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Briefing Book for David Gardiner re June 20, 1996 Testimony before House Subcommittees [Binder]

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BRIEFING BOOK FOR DAVID GARDINER

**FOR JUNE 20, 1996 TESTIMONY
BEFORE THE
SUBCOMMITTEE ON TECHNOLOGY
AND THE
SUBCOMMITTEE ON ENERGY AND THE ENVIRONMENT
OF THE
COMMITTEE ON SCIENCE
U.S. HOUSE OF REPRESENTATIVES**

McGartland

DRAFT

I want to thank the subcommittee members for holding hearings on this most important topic. New environmental technologies have been critical to our nation's environmental progress over the past 25 years. New environmental technologies hold the key to our future success as well. In fact, I can think of no single area that holds more opportunities for improving our future quality of life -- both environmental and economic -- than the development and use of more effective, less expensive environmental technologies. Thank you again for your interest.

Over the past quarter century the United States has earned a well-deserved reputation as the most environmentally-protective industrialized nation on earth. While our economy continues to grow and generate new jobs, we have put in place an environmental system that has led to substantial improvements in the quality of our air, water, and land.

Much of that success can be attributed to our ability to conceptualize, build, and introduce into the marketplace new ways of controlling and preventing pollution. Think of the catalytic converters that are now standard equipment on all cars built in the United States today. Twenty-five years ago people debated whether such a device would work effectively, and whether its cost was within reach of the car-buying public. Today we know catalysts work very well indeed.

It may be possible to imagine a world where catalysts don't exist, but it would be very difficult to breathe there.

The development and use of automobile catalysts, like most environmental technologies, was driven by our system of environmental laws and regulations. In fact, many environmental standards currently in place tend to "lock in" the use of specific technologies that were well-understood when the standards were promulgated years ago.. The use of such technologies, the best available at the time, have led to substantial human health and environmental benefits for all Americans.

The benefits of our investments in environmental technologies aren't limited to the environment. Because the United States was the first country to pass comprehensive environmental legislation, domestic companies got an early start on developing the environmental products and services that today are in demand all over the world. By the year 2000, the global demand for environmental technologies may be half a **trillion** dollars.

Yet the same environmental protection system that gave impetus to new technologies in the past may hinder them in the future. The technologies that were state-of-the-art ten or twenty years ago are almost certainly outdated now, while the regulatory systems that drove their use have been slow to change. Private

industry and financial institutions thus hesitate to fund the development of new technologies, because they are uncertain whether their use will be approved by regulatory agencies. Uncertainty in the private sector is compounded by the inability to obtain credible, independently verifiable data on the performance of promising new technologies, data that is essential to regulatory approval.

Because today's environmental protection system inadvertently puts barriers in the way of new technology development, EPA is working hard to change the system.. We are working to reinvent EPA so we do a better job protecting public health and the environment, but with less cost and complexity for the regulated community. And we are convinced that one of the best ways we can become cleaner, cheaper, and smarter is by encouraging and supporting the development of a new generation of environmental technologies.

Technological improvements are critical to the achievement of several related goals. First, they will help us further improve human health and environmental conditions in the United States. Despite past progress, we still face unacceptably high risks related to "traditional" air and water pollution. 130 million Americans in 170 major cities still breathe unhealthy air; about 40 percent of our nation's rivers, streams, lakes, and estuaries are still too polluted for one or more beneficial uses. Moreover, our ability to manage "new" kinds of

environmental risks -- like cryptosporidium in drinking water -- depends in large part on our ability to develop new monitoring and control technologies.

Second, new technologies will help reduce the costs of environmental protection. Since the passage of the Clean Air Act Amendments of 1990, the capital and operating costs of powerplant scrubbers have declined by almost 50 percent. We need to make the same kind of progress in other areas.

Third, an environmental protection system that fosters the development of new technologies to solve domestic environmental problems will give a substantial boost to domestic companies competing for business in the global environmental marketplace. If domestic companies have the flexibility to develop and test innovative technologies here at home, they'll be much tougher competitors overseas.

Fostering technological innovation is one of our major goals at EPA. And we have learned that one of the quickest ways to achieve that goal is through a "performance-based" system that allows the regulated community the flexibility to define the best ways of hitting environmental targets. Through our Project XL, for example, we encourage businesses to carry out facility-specific projects that achieve better environmental results at less cost. If those projects make sense, both to EPA and to interested stakeholders, EPA is going to give the facilities

greater flexibility in meeting regulatory requirements. I believe that this new flexibility, a flexibility backed up with regulatory incentives, will foster a burst of technological innovation in American companies.

We're already seeing the fruits of flexibility in other EPA programs. For example, under the Clean Air Act of 1990 coal-fired powerplants can choose from a wide variety of control options to meet their emissions reduction requirements for sulfur dioxide. One of those options is the purchase of emissions credits earned by other powerplants who may have devised a cheaper way to limit SO₂ emissions. This market flexibility has already spawned a wide variety of innovations, including major advances in scrubber technology, fuel cleaning, fuel blending, and environmental dispatching. At EPA we are working to expand this market-based, innovation-nurturing approach and apply it to water pollutants and other kinds of air pollutants.

In the Superfund program EPA is encouraging the use of innovative technologies at cleanup sites by sharing the economic risks with Potentially Responsible Parties (PRPs). For selected technologies, EPA will reimburse PRPs for up to 50 percent of their innovative technology costs if the new technology fails and subsequent remedial action is required.

EPA also is helping the Bureau of Reclamation, the state of Arizona, and

the city of Phoenix overcome regulatory barriers to the use of constructed wetlands as an alternative to traditional wastewater treatment and water reuse technology. The city of Phoenix claims that this project may save the ratepayers \$300 - 500 million over the long run, while improving water quality and enhancing wildlife habitat in the Salt River watershed.

These projects, and dozens of others underway with EPA support, have a value beyond the money that will be saved at specific test sites. The technologies developed may ultimately be used at hundreds of other sites, both in the United States and overseas, thus protecting human health, strengthening the economy, and creating jobs for American workers. The investment we're making today in technological innovation will pay human health, environmental, and economic dividends well into the next century.

As you continue your deliberations in this area, please keep in mind that EPA wholeheartedly supports the development and use of innovative environmental technologies. I also look forward to any suggestions you may have on how EPA could help remove existing regulatory barriers. Thank you for inviting me to testify.

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TESTIMONY

Divider Title: _____

**TESTIMONY OF DAVID GARDINER
ASSISTANT ADMINISTRATOR FOR POLICY, PLANNING & EVALUATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON TECHNOLOGY
AND
THE SUBCOMMITTEE ON ENERGY AND ENVIRONMENT
OF THE
COMMITTEE ON SCIENCE
U.S. HOUSE OF REPRESENTATIVES**

June 20, 1996

Good morning. I am pleased to be here today to discuss our shared interest in facilitating the use of high technology to improve the environment. The U.S. Environmental Protection Agency (EPA) agrees with the Subcommittee on Technology and the Subcommittee on Energy and Environment that the development and deployment of cleaner, safer and cheaper environmental technologies in the U.S. is lagging, and that U.S. environmental policy does not provide a framework that maximizes the benefits of high technology for the environment or industry. As the agency primarily responsible for administering the U.S. environmental policy framework, EPA is in a unique position to lead other federal, state and local agencies in an effort to reduce regulatory and policy barriers to, and increase incentives for, technology innovation, while ensuring that environmental protection is not compromised. I am pleased to report today on the many significant activities that EPA is undertaking in this regard.

The Importance of Innovative Technologies

Perhaps nothing is more essential to achieving our nation's environmental goals than the ability to successfully develop and deploy new technologies for environmental protection. The existing stock of environmental technologies is simply not adequate to solve many of today's environmental problems, let alone the daunting challenges that lie ahead. Both here and abroad, better and more economical technologies are needed to protect public health and the environment at an affordable cost.

Developing improved environmental technologies is not only good for the environment, it's also good for business. The U.S. environmental industry accounts for annual revenues of \$134 billion and has created more than a million jobs. With global demand for environmental technologies projected to reach \$300 - \$500 billion annually by the year 2000, the successful introduction of new and better products will help this industry successfully compete in expanding international markets. America's principal trade partners, Germany and Japan, have already positioned themselves to capture a leading share of the global market. The U.S. must either strengthen its own presence in the market, or be left behind.

Market Impediments to Innovative Technologies

A number of impediments -- both internal and external to EPA -- limit private sector investment in innovative environmental technologies. These impediments include:

- Statutes, regulations, policies, and procedures at the federal, state and local levels that favor the use of conventional, often less efficient or cost-effective technologies;
- Reluctance on the part of private industry and the financial community to fund the development of new technologies because of changes in the tax code and uncertainties as to whether innovative methods will be approved for use by regulatory agencies;
- Inability on the part of technology users, financiers, consulting engineers, and regulators to obtain credible, independently verified data on the performance and cost of promising new technologies; and
- Lack of established information networks that provide users with awareness of (and easy access to) better, cleaner, safer and lower-cost technologies.

EPA is working to overcome all of these impediments so as to encourage greater private sector development and use of innovative technologies. But of all the factors that inhibit technology innovation, perhaps none is more significant than the prescriptive nature of the environmental policy framework -- including regulatory, permitting and enforcement programs -- at the federal, state and local levels. Despite the traditional advantages of prescriptive regulations (especially to small and medium sized businesses that seek regulatory certainty and a sure path to compliance), if EPA is to succeed in its mission to protect public health and the environment, we must work within our own programs, and with our state and local partners, to build additional flexibility into the environmental policy framework.

EPA's Policy Framework Drives the Market

Unlike other consumer markets, the demand for environmental goods and services in the U.S. is largely driven by the environmental policy framework that EPA administers, in partnership with the states. American businesses spend over \$130 billion a year to comply with environmental mandates. But EPA's rules, guidelines and administrative procedures sometimes hinder technology innovation by making it difficult or undesirable to use new monitoring, assessment, pollution prevention, remediation, or control techniques.

Barriers to Innovation in the Policy Framework

Barriers to technology innovation in the environmental policy framework can take many forms (see Appendix I). For example, many environmental standards that are currently in place tend to "lock in" the use of existing technologies because they are based on reference technologies that were already well-demonstrated when the standards were promulgated. Even where companies are legally permitted to use alternative methods to meet a standard, they are usually unwilling to risk non-compliance by implementing a relatively unknown or unproven technology. Enforcement personnel do not normally grant exceptions for businesses that make bona fide attempts to comply using an innovative approach but need extra time or fall short of the regulatory mark. Since companies are given no reward for trying a new approach and no protection against failure, conventional technologies tend to be used over and over again, freezing out newer and more effective options.

Another barrier is the unpredictable nature of the statutory and regulatory development process. It is not unusual for the reauthorization of an environmental statute or the promulgation of an environmental standard to take many years. Only at the end of that long process is the required performance level established. However, once the law or standard has been put in place, compliance may be required within a relatively short period of time. Since the development cycle for new technologies can be ten years or longer, there may not be enough lead time for the efforts of technology developers to bear fruit. Even when developers begin their efforts early, uncertainty in the statutory or regulatory development process may make it difficult to obtain financing, since a proposed technology is likely to either over-shoot or fall short of the eventual (unknown) regulatory requirement.

There is no substitute for strong environmental regulations and enforcement in creating the underlying demand for environmental products and services. But environmental programs can be implemented in ways that either help or hinder the development and use of innovative technologies. While some of the barriers inhibiting innovation are rooted in our environmental statutes, there is much that EPA can do to make its regulatory programs more "friendly" towards innovative technologies.

25 Years of Progress and Lessons Learned

In the quarter century that has elapsed since the first Earth Day, the American people have enjoyed dramatic improvements in public health and the natural environment. As we achieved these successes, we learned a great deal about the

advantages and disadvantages of "command-and-control" regulation. Command-and-control approaches have produced some important successes and they have helped us to get where we are today. Some companies still prefer the straight-forward, cookbook-like nature of prescriptive regulations. But prescriptive regulations can sometimes be inflexible, resulting in costly compliance actions that defy common sense. They can also discourage technological innovation. We now know that we must expand the available policy tools to include more flexible approaches that reward innovation and achieve greater levels of environmental protection at lower cost.

We have learned that setting "performance-based" standards and allowing the regulated community to find the best ways to meet them can bring about cheaper, quicker and better results than mandating design standards or specific technologies. Through performance-based approaches, we can promote both lower-cost environmental protection **and** innovation in environmental technology. We have also learned that performance-based standards combined with economic incentives can provide a powerful engine for innovation.

For example, Congress in 1990 enacted a market-based acid rain control program with a tradeable credits provision to further reduce sulfur dioxide (SO₂) emissions by 50 percent. Under this program, coal-fired power-plants can choose from a wide variety of control options in meeting their emission reduction requirements, including demand-side management programs, switching to lower-sulfur fuel, buying emissions credits and installing scrubbers. By rewarding superior performance with tradeable credits, the program has already spawned a wide variety of innovations in

pollution control and prevention, including major advances in scrubber technology, fuel cleaning, fuel blending, and environmental dispatching. U.S. vendors, for example, are now guaranteeing retrofit scrubbers at 98 percent control efficiency, whereas the ability to achieve even 90 percent control at existing units was in doubt just a few years ago. Moreover, the capital and operating costs of these improved scrubbers have dropped by almost 50 percent. The net effect is a more competitive pollution control industry and a much cheaper control program than anyone had previously thought possible.

Reinventing Environmental Regulation

Under the leadership of President Clinton, Vice President Gore and Administrator Browner, EPA is drawing on the lessons of the past 25 years to change the way we do business. In terms of environmental technology, this means developing regulations, policies and procedures that promote innovation instead of stifling it. It means fostering a partnership between the private and public sector that taps each sector's respective strengths. Ultimately, it is the private sector's job to produce innovation. But it is the government's job to create a regulatory framework within which technology innovation is rewarded, not penalized. The key to a successful partnership between government and industry is greater reliance on flexible, performance-based regulations that harness the ingenuity of the private sector.

As Vice President Gore put it, "the next generation of environmental policy must stress flexibility with increasing accountability and environmental quality. Without

flexibility, we will not innovate. Without accountability, we will not have the trust to work together. And without a commitment to increasing environmental quality, we will not achieve a sustainable future."

Moreover, the report of the President's Council on Sustainable Development shows that the Administration's vision of the future of environmental protection is shared by a broad set of stakeholders. This diverse group of industry, government, academic and environmental community representatives recently came together and proposed a dual-track approach to improving the regulatory system -- a first track, to increase the costs-effectiveness of the existing system; and a second track to develop an alternative environmental management system that would give members of the regulated community the flexibility to design their own environmental management strategies in return for a commitment on their part to exceed the traditional standards.

EPA's Two Track Approach

EPA's strategy to reinvent environmental protection runs parallel to the approach recommended by the PCSD report. The **first** track is a set of high priority actions targeted to fixing problems with **existing** regulatory programs. These actions demonstrate our commitment to providing flexibility, sparking innovation, and requiring accountability; to cutting red tape; to encouraging collaboration; and to focusing upon achieving environmental results in local communities, rather than adherence to bureaucratic procedures in Washington.

The **second** track is a set of high priority actions designed to develop innovative **alternatives** to the current regulatory system. We will enter into partnerships with businesses, environmentalists, states and communities to test alternative management strategies for single facilities, industrial sectors, and geographic areas. The knowledge gained from such bold experimentation will lay the groundwork for developing a new environmental management system for the 21st century.

This **dual** strategy is a comprehensive approach to continually improving our environmental management system -- aimed at our twin goals of enhanced environmental protection and economic growth.

Improving the Existing Regulatory System

Under the first track of our reinvention strategy, EPA is making a host of changes to existing regulatory programs in order to remove barriers to innovation and reward private market development of new technologies. These changes include broad-based reforms that provide thousands of businesses, communities or other regulated entities with flexible, performance-based options for compliance, as well as more targeted reforms that address discrete problems faced by specific technologies or industries. A number of EPA's innovation-promoting reinvention efforts are outlined in Appendix II. I'd like to take a few moments here to describe some of these efforts.

Expanding Use of Trading Programs: Based on our successful experiences with the market-based acid rain control program and its provisions for trading sulfur dioxide credits, as well as our previous experiences with trading programs, EPA is

fostering the development of a number of new trading programs for air, water and waste management. EPA's Air Office is preparing to release its Open Market Trading guidance for ozone precursors and recently announced a new Clean Air Power Initiative that will look into the possibility of emissions trading for nitrogen oxides, mercury, and possibly even carbon dioxide. EPA's Water Office recently issued a policy to encourage effluent trading for water quality management. Such programs are beginning to spring up in watersheds around the country. And under EPA's Environmental Technology Initiative, the Chicago Board of Trade (CBOT) is establishing an active market in recycled commodities.

Superfund Risk Sharing for Innovative Technologies: EPA's Superfund Program encourages the use of innovative technologies in Records of Decision (RODs) -- the legal instruments that specify the remedy for a site. EPA has also introduced a new incentive to encourage Potentially Responsible Parties (PRPs) to develop improved methods for cleaning up Superfund sites by agreeing to share the risks of using innovative remediation technologies. For selected technologies, EPA will agree to reimburse PRPs for up to 50 percent of the cost of the innovative remedy, in the event that it fails and subsequent remedial action is required.

Extended NOx Compliance Deadlines: EPA's Office of Air and Radiation has agreed to extend compliance deadlines for sources of nitrogen oxide (NOx), if sources are willing to install new technology that will achieve superior results. Sources of NOx pose serious threats to both human health and the nation's terrestrial and aquatic ecosystems. Conventional control technologies are complex, costly and not as efficient

as they could be to control this air pollution problem. This regulatory fix will open the door to innovative technologies while increasing environmental protection and economic benefits.

Reinvention for Innovative Technologies (ReFIT): Under the Environmental Technology Initiative, EPA has established the Reinvention For Innovative Technologies (ReFIT) Program to strengthen incentives for the development and use of promising new technologies. ReFIT is a "change agent" working to improve the environmental policy framework by supporting more than 40 action-oriented projects, demonstration programs, and policy initiatives throughout the United States. These projects are helping federal, state and local efforts to reinvent environmental management by injecting more flexibility into government policies, programs, and procedures, while ensuring improved environmental results. ReFIT is improving the existing regulatory system by moving from "command-and-control" approaches to performance-based systems that reward innovation. The CBOT Partnership to Trade Recyclable Commodities, which I have already mentioned, is one of ReFIT's many important programs. In order to give you a better flavor of what ReFIT is accomplishing, I'd like to briefly describe a few more of its programs.

Innovative Technology and Pollution Prevention in CAA Operating Permits:

Under the ReFIT program, EPA has begun a new federal/state/industry partnership to allow companies to meet air quality standards with flexible, performance-based Title V operating permits that encourage technology innovation and pollution prevention. This partnership builds on a successful joint effort by Intel Corporation, the State of Oregon

and EPA, which resulted in the first flexible Title V permit in the nation for Intel's Aloha facility. But different facilities possess different characteristics and each state's regulatory framework is somewhat unique. Therefore, EPA has established this new partnership, involving 5 different industries in 5 separate states, with the goal of developing additional models of permit flexibility. These new models of flexibility will be integrated into EPA's Title V regulations and operating guidance, thereby improving Title V implementation nationwide. Over the next few years, tens of thousands of facilities throughout the country will be required to obtain Title V permits. Many could benefit from the new models of flexibility that will be developed by this program.

Increasing Inter-State Cooperation in Permitting: Under the ReFIT program, EPA, the National Governors Association (NGA) and six states are working together to overcome interstate barriers to technology innovation. California, Illinois, New Jersey, Massachusetts, Pennsylvania and New York signed a Memorandum of Understanding on June 4, 1996 committing to conduct a pilot program to evaluate 12 technologies, to develop a standard format for information exchange, and to establish a coordinated, streamlined procedure for reciprocal permitting of new technologies. NGA will analyze the results of the 6-state process, sponsor a workshop to obtain broad stakeholder input, and then write a report on how this type of process could be implemented at the national level. The report will be distributed nationally by NGA and EPA. The ultimate goal of this partnership is to enable innovative technology developers who have gone through the time and effort of getting a technology approved for use in one state, to later get the same technology readily accepted in another.

Overcoming Barriers to Constructed Wetlands: Tres Rios Project in

Phoenix: ReFIT is helping the Bureau of Reclamation, the Arizona Department of Water Quality and the City of Phoenix overcome federal and state regulatory barriers to the use of constructed wetlands as an alternative to traditional wastewater treatment and water reuse technology. This collaborative effort is helping to address NPDES issues, endangered species issues and other permitting and regulatory requirements confronting the Tres Rios project as it is scaled up to full operation. The City of Phoenix claims this project has the potential to eventually save city ratepayers \$300-500 million, improve water quality and enhance wildlife habitat in the Salt River watershed. The Tres Rios pilot permit will serve as a model for more than 20 other communities around the country which are also interested in using constructed wetlands solve their water quality problems.

Creating Building Blocks for a New System

Under the second track of EPA's reinvention strategy, we are laying the building blocks of a new system of environmental protection. As we streamline the workings of the current system, we are also testing new tools that could provide similar, or even broader flexibility to the regulated community. The cornerstone of this new system of environmental protection is EPA's Project XL (Excellence and Leadership).

Project XL provides an unprecedented opportunity for selected entities -- industrial plants, industrial sectors, communities, and federal agencies -- to pilot alternative management strategies that are both less constrained by the detailed

prescriptions of regulations and more effective in fulfilling environmental goals that exceed standards. This program has drawn wide praise even in its early stages because it offers both the **flexibility** that businesses and other regulated entities seek, as well as the bold environmental protection **results** that the American public expects. Project XL offers a win-win opportunity for industry, federal and state regulatory agencies, and society as a whole. The result will be a cleaner environment through a more efficient, less-costly regulatory system.

EPA's Commitment is Strong

Through these and other efforts, EPA is committed to developing an environmental policy framework which encourages innovation -- one which will allow the private sector to maintain its status as a world leader in developing and using environmental protection technologies. By eliminating policy and regulatory barriers that inhibit new technologies from getting to market, EPA's reinvention programs will give the private sector incentives to invest in the technologies that they determine are winners. We look forward to working with the Subcommittee on Technology and the Subcommittee on Energy and Environment to advance our mutual goals in this important area.

REGULATORY BARRIERS TO TECHNOLOGY INNOVATION

A. INFLEXIBLE AND OVERLY PRESCRIPTIVE REGULATIONS

Technological "Lock-In"

With few exceptions, the environmental laws in place today are characterized by reliance on technology-based standards. EPA or state regulatory agencies must identify the best technologies currently available in the marketplace (with or without consideration of cost), and promulgate standards for each industry based on these technologies. Even so-called "performance standards" are usually developed around a particular technology and may have the practical effect of mandating that technology's use. Unless and until the standard for an industry is changed, the same technology will be used over and over again, thereby freezing out newer and more effective options. In theory, most standards are supposed to be updated on a periodic basis (e.g., every five years). In practice, however, such standards are rarely changed.

Rigid Standards Mandating Narrow Bands of Performance

For most environmental regulations, the required band of performance is so narrow that most potential technologies perform either too poorly or too well. For example, a new technology that performs slightly below required levels in its first application must be rejected, even though it could be refined over time to provide superior performance at a small fraction of the cost. Meanwhile, a new technology that initially performs far better than an existing one is likely to be more expensive to develop and use (at least in its first applications). Without a regulatory mechanism that rewards superior performance, this improved technology cannot be successfully marketed.

Single Media/Single Emission Point Focus

Most regulatory programs reflect a very narrow approach to environmental protection, focusing exclusively on one pollutant or medium (e.g., air, waste or water), and requiring specified reductions from each emission point or industrial process within a plant. Such programs discourage investments in technologies that can efficiently prevent or reduce a range of pollutants across an entire facility.

B. BURDENSOME AND UNPREDICTABLE REGULATORY PROCESSES

Lengthy Permit Reviews

Analyzing new technologies can take considerable time and effort on the part of a permit authority. It can also require the attention of experienced personnel. A

seasoned permit writer may be able to review five or ten permits involving conventional technology in the time it would take to review a single innovative technology. With expanding permit workloads and limited agency resources, the review of innovative technologies tends to get pushed to the back burner.

Market Segmentation

Most federal environmental programs establish uniform national environmental standards but leave a great deal of discretion to individual states in deciding how to best implement these requirements. Many states, in turn, delegate decision making to local environmental authorities. The result is that innovators must develop and sell their technologies in a large number of submarkets with differing performance requirements, rather than servicing a unified national market. Segmented markets may inhibit innovation because they increase the paperwork, time and cost involved in certifying a new technology. Moreover, such markets may not be large enough to warrant investment in new technologies that have limited applicability.

Inadequate Lead Time for Innovation

The development of an environmental law or regulation may take many years. Only at the end of that long process is the required performance level known. However, once enacted or promulgated, requirements typically become enforceable within a short period of time. Since the development cycle for new technologies is usually much longer -- often ten years or more -- there may not be enough lead time for the efforts of technology developers to bear fruit. Even when developers begin their efforts well before a new standard is promulgated, lack of predictability in the legislative or rulemaking process makes it difficult to obtain financing.

C. RISK AVERSION AND INTOLERANCE OF FAILURE

High Burden of Proof

Environmental programs typically impose a high burden of proof on new technologies. Regulators and permit writers prefer the tried-and-true since imposition of a technology that is not well demonstrated may result in industry litigation, and approval of a firm's compliance plan which relies on unproven technology may result in failure to protect public health and the environment.

Lack of Soft-Landings

Even where regulations and permit writers do not prevent the use of an innovative technology, the risk of noncompliance may be too great for a potential innovator to bear. Any new technology, even the most promising, may experience difficulties the first time around. But rigid statutory requirements and unforgiving

enforcement practices provide little accommodation for failed efforts to employ new technologies. Indeed, firms may face double jeopardy -- penalties for noncompliance coupled with the cost of replacing the failed technology with conventional controls -- in the event that their innovation falls short of the regulatory mark.

D. OTHER BARRIERS TO INNOVATION

Information Deficiencies

Innovators of new environmental technologies often lack the information they need to move their technology from the drawing board to the global marketplace. Many regulated entities, especially small businesses, find it difficult to determine exactly what clean up measures are required of them under the law. Meanwhile, the financial community, regulators and the public often lack the ability to make informed decisions about innovative technologies due to a lack of independently developed or verified data about availability, performance and cost. These information deficiencies are even more pronounced abroad. This limits the worldwide availability of U.S. environmental technologies and hampers global environmental improvement. The informational deficiencies in the international marketplace also restrict opportunities for U.S. customers and the domestic environment to benefit from the use of new technologies developed elsewhere in the world.

Lax Requirements and Inconsistent Enforcement

There is no substitute for strong environmental regulations and enforcement in creating the underlying demand for environmental products and services. Innovation on the part of domestic manufacturers may suffer where the regulatory program in the U.S. lags behind that of other industrial nations. Regulated firms may delay purchases of innovative as well as conventional technology in an uncertain climate of enforcement. Lax regulations or weak enforcement may also discourage potential investors from lending financial support for the development of new technologies.

Culture of Conflict

After years of adversarial relations, regulators are suspicious of industry's motives in advancing new technologies -- they fear that environmental protection will be sacrificed for the sake of profits. Industry, in turn, does not trust regulators to review their new technologies quickly, or to treat them fairly in the enforcement process if good faith-efforts to develop a new technology fail. Environmentalists are suspicious of industry's motives in advancing new technologies and they are dubious of regulators' ability to withstand industry pressure to water down tough requirements through the approval of cheaper but untested control techniques. In the past, there have been few efforts by government, industry and the environmental community to work together collaboratively in order to meet our common technology-related goals.

EXAMPLES OF EPA EFFORTS TO STRENGTHEN INCENTIVES FOR INNOVATIVE TECHNOLOGIES

Market-Based Acid Rain Control Program

The Acid Rain Control Program was enacted in 1990 to further reduce acid rain causing sulfur dioxide emissions by 50 percent. Under this market-based program, coal-fired power-plants can choose from a wide variety of control options in meeting their emission reduction targets, including demand-side management programs, switching to lower-sulfur fuel, installing scrubbers and buying emission credits. By providing the flexibility to innovate and rewarding superior performance with tradeable credits, the program has already spawned a wide variety of innovations in pollution control and prevention, including major advances in scrubber technology, fuel cleaning, fuel blending, and environmental dispatching. For example, U.S. vendors are now guaranteeing retrofit scrubbers at 98 percent control efficiency, whereas the ability to achieve even 90 percent control at existing units was in doubt just a few years ago. Moreover, the capital and operating costs of these improved scrubbers have dropped by almost 50 percent. The net effect is a more competitive pollution control industry and a much cheaper control program than was previously thought possible.

New Trading Programs for Air and Water Quality Management

Based on EPA's successful experience with the market-based acid rain control program and its provisions for trading sulfur dioxide credits, as well as previous experiences with trading programs, EPA is now developing a number of new trading programs for air and water quality management. EPA's Air Office is preparing to release its Open Market Trading guidance for ozone precursors and recently announced a new Clean Air Power Initiative that will look into the possibility of emissions trading for nitrogen oxides, mercury, and possibly even carbon dioxide. EPA's Water Office recently issued a policy to encourage effluent trading for water quality management and is currently developing detailed guidance. Such programs are beginning to spring up in watersheds around the country.

NOx Compliance Extensions for Innovative Technologies

EPA's air program has agreed to extend compliance deadlines for sources of nitrogen oxide if sources are willing to install new technology that will achieve superior results. Sources of nitrogen oxide pose serious threats to both human health and the nation's terrestrial and aquatic ecosystems. Atmospheric deposition of nitrogen oxides (NOx) is still one of the most intransigent air pollution problems facing the nation. Conventional control technologies are complex, costly and not as efficient as they could be to control this air pollution problem. Finding cheaper, more efficient

alternatives to prevent or mitigate NOx emissions from over 54,000 industrial, commercial and institutional operations is essential to meet several of the nation's environmental goals, such as: attainment of Clean Air ozone standards; reductions in greenhouse gas emissions; habitat protection in ocean and estuarine waters, and long-range transport of NOx emissions.

Design for the Environment

The Design for the Environment (DfE) program encourages businesses to incorporate environmental considerations into the design of products and manufacturing processes. DfE is a voluntary, cooperative program that helps industry evaluate multiple alternative chemicals, processes, and technologies; compare their relative performance and risks to the environment in the earliest design stages; and organize collaborative efforts to develop and commercialize these innovative technological opportunities. Currently, DfE staff are working with the dry cleaning, printing, and computer industries.

RCRA Regulatory 'Quick Fixes'

1. Regulatory and Policy Tension Between Groundwater Protection Provisions and Aquifer Restoration Objectives. Federal and state legislation to protect groundwater resources generally precludes 'injection' of hazardous waste. However, such legislation does not always take into account situations where groundwater resources are already contaminated. Thus, a conflict was created because cost-effective remedial approaches often involve the extraction and partial treatment of groundwater (which is considered hazardous waste if contaminated), followed by reinjection with the objective of eventual restoration of the aquifer. Statutorily, Federal Land Disposal Restrictions do not preclude reinjection as part of a remedial action under CERCLA or RCRA corrective action and EPA has issued guidance to ensure that this is fully understood. Yet, there are instances where cleanups do not warrant CERCLA or RCRA attention. In such circumstances, application of existing policy to voluntary cleanups may be problematic. EPA will reiterate its existing policy, and suggest that regulators look favorably on beneficial reinjection projects, subject to an appropriate level of oversight.

2. Facilitate Increased Use Of In Situ Treatment In General, and Bioremediation In Particular, By Providing Higher Quantity Limits For In Situ Treatability Studies. The Treatability Study Sample Exclusion Rule (TSER) was revised several years ago to allow up to 10,000 kg of contaminated media to be excluded from RCRA manifesting and permitting. 10,000 kg is generally sufficient to pilot test *ex situ* technologies and provide meaningful data. However, the search for more cost-effective approaches to site remediation has led to increased interest in *in situ* technologies. Yet, 10,000 kg is not sufficient to allow meaningful treatability studies on technologies such as soil vapor

extraction or bioventing. Thus, a further increase in quantity limits for *in situ* approaches is warranted as long as the risk is determined to be *de minimis*.

3. *Temporary Containment Buildings*. Provisions regarding "Containment Buildings" were originally promulgated in the Debris Rule, 57 FR 37266, and are codified in the CFR at 40 CFR 264.1100-1103. The debris rule articulated the concept that containment buildings were to be significant structures (concrete floors and load bearing sidewalls). The use of less substantial, temporary structures to facilitate temporary hazardous waste remediation activities was not incorporated in the final rule. Yet such buildings were acknowledged in the preamble and favorable comments were received with regard to flexibility for temporary buildings erected for remedial action. Experience has shown that temporary containment buildings can ensure the necessary containment while controlling for such variables as moisture and temperature, thus increasing the performance and predictability of *ex situ* bioremediation. Thus, it is proposed that the applicable CFR regulation be altered to allow for temporary containment buildings to manage wastes associated with remedial actions such as bioremediation.

Superfund Risk Sharing for Innovative Technologies

EPA's Superfund program encourages the use of innovative technologies in Records of Decision (RODs) -- the legal documents that specify the remedy for a site. EPA has also introduced a new incentive to encourage Potentially Responsible Parties (PRPs) to develop improved methods for cleaning up Superfund sites by agreeing to share the risks of using innovative remediation technologies. For selected technologies, EPA will agree to reimburse PRPs for up to 50 percent of the cost of the innovative remedy, in the event that it fails and subsequent remedial action is required. EPA also encourages the sharing of technical information and requests specific documentation of the costs and performance of the innovative technology selected so as to establish a data base of applied technologies.

Innovative Technology in Waste Management Programs

The Office of Solid Waste and Emergency Response (OSWER) has issued a policy directive affirming EPA's commitment to technology innovation by providing additional flexibility to support the development, demonstration and application of treatment technologies, particularly those which address groundwater contamination and those which involve potential for significant cost savings by treating wastes *in situ*. Additionally, there is the potential for significant payoff in productivity and cost savings through increased use of field measurement and monitoring methods. Innovative technology development and demonstration will be enhanced by bringing together increased regulatory flexibility with the desirable attributes of federal facilities. EPA understands that public-private partnerships are needed to bring about breakthrough

technologies and is willing to support such partnerships by sharing the risk of failure of promising innovative approaches.

ReFIT

Under the Environmental Technology Initiative, EPA has established the Reinvention For Innovative Technologies (ReFIT) program to strengthen incentives for the development and use of promising new technologies. ReFIT is a "change agent" working to improve the environmental policy framework by supporting more than 40 action-oriented projects, demonstration programs, and policy initiatives throughout the United States. These projects are helping federal, state and local efforts to reinvent environmental management by injecting more flexibility into government policies, programs, and procedures, while ensuring improved environmental results. ReFIT is also an "information broker," working to provide information on current reinvention efforts to regulators, permit writers, technology developers, financiers, consulting engineers, the regulated community and the public. ReFIT is improving the existing regulatory system by moving from "command-and-control" approaches to performance-based systems that reward innovation. Examples of ReFIT's diverse portfolio of programs include:

- Innovative Technology and Pollution Prevention in Title V Permits Program (IT-P4). ReFIT is sponsoring a new federal/state/industry partnership to promote technology innovation and pollution prevention by developing innovative, performance-based operating permits under Title V of the Clean Air Act. This partnership builds upon the successful joint effort by Intel Corporation, Oregon's Department of Environmental Quality, and the EPA which resulted in the first flexible Title V permit in the nation for Intel's Aloha facility in Oregon. The Intel permit provides an important model of environmentally protective permit flexibility within Title V. However, different facilities possess different characteristics and each state's regulatory framework is somewhat unique. Therefore, the IT-P4 program is developing partnerships involving 5 different facilities in 5 states with the long-term goal of making permit flexibility, technology innovation and pollution prevention a routine way of doing business for all facilities. These new models of permit flexibility will be integrated into the Title V regulations and operating guidance, thereby improving Title V implementation nationwide. Over the next few years, tens of thousands of facilities throughout the country will be required to obtain Title V permits. Many could benefit from the new models of flexibility that will be developed by this program.
- Inter-State Cooperation in Permitting: Under the ReFIT program, EPA is supporting the National Governors Association and six major states in an effort to overcome interstate barriers to technology innovation. California, Illinois, New Jersey, Massachusetts, Pennsylvania and New York signed a Memorandum of

Understanding on June 4, 1996 committing to conduct a pilot program to evaluate 12 technologies, to develop a standard format for information exchange, and to establish a coordinated, streamlined procedure for reciprocal permitting of innovative technologies. NGA will analyze the results of the 6-state process, sponsor a workshop to obtain broad stakeholder input, and then write a report on how this type of process could be implemented at the national level. The report will be distributed nationally by NGA and EPA. The ultimate goal of this partnership is to enable innovative technology developers who have gone through the time and effort of getting a technology approved for use in one state, to later get the same technology readily accepted in another.

- Multi-Media Regulatory Approach for the Pulp and Paper Industry. ReFIT is working with the Wisconsin Department of Natural Resources (DNR) to create a multi-media regulatory structure to remove barriers to innovative technology and pollution prevention in the pulp and paper industry. The current single-media environmental regulatory structure has, at times, resulted in undesirable cross-media transfer of contaminants, or increased volumes of pollution. A multi-media approach to regulating this industrial sector will provide Wisconsin DNR with the capability to evaluate the environmental impacts of a facility as a whole, rather than as a series of fragmented parts. 38 pulp and paper facilities operate in Wisconsin; they have produced 4.7 million tons of paper annually over the past 40 years. Wisconsin DNR and 28 members of the Wisconsin Paper Council have entered into an innovative joint partnership to establish pollution prevention priorities in the pulp and paper industry.
- Overcoming Barriers to Constructed Wetlands: Tres Rios Project in Phoenix: ReFIT is helping the Bureau of Reclamation, the Arizona Department of Water Quality and the City of Phoenix overcome federal and state regulatory barriers to the use of constructed wetlands as an alternative to traditional wastewater treatment and water reuse technology. This collaborative effort is helping to address NPDES issues, endangered species issues and other permitting and regulatory requirements confronting the Tres Rios project, as it is scaled up to full operation. The City of Phoenix claims this project has the potential to eventually save city ratepayers \$300-500 million, improve water quality and enhance wildlife habitat in the Salt River watershed. The Tres Rios pilot permit will serve as a model for more than 20 other communities around the country which are also interested in using constructed wetlands solve their water quality problems.
- CBOT Recycling Partnership to Trade Recyclable Commodities. ReFIT is sponsoring the Chicago Board of Trade (CBOT) Recycling Partnership (a public/private consortium) in instituting an electronic commodities exchange for buying and selling recovered materials. In a unique collaboration, the states of New York and Washington, the National Recycling Coalition's Recycling Advisory Council, the EPA's Office of Solid Waste and the CBOT are working to

launch trading initially for three materials (glass, PET and HDPE plastic), and then add new materials and additional services continually to make the system more attractive to potential users. By improving the recycling marketplace, this project will assist the nation in achieving its recycling goals and contribute to a more sustainable, resource efficient economy. This historic initiative represents the **ultimate** in regulatory reinvention -- it increases the efficiency of the existing market for recyclables, instead of resorting to traditional regulation.

Project XL

Project XL (Excellence and Leadership) is a program through which the federal government is cooperating with the states and selected firms to test on a pilot basis a new regulatory approach that provides incentives for industry to find innovative ways to achieve environmental goals. The program's purpose is to improve the environmental performance of U.S. industries by providing the option of following an alternative path to existing regulatory-driven compliance. The pilot program requires reductions in discharges below current regulatory standards in exchange for greater flexibility in achieving environmental objectives. The key elements of Project XL are performance, flexibility, accountability, and partnerships. It also requires long-term goal setting and regular reporting of results. This more flexible approach offers a win-win opportunity for industry, federal and state regulatory agencies, and society as a whole. The result will be a cleaner environment through a more efficient, less-costly regulatory system.

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Qs and As

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Questions and Answers for June 20 Hearing

As you know, Congress reduced the FY96 funding for the Environmental Technology Initiative to \$10 million. How has this effected EPA's ability to overcome regulatory barriers to innovative technology?

The budget for ETI, which was \$68 million in FY95, was cut in the FY96 Omnibus Appropriations Bill to \$10 million, this funding was tied directly to technology verification. This 85 percent cut is having a devastating effect on federal, state and local ability to expand existing efforts, and begin new efforts, to improve the environmental policy framework. While some policy reforms, such as writing regulations that facilitate the testing and permitting of new technologies, can be achieved for little or no additional investment of resources, many of the regulatory and policy barriers that need to be eliminated are not under EPA's control--they are administered principally by states.

States have experienced significant budget cuts in recent years. They require federal resources and support to implement needed ETI policy reforms--getting innovative technologies adopted in state air and water permits, writing regulations that reward the introduction of newer, lower-cost, cleaner technologies, carrying out our enforcement and technical assistance program that promotes technology innovation. These policy reforms cannot be accomplished with existing levels of resources -states do not want another unfunded mandate to make their programs more technology friendly.

Can you tell us what the effect of moving toward performance based measurement system will be on small businesses?

It will be a positive effect in several ways. Small businesses will be able to count on the flexibility they deserve. They will directly benefit from the experience of larger companies. Companies can profit by using methods that have already been developed and tested. They may have to receive further training in order to utilize state-of-the-art monitoring technology, but EPA and other parts of the federal government already have programs in place to facilitate these types of learning activities. In essence, small businesses will have more options at a lower cost.

Developers say that EPA's laws and regulations discourage the use of innovative monitoring technologies. How are you addressing this problem?

EPA's policies can inhibit the development and use of innovative monitoring technologies. For this reason, the Agency is putting special emphasis on monitoring projects that address policy-framework issues. The policy framework area addresses barriers to innovation erected by our own policies, method approval practices, and institutional culture. **Under the Environmental Technology Initiative, we are carefully looking at our fundamental statutes, at the rules we write, the monitoring method approval processes, our current system backlogs, and even at our enforcement programs to find ways that will streamline and facilitate the innovation process.** For example, the Water Office is already developing a system that will cut in half the time it takes to approve a method. Under the Clean Air Act, there already exists a mechanism that allow for flexibility and reduction of bureaucracy for approval of new monitoring technologies.

What would you say is the single biggest barrier to innovation in monitoring technology?

Each developer may face a different kind of barrier. But the major obstacle is the conservative nature of the monitoring technology arena. Companies, as well as regulators, are risk-averse. Companies are not interested in taking risks, because a lawsuit or an enforcement action might be initiated if they fail. **For the developers of these technologies, the most difficult challenge is to establish credibility for their technology in the marketplace. They look to EPA to establish this credibility for them, to say their technology meets EPA standards and will perform to those standards.**

What has your agency done to prevent another outbreak of cryptosporidium like the one that occurred in Milwaukee in 1988 where 400,000 people became sick and around 100 people died?

As part of a regulatory negotiation process, EPA proposed the Enhanced Surface Water Treatment Rule (ESWTR) in June 1994. This rule contains various regulatory options. As a preliminary step the Agency has proposed the Immunofluorescent Assay method to support and contribute to a national regulatory analysis for establishing various ESWTR options. However, we also recognized the need to develop a method that would provide more accuracy than the Immunofluorescent Assay method for measuring cryptosporidium in source waters and a better understanding of how various treatment processes remove or inactivate this protozoa. Therefore, we are now evaluating several research proposals that will substantially contribute to this effort. The information developed could be used to reduce waterborne disease internationally, and also as a mechanism to develop "black box technologies" to optimize control of waterborne pathogens.

Is resolving the issue of cryptosporidium a priority to your Agency?

One of EPA's priorities is to develop drinking water standards which protect human health against risks from exposure to cryptosporidium and other waterborne pathogens. **The Agency knows that an effective regulation could prevent nationally between 100,000 and 1 million illnesses per year.** Furthermore, while CRYPTOSPORIDIUM in drinking water may pose a significant public health risk, the major public health benefit in controlling this organism would probably be greater cumulative reduction in illnesses and deaths achieved from the control of other pathogens.

According to agency documents, ETI's mission includes facilitating the development of better environmental solutions by modifying regulations, permitting programs and enforcement procedures to eliminate barriers and provide incentives for innovation. This sounds like the stated purpose of project XL. Why are both programs needed?

ETI and Project XL are **separate** but **complementary** pieces of EPA's overall strategy to promote cleaner, cheaper and smarter ways of protecting the environment. Under the leadership of President Clinton, Vice President Gore, and Administrator Browner, EPA is drawing on the lessons of the past 25 years to "reinvent" the way we do business. Our reinvention program is proceeding on two tracks. The **first** track is designed to fix problems within the **existing** regulatory system. The **second** track is designed to develop innovative **alternatives** to the existing regulatory system. Under the first track, we are making a host of changes to individual regulatory programs. Under the second track, we are testing alternative management strategies for individual facilities, industrial sectors, and communities. The knowledge we gain from the bold experiments carried out under the second track will lay the groundwork for a new environmental management system for the 21st century.

ETI serves as a critical component of the first track of EPA's reinvention strategy by eliminating barriers and strengthening incentives for innovation within **existing** environmental programs. ETI's Reinvention for Innovative Technologies (ReFIT) Program is supporting over 40 action-oriented projects, pilot programs and regulatory initiatives at the federal, state and local level. These range from broad-based reforms that will provide thousands of businesses, communities and other regulated entities with flexible, performance-based compliance options, to more targeted reforms that will overcome discrete problems faced by specific industries, types of technology or geographic areas.

Project XL is the cornerstone of the second track of EPA's reinvention strategy. It provides an unprecedented opportunity for selected facilities, industrial sectors, communities, and federal agencies, to pilot alternative management systems that are less constrained by the detailed prescriptions of existing regulations and more effective in achieving better environmental results. Project XL allows its participants (along with local stakeholders) to design their own environmental management strategies in return for a commitment on their part to exceed traditional environmental standards. Many XL strategies are likely to produce new and improved environmental technologies by providing incentives for innovation and more latitude in developing compliance plans. Project XL has drawn wide praise even in its early stages because it offers both the **flexibility** that businesses and other regulated entities seek, as well as the bold environmental protection **results** that the American public expects.

EPA's **dual track** reinvention strategy is a comprehensive approach to continually improving our environmental management system. As we streamline and improve the workings of the current system, we are also testing new tools that could provide

even greater flexibility to the regulated community. Together, these two tracks, including ETI's ReFIT Program and Project XL, will achieve the Administration's twin goals of enhanced environmental protection and economic growth.

even greater flexibility to the regulated community. Together, these two tracks, including ETI's ReFIT Program and Project XL, will achieve the Administration's twin goals of enhanced environmental protection and economic growth.

What is ETI doing to eliminate barriers and strengthen incentives for innovation in environmental policies and regulations?

EPA is committed to improving the environmental policy framework it administers. One of ETI's major goals is to support the reinvention of regulatory, permitting and compliance strategies to foster innovative technology. Innovative technologies can save money for industries, municipalities, and states while protecting the environment; they can allow us to clean-up our environment cleaner, cheaper and faster.

ETI's policy Reinvention for Innovative Technologies (ReFIT) program was designed to strengthen incentives for the development and use of promising new technologies. ReFIT is a change agent and information broker. It is working to improve the environmental policy framework by supporting more than 40 action-oriented projects, demonstration programs, and policy initiatives throughout the United States. These projects are helping federal, state, and local efforts to "reinvent" environmental management by injecting more flexibility into government policy, programs, and procedures while removing barriers to innovation and ensuring improved environmental results. Project examples include:

AIR: **WA: IT-P4 Project:** This project builds on a successful joint effort by Intel Corporation, Oregon's Department of Environmental Quality (under Fred Hansen's leadership), and EPA, which resulted in the first flexible Title V permit in the nation for Intel's Aloha facility. It is launching a new partnership involving 5 different facilities in 5 separate states, to develop flexible Title V permits, namely Cytex Industries in Connecticut (w/ Region 1), G.D. Searle in Georgia (w/ Region 4), Lasco Bathware in Washington State (w/ Region 10), Rio Grande Portland Cement in New Mexico (w/ Region 6) and Facility TBD in California (w/ Region 9). Flexible, **performance-based** operating permits are crucial for pollution prevention and other innovative control techniques and for maintaining the competitiveness of industries that are continuously re-engineering their product lines. EPA intends to issue draft permits for all 5 facilities within 6 months.

WASTE: **IL: Chicago Board of Trade (CBOT).** This project is instituting an electronic commodities exchange for buying and selling recovered materials. New York State, the State of Washington, the National Recycling Coalition's Recycling Advisory Council, EPA's Office of Solid Waste and the CBOT are working to launch trading initially for glass and PET and HDPE plastic. New materials and services will be added over time.

WATER: **AZ: Tres Rios Constructed Wetland Project.** This project is overcoming federal and state regulatory barriers to the use of constructed wetlands as an alternative to traditional wastewater treatment and water reuse technology. It promises to enhance wildlife habitat in the Salt River ecosystem and provide significant recreational and educational benefits while potentially saving city ratepayers \$300-500 million dollars.

Doesn't the Environmental Technology Initiative Put EPA in the Position of Picking Winners and Losers?

Over the past 25 years the actions of the EPA and some states have had the effect of picking winners and losers by writing regulations that effectively narrowed market demand to a few conventional, inefficient, and often very expensive technologies. As a result, we have effectively discouraged the use of new innovative technologies by favoring these "tried-and-true" solutions to health and environmental problems. Today, we need new technologies that work better and cost less.

The *Environmental Technology Initiative* (ETI) is a cornerstone of EPA's new generation of environmental protection measures. It is designed to foster a friendlier marketplace in which the private sector can maintain its status as a world leader in developing and using environmental protection technologies. By eliminating policy and regulatory barriers that inhibit commercialization of new technologies, the ETI gives the private sector incentives to invest in the technologies that they determine are winners.

Isn't EPA's Environmental Technology Initiative an "industrial policy" or "corporate welfare" in disguise?

The ETI is not an "industrial policy" that funds only direct technology development. Less than 7% of the requested ETI budget in FY1996 will be invested in direct technology development -in areas such as EPA's Small Business Innovative Research Program. The remaining 93% of requested FY1996 funding will be invested in eliminating policy and regulatory barriers, building state and local capacity to adopt these policy reforms, piloting the verification of "ready-to-market" technologies, "getting the word out" about the availability of cleaner, safer, cost cutting technologies and offering incentives, such as regulatory flexibility, that will foster a market-place for the billions of public and private dollars being invested in better solutions to today's environmental problems.

EPA's *Environmental Technology Initiative* is one of several key elements of the Agency's common sense approach to managing environmental quality. EPA's Project XL will offer companies and communities incentives to move "beyond compliance" -and drive the demand for better technologies. EPA's regulatory reinvention projects to enhance air and water quality "trading" will also drive the demand for new technologies by giving companies and communities an incentive to use the most cost-effective technologies available.

ETI funded public-private partnerships are helping to correct market signals so that Federal funds stimulate private sector investment in innovative technologies and processes. EPA and states are taking a hard look at statutes, regulations, policies, and processes to find ways to restructure this framework so it rewards, rather than penalizes, technology developers' efforts to provide better, cleaner, safer, lower cost technologies and solutions to the nation's environmental problems.

Why do EPA's Regulations "Kill" Jobs, instead of creating Them?

Clearly EPA creates and shapes the environmental technology market through its policies, procedures, and regulations. Today, the domestic pollution control industry is actually a "big" business: more than 1,000 people have environmental jobs; and the domestic environmental technology market now exceeds \$150 billion per year (the worldwide market is approximately \$30 billion per year).

As we move away from reliance on current EPA and state regulatory frameworks and towards efforts that support pollution prevention and reward technology innovation, more jobs will be created. For example, by cutting the time that it takes to get a new waste detection monitor approved, several small businesses have been able to introduce their technologies sooner and in turn, hire new employees.

As EPA introduces greater flexibility and other reforms into its policy framework, the cost of complying with our environmental regulations will fall and thereby making firms more competitive. These actions will in turn, create more private sector job opportunities here in the US, and will enhance the nation's ability to compete in the growing international market where each \$1 billion in export sales creates 17,000 jobs here at home.

Why should changing federal and state policies and regulations require funding--Shouldn't Agencies just do this?

While some policy reforms, such as writing regulations that facilitate the testing and permitting of new technologies, can be achieved for little or no additional investment of resources, many of the regulatory and policy barriers that need to be eliminated are not under EPA's control--they are administered principally by states.

States have experienced significant budget cuts in recent years. They require federal resources and support to implement needed ETI policy reforms--getting innovative technologies adopted in state air and water permits, writing regulations that reward the introduction of newer, lower-cost, cleaner technologies, carrying our enforcement and technical assistance program that promote technology innovation. These policy reforms cannot be accomplished with existing levels of resources -states do not want another unfunded mandate to make their programs more technology friendly.

In FY1994 and FY1995, EPA is providing funding to states such as New Hampshire, Massachusetts and California who are leading the country in adopting important policy reforms. According to Trudy Coxe, Massachusetts Secretary of Environmental Affairs, "Governor Weld and I have acknowledged the key role that innovative environmental technologies play in our economic and environmental future through the development of the Massachusetts Strategic Envirotechnology Partnership (STEP)... funding through the Environmental Technology Initiative is crucial to our success."

Permit streamlining is another example of the fundamental changes that are needed to create a climate where innovative technologies can freely compete in the marketplace. EPA and the States are responsible for processing more than 1,000,000 air, water and waste permits. Regulations need to be rewritten, policies and approval procedures must be retooled to ensure that they do not lock in "tried and true" technologies. Many stakeholders are seeking government-sponsored technology verification programs, so that users and regulators will have more confidence in how well a new technology will perform and cut costs. Training staff to understand how the government inhibits technology development and providing technical assistance requires funding that is not currently available at the state level.

Isn't Promoting Innovative Technology that Protects Health and the Environment is the Private Sector's Job--Not the Government's Job?

It is the private sector's job to promote innovation. It is the government's job to create a climate where technology innovation is rewarded, not penalized, so that the private sector can function free of government interference. However, there are many barriers--both internal and external to the Environmental Protection Agency--that limit private sector investment in innovative environmental technologies. These barriers include:

- Statutes, regulations, policies, and procedures like permitting and enforcement that favor the use of conventional technologies and then essentially "lock" these technologies into place. In this situation better, more cost-effective technologies cannot compete;
- Reluctance to finance the development of new technologies/processes because of changes in the tax code and uncertainties as to which innovations will be approved by regulatory agencies;
- Insufficient resources at the state and local level to provide credibility to vendors by verifying the performance and cost of promising new technologies;
- Lack of established networks and sources of information that provide users access to better, cleaner, safer, lower cost technologies.

EPA is streamlining its framework to develop policies, standards and guidelines that will reward, not inhibit, market development of innovative technologies. It is also helping states to build the capacity to do the same. In addition, EPA's *Environmental Technology Initiative* (ETI) is aimed at helping overcome other market barriers so that the private sector can develop, market, and export innovative technologies on a level playing field.

Why are EPA's Regulations so Rigid? Don't Enforcement Deadlines Discourage New Technology?

EPA agrees that federal and state regulations are sometimes overly prescriptive, and that enforcement deadlines actively discourage the regulated community from investing in and using new technology. EPA is working diligently with our state partners to reform federal and state policies and regulations in order to provide more flexibility and to create incentives that encourage private market investment in new technology.

For example, the air program has agreed to extend compliance deadlines for sources of nitrogen oxide *if* sources are willing to install new technology that will achieve superior results. Sources of nitrogen oxides pose serious risks to both human health and the nation's terrestrial and aquatic ecosystems. Atmospheric deposition of nitrogen oxides (NOx) is still one of the most intransigent air pollution problems facing the nation. Conventional control technologies are complex, costly and not as efficient as they could be to control this air pollution problem. Finding cheaper, more efficient alternatives to prevent or mitigate NOx emissions from over 54,000 industrial, commercial and institutional operations is essential in order to meet several of the nation's environmental goals, such as: attainment of Clean Air ozone standards; reductions in greenhouse gas emissions; habitat protection in coastal and estuarine waters, and long-range transport of NOx emissions. ETI is supporting work that may help facilities come into compliance with NOx requirements by working closely with sources and state agencies in California, the midwest, and northeastern U.S.

Why is EPA in the business of promoting new technologies and how is this part of your mission?

EPA is not in the business of funding specific technologies; in FY1996, less than 7% of planned spending will directly fund the development of specific technologies--and even then, these are in areas that meet small business and local government need (such as unfunded mandates). EPA is in the business of promoting "better, cleaner, cheaper" technological solutions to public health and environmental problems.

The past 25 years of development of federal, state and local regulations and policies have undoubtedly fostered a growing demand for technologies. Unfortunately, these same regulations and policies have the effect of picking technology winners and losers. They discourage the use of new innovative technologies with "unfriendly" permitting processes, enforcement policies that penalize those who try new solutions, and regulations designed around the "tried-and-true", (and often very expensive) technologies deployed years ago.

As the domestic market for environmental technologies has grown 5-10% annually over the past quarter century, expensive, inaccessible technologies have also been "locked" into air and water permits, compliance activities and manufacturing processes. Federal and state regulators and technology users have developed a bias toward relying on the "tried-and-true." For example, the 1986 Safe Drinking Water Act requires granulated activated carbon filtration to remove synthetic organics from our drinking water, while other new technologies are more effective and cheaper to use. Our existing regulation and procedures for issuing air permits, water permits and managing wastes inhibit rather than support the introduction and rapid adoption of cost cutting, more reliable, technologies that can often move a source "beyond compliance."

If EPA is to succeed in its mission to protect public health and the environment, we must address the policy and regulatory barriers to technology innovation that are under the Agency's and state's jurisdiction, as we move toward providing more regulatory flexibility, aligning spending with health and environmental risks, and putting permit writers to work on a wide range of technologies, as we re-invent our regulations and policy framework at the federal and state level. It makes sense to assist ETI stakeholders build the capacity they need to make the transition from the old policy framework to the new policy framework. It makes sense to invest strategically in technology diffusion--especially in those areas that give communities access to technologies that lower their costs to maintain and improve, not rollback, levels of environmental protection and services and in those areas that make U.S. environmental technology companies succeed in today's export markets.

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SPECIFIC EXAMPLES

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Specific Technology Examples

Massachusetts Innovative Technology Coordinator

- ReFIT is working to address intra-state barriers to permitting, regulatory policy, and information dissemination. Under an ETI grant, the Massachusetts Department of Environmental Protection (MADEP) has established an innovative technology coordinator (ITC) to act as a liaison between technology developers and regulators and to facilitate the development and commercialization of innovative technologies in Massachusetts.
- Media programs are by and large delegated to States for implementation. Any regulatory or policy barriers at the federal level evolve to myriad permutations at the state level. Those who are seeking to commercialize their technologies within a state can face a staggering array of regulations and policies which were designed for existing technologies.
- One of the most notable accomplishments of the Massachusetts ITC is the elimination of duplicative testing requirements that benefits Puritan Water Corporation in Plymouth, MA:
 - Puritan sells water dispensing systems for drinking water-- retail vending machines for water -- intended as a competitive low cost alternative to "designer" bottled water. The machines are smaller than a typical soda machine, and are usually located in grocery stores. The customer fills up a container at the machine, and pays for it at the register. The source of the water is the municipal water system.
 - Puritan faced additional and duplicative testing requirements for each unit they wished to sell- potentially costing the company as much as \$1000 per unit in start up costs. The water first had to pass all of the municipal requirements, and then pass a complete new set of tests for the machine to be permitted for public use. The Massachusetts technology coordinator worked within her state to alleviate this additional duplicative requirement, and Puritan is scheduled to install the next machine in early fall under the revised regulatory policy.
 - Through the regulatory change in MA, Puritan now should expect start up costs of about \$100 per unit, with no unnecessary duplicative testing, and no loss of protection for human health and the environment.
 - The machines filter for cryptosporidium with a 99.9% efficiency rate.

Green lights program

The Environmental Protection Agency's Green Lights program is an innovative, voluntary pollution prevention program. Green Lights offers technical assistance and recognition for producing and applying energy reduction measures in buildings, computers, and lighting. By encouraging the widespread use of energy-efficient lighting, Green Lights is proving that profitability and environmental protection can go hand in hand. By joining the program, partners agree to install energy efficient lighting where profitable as long as lighting quality is maintained or improved. Federal partners have until 2005 to complete upgrades. The primary purpose of the Green Lights program is to encourage U.S. organizations to install energy-efficient lighting in order to prevent the creation of air pollution, solid waste, and other environmental impacts of electricity generation.

By joining Green Lights, participants realize average rates of return on their initial investment of 30 percent or more. They reduce their lighting electricity bill by more than half while maintaining and often improving lighting quality. If Green Lights were fully implemented in all facility space in the United States, it would save over 150 billion kilowatt hours of electricity annually, reducing the national electric bill by \$12 billion per year.

As of this month, there are over 2,100 members with 1,300 partners in the program. The partners include corporations of all sizes, nonprofit organizations, and federal, state, and local government agencies. Health care facilities, universities and colleges, and restaurant and hotel chains are just a few examples of the organizations that have teamed up with EPA to upgrade their lighting systems. Participants agree to survey 100 percent of their facilities and, within 5 years, to upgrade 90 percent of the square footage that can be upgraded profitably without compromising lighting quality. EPA, in return, provides support programs to help Green Lights members obtain information on energy-efficient lighting technology, financing options, and public recognition opportunities.

A sample of the partners includes:

3M

California State Automobile Association

Citicorp/Citibank

Eli Lilly & Company

The George Washington University

Lockheed Martin Corporation

Marriott Corporation

Rockwell International Corporation

SALLIE MAE

XEROX Corporation

20 States including California, Florida, Maryland, Michigan, Ohio, Pennsylvania, and Virginia

Environmental Leadership Program

Through its Office of Enforcement and Compliance Assurance, the Environmental Protection Agency in 1994 began a new initiative, the Environmental Leadership Program (ELP), to encourage innovative compliance activities by companies. ELP is designed to recognize and provide incentives to facilities willing to develop and demonstrate innovative approaches to establishing accountability for compliance with existing laws. The program's goals are to define the characteristics of an "Environmental Leader"; recognize and reward those facilities that achieve the high standards being established for environmental leadership; identify and promote outstanding environmental and compliance management systems; and demonstrate effective partnerships with the States and Industry.

Starting in 1997, ELP will provide reduced inspection and enforcement oversight at participating facilities thereby allowing EPA to redirect its enforcement resources towards companies that present a greater environmental risk. Facilities will be expected to implement state-of-the-art environmental management systems, conduct routine audits through independent third-party verification or self-certification to verify compliance, involve employees, and share environmental performance information with the general public.

ELP's pilot phase will be completed by September, 1996. There are ten private companies and public utilities, and two federal facilities testing the design of specific elements of the program during this phase. The participants, which cover such industries as manufacturing, chemical, printing, pulp and paper, and solid/hazardous waste disposal are:

Arizona Public Service, Deer Valley Facility
Ciba-Geigy
Duke Power Company, Riverbend Steam Station
The Gillette Company
The John Roberts Company
McClellan AirForce Base
Motorola, Oak Hill Facility
Ocean State Power
Puget Sound Naval Shipyard
Salt River Project
Simpson Tacoma Kraft Company
WMX Technologies, Columbia Ridge Landfill & Chemical Waste Management of the Northwest

*Overcoming regulatory barriers to constructed wetlands:
Tres Rios project in Phoenix*

- ReFIT is helping the Bureau of Reclamation, the Arizona Department of Water Quality and the City of Phoenix overcome federal and state regulatory barriers to the use of constructed wetlands as an alternative to traditional wastewater treatment and water reuse technology.
- This effort is helping to address NPDES issues, endangered species issues and other permitting and regulatory requirements confronting the Tres Rios project, as it is scaled up to full operation.
- The project promises to enhance wildlife habitat in the Salt River ecosystem, and to provide significant recreational and educational benefits, while meeting advanced effluent discharge and water quality requirements.
- Phoenix Deputy City Manager George Britton claims this project has the potential to eventually save city ratepayers \$300-500 million, improve water quality and enhance wildlife habitat in the Salt River watershed.

The Tres Rios pilot permit will serve as a model for more than 20 other communities around the country which are also interested in using constructed wetlands to solve their water quality problems.

CBOT recycling partnership to trade recyclable commodities

- ReFIT is sponsoring the Chicago Board of Trade Recycling Partnership, a public/private consortium, in instituting an electronic commodities exchange for buying and selling recovered materials. In a **unique collaboration**, the states of New York and Washington, the National Recycling Coalition's Recycling Advisory Council, the EPA's Office of Solid Waste and the CBOT are working to:
 - Develop standardized industrial grades for selected recovered materials;
 - Identify and field test methods for verifying agreed upon standards;
 - Recruit 100 buyers and sellers to participate in the trading system;
 - Launch trading initially for three materials: glass, PET and HDPE plastic;
 - Add new materials to be traded and additional services continually to make the system more attractive to potential users.
- By improving the recycling marketplace, this project will assist the nation in achieving its recycling goals and contribute to a more sustainable, resource efficient economy.
- This historic initiative represents the **ultimate** in regulatory reinvention -- it increases market efficiency for recycling, instead of resorting to traditional regulation.

Flexible permitting to reduce compliance costs and spur competitiveness

EPA is helping states develop flexible Clean Air Act operating permits that can accommodate rapid changes in a company's manufacturing process without sacrificing air quality goals. For example, EPA is working with Connecticut to give CYTEC industries the ability to use innovative pollution prevention and control technologies at their specialty chemicals manufacturing facility in Wallingford, CT -- without the cost and delay of having to modify permits with each equipment or manufacturing process change, and while meeting air quality standards. CYTEC's Wallingford plant employs 600 people and is the Town's fourth largest employer, and second largest taxpayer. By participating in the project, CYTEC hopes to maximize the plant's operational flexibility and remain competitive. EPA is also working with G.D. Searle Pharmaceuticals in Atlanta, GA, Lasco Bathware in Washington State, and Rio Grande Portland Cement in New Mexico, to advance this approach in other industries. These pilot projects will further the Agency's ultimate goal of making flexible air pollution permits available nationwide. Such permit flexibility is crucial for maintaining competitiveness in U.S. industry, especially those which are continuously re-engineering their product lines. Over the next few years, tens of thousands of facilities throughout the country will be required to obtain CAA operating permits. Many of these facilities could benefit from the new models of permit flexibility developed by this program.

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MONITORING RESPONSES

Divider Title: _____

Monitoring Issues Responses from the PTID Monitoring Team

- a. **"the current system requires use of a specific EPA approved analytical method to perform the environmental measurement"**

The Performance Based Measurement System (PBMS), being developed by the Environmental Monitoring Management Council (EMMC), will create analytical methods which emphasize method performance rather than specific, prescribed procedures. Under PBMS, laboratories will be required to document the performance of whatever method they choose to use and to certify the appropriate use of quality assurance and quality control procedures.

- b. **slow approval may become even more of a problem as technology innovation moves forward and "as EPA's methods approval resources are reduced or directed to other priorities"**

This is a valid point and in terms of EPA's budget, shows EPA's need for resources. The Office of Air and Radiation has been successful in limiting the time it takes for monitoring method approval to about 6 months. Among the reasons for its success is the fact that there is not a formal Notice and Comment period, and the AA has delegated authority to make an approval down to the Division Director level (i.e., a decision memo from the Division Director is all that is needed for approval).

- c. **"no uniformity in the process for producing a data package for the same method in the different programs"**

This is an issue that EMMC is aware of and it plans a future effort to develop an alternative method approval process. This alternative process will have a central entry point -- methods will go through one process to gain approval for more than one applicable program.

- d. **"there is not clear timetable or priority system for handling methods approval requests"**

We do not know how EMMC would respond to this, and we do not know of any efforts to address it.

- e. **"there appears to be no uniformity of the analytical methods for accomplishing the same goal"**

There are two EMMC efforts underway addressing this issue. The first is the EMMC method integration effort in which EPA has developed a few (4?) integrated methods. An integrated method is one which is applicable to more than one program. EMMC is using these integrated methods to demonstrate to the Agency that the idea is feasible. The second EMMC effort is a methods framework. The methods framework is an effort to get Agency-wide review of new monitoring method development efforts in order to prevent duplication of efforts and to facilitate multi-program methods.

- f. **Even though EPA is considering moving to a PBMS approach, there is no deadline for the review, development or implementation of the approach. AIA favors "a coordinated and concerted effort that would apply to all environmental programs where analytical methods are used."**

The "no deadlines issue" is a valid one. If it is not mandated from above, the EMMC may spend a very long time just trying to iron out a definition of PBMS that all the programs can agree on, and even longer to figure out a plan to implement such a system.

As you have seen at the EMMC Policy Council meeting, some program offices do not want a centralized effort to implement PBMS, while other programs and especially ORD are pushing for exactly what AIA favors.

See AIA's draft legislation for more specifics on what they want to do. In a nutshell, they want to establish an advisory committee to give recommendations to the Administrator on how to develop the PBMS, then put deadlines on when the Agency will implement the approach (one year to develop a plan and one more year after that to implement the plan).

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**Written Statement of John Urh
of CETAC Technologies, Inc. on behalf of
the Analytical Instrument Association**

**Presented to the Joint Hearing of the
Subcommittee on Energy and Environment
and the Subcommittee on Technology
of the House Science Committee**

June 20, 1996

Mr. Chairmen and Members of the Subcommittees, the Analytical Instrument Association ("AIA") welcomes the opportunity to appear before you today on the subject of the Federal Government's role in facilitating the use of new technology to improve the environment.

1. The Analytical Instrument Association

AIA is the leading trade association for producers of high technology analytical instruments and related products used generally in laboratories for chemical and biomolecular analysis. Our industry's products separate chemical compounds into their chemical components and then analyze and measure those components often in quantities as small as parts per billion and parts per trillion. Together our members and their overseas subsidiaries, parents and affiliated organizations account for more than 85 percent of the estimated \$10 billion world market for analytical products. Our industry is a global one and many of our US based members derive more than 50 percent of their revenues from overseas sales.

A principal use of our products is in environmental measuring, monitoring and compliance activities by environmental testing laboratories, a wide variety of industrial facilities and public utilities, and by government laboratories. Many of our members develop new and alternative analytical methods which then are submitted for approval to the various US EPA program offices.

2. The Benefits of New Environmental Measuring and Monitoring Technology

The importance of stimulating the development and use of new environmental technology is most important in the area of environmental measuring and monitoring. Environmental monitoring ensures compliance with environmental laws. Without monitoring, it would be impossible to determine whether industry is meeting the effluent limits established by law and through the various permit processes. Environmental measuring and monitoring also is used to identify hazardous waste and to ensure that our drinking water is free of harmful amounts of contaminants. As we develop new technologies to further reduce emissions beyond current requirements, it is imperative that we have state-of-the-art environmental monitoring technology and methods that are capable of measuring those reduced levels of emissions.

In addition to allowing environmental emissions to be measured to a greater degree than previously possible, such new environmental monitoring technologies can offer improved methods that ensure greater accuracy and faster measurements - including a movement toward "real time" measurements.

As an example of our innovated industry, technology has been developed that can eliminate or reduce the amount of hazardous waste that itself is generated by one of the currently prescribed EPA analytical methods. It may come as a surprise to some that in testing to determine whether a particular waste sample is hazardous, many of the current analytical methods create a significant amount of hazardous waste.

Yet another benefit is lower cost. According to our environmental contract lab customers, the cost of performing an EPA prescribed analytical method is significantly higher than performing a clinical test. The use of new technology may lower the cost of environmental measurements, thereby reducing the costs of environmental compliance for both industries and municipalities. Lower per test costs also would allow more frequent monitoring for more pollutants.

3. The Current Approval System Inhibits and Delays Use of New Monitoring Technologies

While environmental monitoring is critical to ensure compliance with emissions and effluent standards, characterize hazardous waste and safeguard our drinking water, the current system which requires use of a specific EPA approved analytical method to perform the environmental measurement inhibits and delays for years in some cases the use of new environmental measuring and monitoring methods. These EPA methods are highly detailed and often specify the use of specific procedures and analytical instrumentation to prepare the sample and to perform the analysis. They must be precisely followed or the results will be deemed unacceptable to the company or municipality which has contracted for the test, as well as to the state environmental agency and to the US EPA regional and national offices.

While analytical monitoring methods continue to improve, the current EPA process for approving the use of new monitoring methods keeps getting slower and more bogged down. EPA is well aware of this problem and is working with interested parties to develop improved mechanisms for streamlining and expediting the process.

Our industry, which relies on the approval of new and modified methods allowing the use of our latest instrumentation, is greatly concerned that despite these efforts, the problem will become exacerbated as technology moves forward at a faster pace, as more methods are proposed for field applications and as EPA's methods-approval resources are reduced or directed to other priorities.

We would like to offer some examples of the kinds of delays that members of AIA have encountered in recent years in obtaining EPA approval of analytical methods using new technology in the Water and RCRA offices. For example, it took one company over five years from the time of first appearance as a proposal to final adoption to obtain approval for the use of microwave technology in sample preparation. This company notes that there is no uniformity in the process for producing a data package for the same method in the different programs. Further,

there is no clear timetable or priority system for handling methods approval requests. The company also reports that there appears to be no uniformity of the analytical methods for accomplishing the same goal. The chemistry for sample preparations for the analysis of solid wastes for the determination of metals like copper and iron are different in each program.

Another member of AIA reports that it took two years to obtain EPA approval for a new method which simply automated an existing method. It took the same company five years to obtain approval under the RCRA program for a method using plasma emission spectroscopy. The method approved was not technically different than that proposed five years earlier.

Another member developed a new sample preparation method using headspace analysis. The approval process took three years by which time the new sample preparation technique was obsolete.

Further, instrument producers and testing laboratories have been stymied by unnecessarily long delays in gaining permission to make very minor changes in methods. As previously indicated, the methods must be precisely followed or the results will not be acceptable.

The primary cause for the long delay in obtaining approval of new analytical methods appears to be the inflexible and cookbook type detail of the existing methods. Any change, regardless of how minor it may be, must be submitted to and approved by the appropriate program office. Further, as indicated above, there is no timetable for action or structure for the methods approval process, and there is little uniformity for methods approval among the various programs.

The current EPA system is also stratified. The lack of multi-program methods and a multi-program methods approval process requires applicants to develop a separate and different application for each program and to negotiate approval separately with each program office. The current program-specific approach to methods approval also acts as a disincentive and often makes it difficult for testing laboratories to justify investments in new technology since labs need to have a sufficient number of tests to justify the acquisition of expensive new instrumentation. In fact, the rigid specification and inflexibility of the current system may force testing laboratories to use more expensive technology or more environmentally risky practices when a simpler, less costly and safer approach may be more suitable.

4. EPA is Evaluating Moving Toward Performance-Based Monitoring Methods

We are pleased that EPA recognizes the problem and has taken steps in recent months to approve methods faster. Further, in recent meetings the Office of Planning, Performance and Evaluation has expressed interest in further streamlining and expediting approval of environmental monitoring involving new technologies and a number of EPA offices are evaluating the use of performance-based monitoring methods in place of the current system. A roundtable on regulatory reform at the recent White House Conference on Environmental Technology included a recommendation in its report to the Vice President that EPA review its rules and internal procedures and revise those that may adversely impact the development and use of new environmental technologies. Monitoring was cited as an example of an area to be investigated.

However, while we enthusiastically support these actions and have pledged to work together with the appropriate offices of EPA on ways to expedite and streamline methods approval, AIA believes that fundamental changes must be made in the analytical methods approval system, especially if a goal is to stimulate the development and use of new environmental technologies and to promote uniformity among the various EPA program offices. Specifically, we support an acceleration of the movement to performance-based methods.

5. EPA Should Adopt a Performance-Based Methods System

It should be recognized that performance-based methods are not a new concept. In the past they have been embraced by FDA, OSHA, and other Federal and state regulatory authorities.

Performance-based environmental monitoring methods, in which the focus is on the scientific results of the analysis and compliance with data quality assurance criteria without prescribing the particular procedures, analytical techniques, or instrumentation to be used, offers the greatest promise of substantially reducing methods approval times and stimulating the development and early use of new environmental technologies.

As indicated above, several EPA offices are evaluating the movement to a performance-based methods system. However, there is inconsistency among the program offices and no deadline for completion of the review of the benefits of transitioning to a performance-based system or how the transition should be accomplished. Instead of attempting to develop and implement the move toward a performance-based methods system on a program-by-program basis, we favor a coordinated and concerted effort that would apply to all environmental programs where analytical methods are used.

A performance-based system would allow EPA personnel to focus on truly new technology and the scientific quality of data. It would minimize the regulatory workload associated with modifications to methods resulting from technological innovations and reduce paperwork. The end result will be methods covering more pollutants and better methods to meet EPA's mandates.

At the same time, our customers in the testing laboratory industry tell us, performance-based methods will increase laboratory productivity and improve the quality of their testing and data, speed decision making based on monitoring, and reduce overall environmental monitoring and compliance costs.

By allowing the use of new technology and technology improvements, performance-based methods also will increase the export market for environmental products and make US environmental laboratories more competitive in world markets. Many environmental technologies and instrumentation developed by US companies are currently used in other countries, however their use is prohibited here because they are not included in approved methods. The ability to use such technologies will position the US environmental laboratory industry to be more globally competitive.

6. What Needs to be Done to Implement a Performance-Based Methods System

AIA supports the acceleration of EPA's development of performance-based methods and a process for implementing performance-based methods within all Agency program and administrative offices to cover all media and multimedia. Critical to the success of its effort are measures to promote and encourage the participation and representation of all affected parties and the development of a comprehensive plan for guidance, implementation and acceptance by all EPA regions, program offices and states.

As the first step in the process, we favor the creation of an advisory committee which would advise the Administrator of EPA within a specified period of time on a number of issues including: EPA rules and policies that are barriers to the development and acceptance of new or innovative environmental monitoring methods, defining what should be contained in a performance-based method such as the data quality assurance criteria, defining what documentation needs to be maintained by the testing laboratory, defining instances in which methods and modifications to methods need to be approved by EPA, and providing guidance on how performance-based methods will be administered and enforced and how the new program will be communicated to the regions, states and regulated community.

Following receipt of the advisory committee's recommendations, the Administrator would develop and implement a plan for establishing a performance-based environmental monitoring system covering all media and programs as well as an educational and communications plan to facilitate implementation and acceptance of the new system by all EPA regions, program offices and states.

In conclusion, there is a need for a coordinated and concerted effort to improve the analytical method approval process. Congress can play a critical role in this regard. We appreciate the opportunity to present our views and welcome working with both the Committee and the EPA to examine and implement our recommendations.

DRAFT

Testimony Before the Science Committee
Subcommittee on Energy and Environment

and

Subcommittee on Technology

U.S. House of Representatives

By Ms. Jan Geiselman Power

President and Chief Executive Officer
Power Associates Corp.

June 20, 1996

INTRODUCTION

Good morning Madam Chairwoman, Mister Chairman, and distinguished members, I am Jan Geiselman Power, President and CEO of Power Associates Corp. I have over 21 years of experience in environmental protection as an EPA Division Director, a member of a Superfund settlement organization, as Regulatory Vice President of a hazardous waste remediation firm, and now as a consultant to the waste treatment, biotechnical, transportation and real estate industries.

I greatly appreciate the opportunity to testify and commend the Subcommittees interest in investigating and correcting existing impediments to innovation in environmental technologies. This innovation is vital to support our need to find more cost-effective ways to protect and enhance human health and the environment in the U.S.,

but also to maintain our international competitiveness. I fear that despite the best intentions, neither the present laws nor the current statutory and regulatory reforms relating to hazardous and toxic wastes which are currently pending will accomplish our overarching goal to facilitate the research, development and commercialization of innovative environmental technologies.

American scientists are world leaders in conceiving innovative environmental technologies, but in many instances these homegrown technologies are being lost to overseas ownership due to frustration in the domestic marketplace created by statutory/regulatory impediments. Your efforts here today are a critical step in assuring that environmental technologies do not become to the 1990's, what the electronics industry's loss overseas represented in the 1970's and 1980's.

NEED FOR STRONG NATIONAL STANDARDS

At the threshold of this problem is our national mood swing between environmental over-regulation and the inevitable instinct to it winnow back. This dynamic undercuts stability and the predictability of standards which are the *sine qua non* for innovative technology development.

At the present, no one can dispute that the current Superfund and RCRA programs have, in some instances, led to "treatment for treatment's" sake remedies which have squeezed out the use of innovative technologies as well as increasing cleanup cost by an order of magnitude, with no commensurate environmental benefits. It is also indisputable that there is no technology currently that in existence can, in a cost effective manner, remediate dense non-aqueous phase liquids (DNAPLs) which so threaten our precious groundwater supply. So, we find ourselves, under present law, at the extreme end of the spectrum.

Yet, current pending reform of both Superfund and RCRA on the statutory and regulatory level, may fling us to the opposite end of the spectrum by the revocation of strong national standards, removal of the preference for permanence and treatment, equating natural attenuation and containment with treatment, and establishing no treatment requirements for some compounds which are highly treatable at a reasonable cost...all these proposed changes undercut incentives for environmental innovation as surely as the present overly stringent rules do.

Let me hasten to add that I am in favor of enlarging the state role in hazardous waste cleanup, but doing so by eliminating national standards and relying instead on state discretion to set them will not foster innovation. To expect a system in which entrepreneurs potentially have to deal with 50 sets of state standards is totally inconsistent with a national policy which fosters innovative technologies. National standards also remove the temptation for some states to overly weaken standards to attract industry.

POSITIVE ASPECTS OF PENDING REFORMS

There are numerous positive reforms pending which will help the environment and encourage innovative technology:

- Elimination of RCRA technical and procedural standards for site remediation
 - elimination of virtually mandatory incineration requirements for organics will open the way for innovative technologies
 - elimination of RCRA permit requirements
- Opening of the Voluntary Cleanup Market - over 500,000 sites creating huge new market to attract innovation

- Enhanced lender liability will attract new capital into the market
- Remedy selection reforms based on reasonably anticipated risks and actual or planned land use, rather than relying on compounded worst-case risk assessment scenarios and hypothetical residential exposure

ON-SITE VS. OFF-SITE TREATMENT/CONTAINMENT

I also endorse recognizing cases where treatment is economically and technologically infeasible, and in those circumstances, acknowledging permanence and treatment preferences are inappropriate. Yet, one commonly misunderstood fact in the remedy selection debate is the cost-effectiveness of many innovative on-site technologies as compared to offsite-treatment and containment remedies. Technologies such as bioremediation, soil vapor extraction, soil washing and on-site thermal treatment are extremely competitive with traditional cap and contain remedies, and at the same time offer permanent rather than temporary treatment solutions

EAR-MARKING FUNDS FOR ACTUAL CLEANUP

Earmarking significant portions of cleanup funds for actual remediation, as opposed to studies and overhead, has been a very successful strategy at Department of Defense sites. This earmarking concept should be broadened to other federal agencies, as currently provided in the House Commerce Committee's Reauthorization of Superfund Act (ROSA). This earmarking not only has been found to speed the pace of cleanup, but creates a tremendous incentive and a vehicle for innovative technology research and development and commercialization. The current system of spending significant amounts of money on engineering studies and litigation is counter-productive to innovation.

SUPERFUND PRESUMPTIVE REMEDIES

Superfund Presumptive Remedies, long hailed as a way to fast track the pace of Superfund remedial actions, can represent tremendous deterrents to innovative technologies. Presumptive Remedies seek to capitalize on experience gained at certain classes of sites, such as municipal landfills, PCB sites, and volatile organic compound-contaminated sites. Rather than conducting exhaustive studies on remedial alternatives, EPA, through Presumptive Remedies, pre-identifies technologies found to work at those categories of sites. The danger for innovative technologies lies in being recognized as an appropriate alternative, once a presumptive remedy has been finalized. Recently, the innovative bioremediation industry found that its highly cost-effective use at Manufactured Gas Plant (MGP) sites is not being considered by EPA despite a major effort to provide actual data on bioremediation's efficacy at MGP sites. Presumptive remedies must be flexible enough for easy and frequent updating as new technologies emerge.

MORE RELIANCE ON PROFESSIONAL PEER REVIEW ORGANIZATIONS

Accelerating, if not mandating, federal agencies' use and reliance upon on outside professional organization's standards and certifications to recognize innovative technologies would be a very constructive step Congress should take to foster innovative environmental technologies. Certain federal agencies, indeed, certain programs within EPA, automatically incorporate by reference these standards into their regulations. Multiple public policy benefits are realized from this approach: federal agency resources are saved by this private sector

effort; the rigorous peer review and consensus standard development process these organizations conduct discourages charlatans from even entering the system; and, the merit of new technologies is "jump-started" into commercialization by the protocols and standards being incorporated by reference into regulatory programs.

Another major impediment is solved by this approach. There is a major conflict between the exclusive ownership and uniqueness of an innovative technology and deeply ingrained notions by regulators that approving a "sole-source" technology is anti-competitive. As a former EPA Division Director, I remember a strong hesitancy on my part to approve something owned by only one vendor. To do that was, so I thought, tantamount to creating an exclusive market and a virtual sale for that vendor...an anti-competitive act.

This may seem a minor point, but it looms large in the list of institutional impediments blocking commercialization of innovative environmental technologies. Obviously, by their very nature, and their patent protections, an entrepreneur is attracted into the market because he or she has a better idea which is first and alone in the marketplace. Again, more federal agency reliance on professional organizations would greatly help in this area.

Some of the organizations already providing this invaluable service include the American Society of Testing and Materials, the American National Standards Institute, the American Institute of Chemical Engineers, and the American Society of Mechanical Engineers.

It is no criticism of EPA to state that these organizations are in a much better position to be responsive to new technologies and changes in the market place. With their broad array of private sector technical experts, working closely in conjunction with affected federal agencies, these groups will always remain the best identifiers of the leading edge of

technology.

EXAMPLES OF IMPEDIMENTS

Paradoxically, the Resource Conservation and Recovery Act, which has brought about major environmental improvements through cradle to grave management of newly generated hazardous waste has impeded innovative technologies for "old", historic remedial wastes. Technical and procedural standards created for "new" waste applied to remedial waste have placed a chilling affect on conducting cleanup in general, and have directly and adversely affected the use of innovative technologies.

RCRA Land Disposal Restriction (LDR) rules mandate use of Best Demonstrated Available Technology (BDAT). BDAT for organics is costly incineration because it achieves a 99.99% destruction and removal efficiency, and therefore is "best". Bioremediation can achieve about a 90% reduction but keep in mind that virtually all of the remaining 10% of contamination is not biologically available for release to affect human health or the environment, and can be conducted for 1/10th the cost. So which is "best"? A cleanup of a one acre surface impoundment with minimal contamination cost \$36 million due to RCRA incineration-driven LDR requirements—bioremediation would have been an ideal alternative had not the rules prevented it.

At the same time, there are sites in which on-site incineration is the most cost-effective technology if a wide range of volatile and semi-volatile compounds are present at the site. The point is, site-specific flexibility is needed to choose the best traditional or innovative technology, without any pre-determined, absolute mandate making that choice absent the facts.

RCRA is probably the strictest hazardous waste law on the face of the

earth, and yet it automatically incorporates by reference the adoption of the American Society of Testing and Materials (ASTM) standards. It is therefore ironic to share with you a case of a California-based innovative biotechnical company, Microbics Corporation, which has been lost to overseas investors because ASTM standards are not recognized under the Clean Water Act.

Micobics' scientists/entrepreneurs developed a method utilizing luminescent bacteria which provides a faster, less expensive and more precise means to assess toxicity than the fish bio-assay test recognized under the Clean Water Act regulations. In addition to the exacting peer review required for its ASTM standard, and despite the existence of close to 500 articles in scientific literature (over 325 peer reviews) confirming its validity, numerous requests by states for its use, and a continuing large and successful monitoring program by the City of Baltimore, Microbics' method is still unrecognized federally in the U.S.

Microbics' test is currently accepted in eight European countries and Canada, and is in process in Mexico. Its financing recently has been acquired by British, German and Japanese interests and it is presently being courted to move its headquarters from California to Britain.

Hopefully, the work your committee has initiated will eventually lead to creating a more welcoming environment for American scientists so that in the future they can stay at home.

Thank you.