissions from diesel vehicles. The panel was appointed by the Governor and staffed by the state air agency, and included representatives of major corporations, including Cummins Power, Conoco, Texaco, Marathon Oil, and Navistar; environmental groups including the Environmental Defense Fund and Colorado Public Interest Research Group; and local, state and federal governmental agencies, including the Colorado legislature and U.S. EPA.

The group reviewed an assortment of control options recommended by air quality officials. The state air quality staff, working in cooperation with public and private sector participants, prepared briefing reports and organized panels of experts to help address questions raised by task force members and to facilitate decision-making.

The Reward. The Task Force developed the framework for specific legislative and regulatory initiatives and formed the core of an influential coalition that worked together with state and local officials to promote implementation of these proposed programs. As a direct result of this effort, Colorado implemented one of the nation's only inspection and maintenance programs for diesel vehicles; the Governor committed to propose regulatory enactment of clean fuel standards if the federal program was jeopardized or delayed; and state and local governments worked together to strengthen diesel opacity programs.

The public and private sectors have much to gain by working cooperatively to develop the most cost-effective programs for reducing pollution.

In Colorado, the Wood Burning Working Group and the Governor's Alternative Fuels Task Force have

Continued on following page

both successfully used similar models to identify needed programs, establish their framework, and develop a base of consensus that has enabled successful program implementation.

Model 3: Partnerships for Educating the Public and Implementing Specific Programs

The Opportunity. Many private sector interests are positively affected by the implementation of new pollution control programs. Such programs can improve a community's image and living environment, create conditions conducive to future growth, help to ensure that the burden for cleanup is allocated equitably between sources, and establish expanded markets for clean energy products, technologies, processes, and services. Identifying those interests that will benefit most from proposed programs and encouraging them to undertake specific projects can be instrumental in educating the public and helping to implement needed programs.

The Model. Although air quality officials were unable to impose an outright ban on wood burning, they were able to establish a metropolitan area-wide program prohibiting wood burning on declared "high pollution" days. The program exempted natural gas fireplaces, new generation wood stoves, and pellet stoves, thereby creating enormous market opportunities for these products. To facilitate public compliance, state and regional air quality officials worked cooperatively with representatives of the "clean burning" industry to encourage product promotion. Led by Public Service Company of Colorado, Rocky Mountain Gas, Colorado Interstate Gas, and a cadre of companies manufacturing or selling gas fireplaces, gas logs, and gas stoves, these interests created the "Light a Better Fire Campaign." This coalition spearheaded an aggressive advertising program to inform the public about the hazards of wood burning and the many advantages of natural gas alternatives.

Air officials worked cooperatively with the Campaign and other private sector interests, providing tax breaks and rebates to consumers purchasing natural gas or clean burning units; promoting consistency in local building codes to facilitate use of natural gas and newer wood and pellet stove technologies; and establishing certification programs insuring the quality, efficiency, and proper installation of the new technologies.

The Reward. Since the wood burning program was put into place, the number of clean burning stoves and fireplaces has grown from an estimated 300 to 96,000 units (about one-third of the metropolitan Denver area total). The burning bans together with the education/advertising program mounted by the private sector have dramatically reduced wood burning and retained high public compliance with the episodic bans; spawned the installation of natural gas units in over 90 percent of all new metropolitan Denver area homes having fireplaces; spawned complete prohibitions on new wood burning fireplaces in some communities; and created new markets for clean burning products. Public compliance with the episodic bans, consumer willingness to purchase cleaner burning units achieving season-long reductions, and the success of local governments in establishing increasingly stringent programs is largely attributable to the active role the private sector has played in promoting clean alternatives to traditional wood burning units.

Conclusion

State and local air agencies across the country have employed an assortment of innovative partnerships with the private sector, enlisting valuable allies in developing and implementing a variety of important programs. While many of these models are custom-crafted to meet the specific needs of an area, replication is possible in other areas if several criteria are present: (1) strong public pressure for regulatory action that encourages active participation in programs; (2) a diverse group of private sector interests (this may include both polluting sources and companies vending air products) that can be called upon for support; and (3) political leadership and technical expertise that can initiate, fashion, and pilot the process.

By focusing greater attention on the positive role the private sector can play in supporting clean air programs and building upon the experiences of others in creating innovative public/private sector partnerships, state and local agencies can dramatically augment their bases of support and their abilities to achieve clean air goals.

Conference

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learn what the rules require, the array of technologies that are available to them, and how to avoid enforcement actions. EPA is planning to train people at Small Business Administration development centers across the U.S. to assist small businesses in complying with the CAAA. In addition, EPA is going to stimulate the clean air marketplace by helping small businesses that are currently developing environmental technologies by partnering them with businesses that need the technologies.

Despite recent EPA efforts to work with industry, many industry representatives argue that the government should be doing more. Don Deieso, President and CEO of Research-Cottrell Companies, encouraged the government to provide investment tax credits for environmental technology investments and tax credits for research and development on environmental technologies. To enhance the role of U.S.-based companies abroad, the government should subsidize U.S. environmental businesses in other nations "by providing loan guarantees and access to capital at below-market rates." Without help from the federal government, he argues, U.S.-based companies cannot compete with foreign counterparts that are backed by their national governments.

Others cited the need for industry to play a key role in strengthening the clean air marketplace. Professor Porter encouraged industry to provide substantive input during the regulatory process. In addition, companies must strive to understand how their operations affect the environment and how they can reduce those impacts. Emission inventory requirements such as the Toxics Release Inventory are very powerful because they help companies systematically quantify the amounts and types of pollutants they release.

The role of environmentalists in the clean air marketplace also needs to be redefined. Instead of focusing on forcing industry to comply with regulations, they should support regulatory standards that encourage innovation, help disseminate information about best practices, and work with industry to develop strategies that will allow companies to remain profitable while protecting the environment.

Government, industry, and environmentalists working together to improve both the quality of our environment and the health of our economy can provide the underpinnings of sustainable development. Senator Baucus stated his vision of a sustainable future most optimistically when he said, "Now we are on the verge of a Renaissance; at the core is an understanding that we must preserve our natural resources to sustain ourselves both economically and physically."

Control

From page 7

The U.S. emission control industry is proud of its contribution over the past 20 years in helping to clean up the air we breathe. Catalysts have been equipped on over 200 million vehicles worldwide. Diesel particulate controls are being installed on new and existing trucks and buses. Control technologies are now available for vehicles which operate on alternate fuels such as natural gas, propane, methanol, and ethanol. Today, sophisticated emission controls are an integral part of high technology/high performance motor vehicles.

Looking to the future, the 1990 Clean Air Act Amendments call for possible implementation of Tier II standards after the year 2000, which would require an additional 50 percent reduction in emissions, and California has adopted an ambitious control program that will significantly reduce emissions of cars sold in California in the mid to late 1990s. Greater reduction of particulate and NOx from heavy trucks and buses also has been mandated. Finally, emissions from engines in off-road vehicles ranging from heavy construction equipment to lawn mowers will be controlled for the first time. The U.S. emission control industry is now hard at work on new technologies to meet these emission control challenges and to help the U.S. achieve the dual objectives of clean air and sustained economic growth.

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