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MARKET-BASED POLICY MECHANISMS FOR TOXIC AND HAZARDOUS SUBSTANCE MANAGEMENT

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CITATION AND REPRODUCTION

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PROJECT 88

Project 88/Round II focuses on the design and implementation of incentive-based environmental policies in three areas: global climate change; hazardous and solid waste problems; and resource management issues. The project includes a seminar series, a set of policy workshops, public policy reports, and student internships. Project 88/Round II is sponsored by CSIA's Environment and Natural Resources Program, Henry Lee, Executive Director. Financial support is provided by the W. Alton Jones Foundation, the Pew Charitable Trusts, the Surdna Foundation, and the U.S. Environmental Protection Agency. This series of Discussion Papers consists of revised versions of papers presented at the seminar series. For a copy of the full report of Project 88 or Project 88/Round II, contact: Professor Robert Stavins, John F. Kennedy School of Government, Harvard University, 79 John F. Kennedy Street, Cambridge, MA 02138 (617-495-1820).

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Project 88/Round II is dedicated to the memory of Senator John Heinz and his vision of improving environmental policy through the application of economics.

This workshop was part of Project 88/Round II, co-chaired by Senator Timothy Wirth and the late Senator John Heinz, directed by Professor Robert Stavins, and dedicated to the memory of John Heinz and his vision of improving environmental policy through the application of economics. The project focuses on the design and implementation of incentive-based environmental policies in three areas: global climate change; hazardous and solid waste problems; and resource management issues. In addition to this workshop, the project includes a seminar series, three other policy workshops, a public affairs forum, policy reports, and student internships.

Project 88/Round II is sponsored by the Center for Science and International Affairs' Environment and Natural Resources Program, Henry Lee, Executive Director. Financial support is provided by the W. Alton Jones Foundation, the Pew Charitable Trusts, the Surdna Foundation, and the U.S. Environmental Protection Agency. The Project 88/Round II report, *Incentives for Action: Designing Market-Based Environmental Strategies,* was funded by a grant from the Carnegie Corporation of New York. For a copy of the full report of Project 88 or Project 88/Round II, contact Professor Stavins at the John F. Kennedy School of Government, Harvard University, 79 John F. Kennedy Street, Cambridge, MA 02138 (617-495-1820). These proceedings were edited by Andy Kopplin, workshop rapporteur.

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OVERVIEW: Robert N. Stavins, Assistant Professor of Public Policy, John F. Kennedy School of Government, Harvard University

This workshop explores economic-incentive or market-based approaches for the management of toxic and hazardous substances. Held at the Hart Senate Office Building in Washington, D.C., the workshop is part of Project 88/Round II, a two-year, multi-faceted program undertaken by Harvard University's John F. Kennedy School of Government. It focuses on the design and implementation of incentive-based environmental policies. The overall project is co-chaired by Senator Timothy Wirth and the late Senator John Heinz and dedicated to the memory of John Heinz and his extraordinary commitment to utilizing sound economics as a means of improving environmental policy.

In the past three years, there has been greatly heightened interest by political leaders on both sides of the Atlantic Ocean in new approaches to environmental protection. In particular, there is a growing recognition that the forces of the marketplace, obviously a source of many environmental problems, also have great potential to be part of the solution to these problems. In Washington, the debate has evolved rapidly, culminating in the fall of 1990 with the President's signature on the Clean Air Act Amendments, which incorporate a market-based tradeable permit program for the control of sulfur dioxide emissions, a precursor of acid rain.

One catalyst for these changes was the bipartisan study initiated and sponsored by Senator Timothy Wirth of Colorado and the late Senator John Heinz of Pennsylvania. Their original "Project 88" report was the product of a team effort by fifty persons from government, business, environmental organizations, and academia. In fact, a number of the people who helped develop the report's recommendations for enlisting the forces of the marketplace to deter pollution or reduce natural resource degradation are participating in today's workshop.

As the first Project 88 report served to facilitate some initial steps towards reform of environmental policies, the Project 88/Round II report, to which over one-hundred individuals nationwide contributed, takes the next step of investigating design and implementation issues of market-based approaches to three significant environmental problem areas: (1) global climate change; (2) solid and hazardous waste management; and (3) natural resource management. This workshop is one element of the ongoing Project 88/Round II effort, which also involves seminars and workshops on a variety of issues, as well as student internships.

At our last workshop, we addressed market-based approaches for the management of municipal solid waste (MSW). Today we move beyond that to investigate a variety of ways of improving current policies for the management of toxic and hazardous substances by supplementing -- not necessarily substituting for -- them with the use of incentive-based policies. Our purpose is not to sell these ideas, but to examine them critically -- to find out *if* they apply, *where* they apply, and *how* they might be used. The workshop begins by examining how price signals could enhance toxic and hazardous substance management. A subsequent session focuses on the problem of allocating responsibility and the possibility

of using tradeable permit systems for the phase-down or phase-out of the use of particular substances. We will then examine ways to improve liability standards. In general, this workshop primarily focuses on Federal policies and on the demand side for toxic and hazardous waste management.

SESSION I: GETTING PRICES RIGHT -- CHARGES, FEES AND DEPOSIT-REFUND SYSTEMS

INTRODUCTION: Robert N. Stavins, Assistant Professor of Public Policy, John F. Kennedy School of Government, Harvard University

Toxic and hazardous substance problems is a convenient label for a very broad set of environmental challenges. It should not be surprising that an equally diverse set of policy instruments may be required to address this set of challenges. In this session, we look at a few market-based policies which might help us get prices right, and thereby aid in toxic and hazardous substance management. Charges, fees, and deposit-refund systems could help send the right signals to business and consumers about the substances they use. Equally important, each policy mechanism proposed must be the right one for the particular problem it is designed to address. Because the substances to be controlled have such different properties and uses, the policy mechanisms designed to manage them will have to reflect these differences.

PRICING MECHANISMS FOR MANAGING TOXIC AND HAZARDOUS SUBSTANCES: Molly Macauley, Fellow, Resources for the Future, and Visiting Professor of Economics, John Hopkins University

Over 60,000 chemicals enter into the products and services that make up the lifestyle that we enjoy today. Taken together, these chemicals are a huge industry. Annual sales in the U.S. alone are over $200 billion. This sector is the nation's third largest employer and it is one of the few industries in which the U.S. has a positive trade balance. Thus, the sheer variety, ubiquity, and economic importance of these chemicals severely challenges our attempts to safeguard against any undesirable human health or environmental side effects that may be associated with them.

Traditionally, our approach to protecting human health from undesirable effects has been through regulatory mechanisms. We have seen bans on polychlorinated biphenyls (PCBs), on asbestos-containing products, and on nonessential uses of chloroflourocarbons as aerosol propellants. We have seen mandatory standards for design, manufacturing, use, and disposal, including product reformulations and content standards. At the state and local level, prescriptions on recycling have been the traditional approaches to regulating toxic substances. Finally, in the absence of direct regulation, we have also seen situations in which a business or industry undertakes to reform a product or substitute away from a substance in anticipation of direct regulation or to promote goodwill.

There are many arguments against these approaches. First of all, they frequently fail to exploit the often large cost differences across industries and substances and therefore pass on a relatively large cost to society. A substance banned to discourage its widespread use in one manufacturing process will also keep smaller amounts of that substance from being used in another manufacturing process in which it may be highly valuable. Second, some of these approaches may discourage risk-neutral or risk-reducing innovations. When

a product is banned, or a process is banned, how do we know whether that which will be substituted is any more environmentally benign? An increase in the deposition of heavy metal contaminants in the water stream is a perverse side-effect of substituting a water-based solution for a banned cleaning solvent. Finally, product bans may result in very large sunk costs to society, as when an entire industry goes out of business.

Flexible alternatives to command-and-control regulatory structures can offer equivalent protection with greatly reduced costs. Taxes and fees reduce demand for a toxic or hazardous substance by increasing its price, thereby limiting its use to highly-valued endeavors. If these taxes and fees are set correctly, at least from the perspective of economics, the extra charge incorporated into the price of the substance will be equal to the environmental externality it imposes.

Deposit-refunds and performance bonds should be viewed as being in the same category as taxes and fees, because they too are designed to increase the cost of the substance to reflect associated negative externalities. A deposit-refund is really a two-stage tax equal to the net present value of the deposit minus the refund and any costs associated with collecting it. Similarly, a performance bond consisting of a payment to a third party, perhaps a bank or an insurance company, represents the cost of insuring a substance against the probability of a bad outcome. A performance bond allows businesses to be risk-neutral with regard to the development of new substances, lessening the amount of evidence the industry will need to bring to bear to demonstrate safety for each substance.

A final alternative to command-and-control regulation is in the provision of information. Labelling standards may yield the desired public objective because of the way they alter consumer behavior and the product-liability outlook of producers.

Tradeable permits make sense for controlling sulfur dioxide emissions because the pollutant is homogenous and has a small number of easily-identifiable sources. Administrative complexities for regulating sulfur dioxide only appear when we attempt to address the spatial variation in damages caused by the pollutant. With toxics, on the other hand, far greater complications arise. For example, toxicity can arise at several stages of the product life -- at the mine mouth, during feed stock or intermediate production of a product used by industry or households, or in disposing of or recycling the substance. Furthermore, the same toxic substance will likely have numerous uses, each of which will probably have different levels of associated risk. Risks could also vary among users depending on the level of caution they exercise. Finally, as we move away from the mine mouth or initial producers, the number of users who would be affected by any regulatory intervention increases dramatically.

Assuming that a given toxic or hazardous substance poses significant risk, the first determination a regulator should make is whether the substance's harmful effects are felt at a micro or macro level. Does the product pose a potential risk to society as a whole or simply to an end user? If there are no third-party exposure effects, as in the case of formaldehyde, then we should probably address it through product labelling and information supply, or through product-liability law.

Where externalities are present, we should make sure our proposed incentive-based solutions specifically address the problems with which we are concerned. For example, although recycling of spent chlorinated solvents is an important concern that could be addressed with a deposit-refund system, of greater concern is the potential of these substances to act as ozone depleters or precursors. Thus, our intervention should be directed further upstream, perhaps with an excise tax that discourages the release of fugitive emissions by making them more valuable. A deposit-refund system probably does not make sense for cadmium, either, because its price is so closely linked with zinc prices. To control the problems associated with its disposal, however, we might initiate a tradeable permit system for the phase-down of cadmium in various products. Finally, because small changes in chemical composition can lead to new substances which may pose equal or greater risks, we should be wary of policy mechanisms which are focused on a specific chemical compound. In this case, performance bonds will set the right incentives for industry to develop safer -- not simply chemically different -- products.

POTENTIAL IMPLEMENTATION PROBLEMS: Lynn Scarlett, Vice President, Research, The Reason Foundation

Market-based incentives for the management of risks associated with toxic and hazardous substances offer significant opportunities to improve our regulatory framework. Instead of highlighting these, however, I will play devil's advocate and point out a number of potential problems associated with implementing incentive-based policies.

Charges and fees are often implemented by governments to raise revenues, not to influence behavior. As a result, it may be difficult for regulators to "get prices right." Further, when charges and fees are not designed to influence behavior, the informational message transmitted by the market about the costs and benefits of a substance becomes skewed.

There are also significant equity concerns with market-based policies. Although a charge may internalize the cost of the externality, there is no requirement that a transfer payment be made to those parties who receive injury. Many would argue that a charge imposed to reflect the cost of environmental degradation ought to be turned over to those who are injured or used in efforts to mitigate environmental damage. For producers, there is also a certain inequity in assessing a fee against all producers when only a small portion of producers may impose the externality by illegally disposing of the substance. Finally, if the deposit required is quite large, a deposit-refund scheme may significantly limit the choices of the poor (a concern which ultimately discourages politicians from setting prices correctly).

A final point to make clear is that market-based incentives are not a panacea. Although they have the potential to yield great savings, in some cases they may not save any money or may actually cost more because of administrative or enforcement costs. In other cases, predicted savings relative to command-and-control approaches may not be realized because the costs of pollution control are uniform across products and industries.

FOCUSING ON DEPOSIT-REFUND SYSTEMS: Bradley Whitehead, Management Consultant, McKinsey & Company

Many in the business community would share the views about market-based incentives which have been presented so far. Charges, fees, and deposit-refund systems for hazardous waste management represent neither a policy panacea nor the market-run-wild nightmare that was often portrayed in the past. They make sense in certain instances and in certain industries, but not in others. They should be regarded as a set of highly-promising arrows in what is hopefully a very broad and deep quiver of environmental policy instruments. Ultimately, we should rely on a portfolio of policies which can be tailored to address problems which share particular characteristics.

All market-based incentives should be judged against the next best alternative. Probably the least satisfactory approach is a waste-end tax, in which the ultimate user pays for the social cost at the time of disposal. This creates an incentive, in fact, for improper disposal. Unfortunately, many current policies, such as those which restrict interstate transport of hazardous materials, are behaving like waste-end taxes. One obvious alternative designed to correct these problems is the front-end tax, levied far upstream in the production process. While this sends the right incentives to businesses and consumers about the substance, it does not provide any incentive for proper disposal -- as does a deposit-refund system. Nevertheless, we should recognize that deposit-refund systems share many of the administrative complexities of the manifest system. Furthermore, a deposit-refund system does not guarantee that the incentive created will be sufficient to put an end to improper disposal.

Despite these limitations, there are a number of situations in which deposit-refund systems would make sense. First, they tend to be appropriate where the costs of improper disposal are high, but not cataclysmic. If improper disposal costs are low, we should use a front-end tax and not burden ourselves with the costs of developing a deposit-refund infrastructure; if the costs of improper disposal are enormous, however, we cannot risk a mistake and should rely on manifests or, in extreme cases, on outright bans. Secondly, deposit-refund systems make sense in situations where there are a large number of generators because the administrative costs would likely be significantly less than with a manifest system. Thirdly, they make sense where there is an existing infrastructure that can be utilized. When collection centers already exist, the imposition of a deposit-refund system becomes more manageable.

An additional area which deserves close attention is the development of incentive-based policies which encourage waste reduction, rather than just better waste disposal, because this gets to the heart of the problem in many cases. Labelling standards, for example, will encourage the public disclosure of information and could play an important role.

DISCUSSION:

a. Applicability of Market-Based Policies

One participant noted that the key to successfully implementing incentive-based policies for the management of toxic and hazardous materials is making sure that the policy chosen addresses the particular market failure being confronted, something which had been implied but not explicitly stated by the presenters.

b. Problems of Implementation

While they agreed that market-based incentives were good ideas, a number of participants were concerned that political processes might mitigate against their proper implementation. In particular, many suggested that politicians would find it difficult to enact charges and fees high enough to have the appropriate impact. Others were concerned that we did not have enough information about the risks associated with toxic and hazardous substances to develop appropriate charges or fees. One participant suggested that a system of charges and fees may bias consumers against those substances whose effects we know about and towards those substances about which we have little information. Finally, others argued that before initiating new market-based policies, it would be important to evaluate how such policies would interact with our existing system of regulation.

c. Flexibility of Market-Based Policies vs. Command-and-Control

Concerns were raised as to whether market-based policies would themselves require large regulatory infrastructures and thus would not yield substantial savings and might even cost more relative to a command-and-control system. A number of participants contested this assertion, arguing that market-based policies were unlikely to increase the burdens placed upon regulators and were, in fact, considerably more likely to reduce them. In particular, they pointed to such policies as deposit-refunds and performance bonds as evidence of "self-enforcing" incentive-based policies.

d. Revenue Neutrality

Economists generally argue that revenues raised by charges and fees established as environmental policies should be off-set by removing other, more distortionary, taxes in the economy. However, several participants questioned whether most politicians would adopt such "revenue-neutral" policies in practice. One speaker suggested that if revenue neutrality were applied, the taxes which are reduced should be rebated as closely as possible to the industry affected by the initial charge so as not to put that industry at a disadvantage.

e. Implications for International Trade

There was considerable debate about the effects of market-based policies, in particular, and environmental policies, in general, on international trade. Fees levied on

American-made toxic and hazardous substances might put American companies at a disadvantage unless those fees were applied globally. Even if that difficult task were accomplished, significant complexities could arise about how and whether to assess a charge on such products as imported computer circuit boards which have been cleaned with chloroflourocarbons.

f. Product-Responsibility Legislation in Europe

One participant asked the workshop to comment on recently-enacted legislation in Germany and Holland which makes producers of domestic and imported products responsible for disposing of the products they create. Most participants felt strongly that such policies were unwise. In particular, concerns were raised that "product-responsibility laws" would result in enormous trade restrictions. Additionally, it was argued that such policies were also likely to give large firms a significant advantage over small firms, and multi-national firms an advantage over national firms. Another participant asked how such laws would address disposal of products composed of many different components. Would each be separated and sent back upstream? Finally, one speaker questioned the wisdom of product responsibility legislation's implicit assumption -- that responsibility for disposal lies with the producer rather than the end-user of a product.

SESSION II: ALLOCATING RESPONSIBILITY -- TRADEABLE PERMIT SYSTEMS

INTRODUCTION: Henry Lee, Executive Director, Program on Energy and Natural Resources, John F. Kennedy School of Government, Harvard University

Until the mid-1980's, the concept of tradeable permits appeared most often in academic journals. There were some experiments -- offsets, bubbles, and banking under the Clean Air Act -- but it took the success of the tradeable permit program to phase down lead in gasoline to get people's attention. That program saved about $200 million per year over a five-year period. More recently, Congress has enacted a tradeable permit scheme for controlling sulfur dioxide emissions as part of the Clean Air Act Amendments. This program may result in savings of $1.5 billion annually. Although getting these ideas put into practice took many years and much effort, today there is hardly a pollution issue for which someone is not suggesting a tradeable permit scheme. Given the number of toxic substances and their ubiquity, it comes as no surprise that many have suggested that permit schemes may be useful in managing hazardous substances. This session focuses on identifying particular categories of toxic and hazardous substances where tradeable permits are appropriate or inappropriate.

CONDITIONS UNDER WHICH TRADEABLE PERMITS MAKE SENSE: Terry Dinan, Analyst, U.S. Congressional Budget Office

Because uniform or technology-based standards do not recognize the cost differences among firms and industries, they are a costly way to bring about environmental improvements. In contrast, tradeable permit schemes can provide significant savings by allocating the control burden cost-effectively among sources. Firms that can decrease the discharge of toxic material at a relatively low cost can sell their excess permits to firms that have relatively high costs of decreasing discharge. This flexibility leads to potentially large savings.

In comparison with fees and charges, tradeable permits are appealing in certain circumstances because they place certainty on the environmental results. Only the quantity allocated will be released. The flip-side of this, of course, is that there is considerable uncertainty about the cost society will bear in order to meet the environmental goal.

Four conditions are necessary for the successful use of a tradeable permit system.

(1) Firms must have strong incentives to comply. Firms that have higher discharges than they are allowed will only buy extra permits if the cost of complying with the regulation is less than their expected cost of not complying with the regulation. In other words, the probability of their being caught for non-compliance multiplied by any associated fines must be higher than the cost of additional permits. Ultimately, tradeable permit systems tend to be easiest to enforce when they affect a relatively small number of firms and it is easy to detect noncompliance. Where the number of firms is high or

compliance is difficult to detect, high fines can increase compliance dramatically.

(2) Transactions costs must be minimal for a successful tradeable permit program. No efficiency gains will be realized from this system unless firms actually trade permits. If the costs of identifying potential buyers and sellers and completing transactions are too high, expected trades will not take place. Transactions costs tend to be lower when there is a fairly small number of potential trading partners, and when there is good information on who potential traders are. Advance notification and other regulatory constraints that the government might place on trading will also increase transactions costs.

(3) There must be a high-degree of certainty about the value of the permits in order for a tradeable permit scheme to succeed. Holding buyers liable for the legitimacy of their permits encourages buyers to scrutinize their purchases, but too strong a "buyer beware" message may make firms reluctant to buy permits. Also, if firms are worried that the government might change the rules regarding permits, then firms will be reluctant to take full advantage of the cost savings the system can provide.

(4) Efficiency gains will only be realized if the tradeable permit market is competitive. If firms can manipulate prices to their own advantage, then the savings from a permit system will be transferred to those who can monopolize the market. Many economists believe that a firm would need to control at least ten percent of the permit market in order to manipulate prices. However, in order for a firm to take advantage of such a dominant position, it would also have to dominate the final product market, a condition which makes it less likely that permit markets would be subject to anti-competitive behavior.

MONITORING PERMIT SYSTEMS: Boyden Gray, Counsel to the President

In general, tradeable permit systems merit serious consideration for a variety of environmental problems. There is a considerable amount of resistance to using tradeable permit systems because many view monitoring such systems as a difficult task. I would suggest that monitoring trades is no more cumbersome and potentially a great deal less cumbersome than monitoring a command-and-control system. The Securities and Exchange Commission is arguably as effective as EPA.

Another important issue which needs to be made clear is that a tradeable permit is, in fact, a property right. In order for the permit to maintain its value over time, it must be a legal property right held by the firm which owns it.

HOW TO DECIDE ON A REGULATORY SCHEME: Raymond Squitieri, Senior Staff Economist, Council of Economic Advisers

We must answer four questions before deciding whether to implement a tradeable permit system or any other regulatory system. First, is there an externality present? If so, is it negative? Before we worry about regulating a toxic or hazardous substance, we

need justification. Sometimes this has been forgotten in the past. Second, do existing regulations, including taxes and other regulatory programs, already internalize some or part of the externality? Gasoline taxes internalize thirty-one cents per gallon of associated externalities right now. Third, if we still have some externalities present, will government intervention help? Can we be certain that we are measuring the externality well enough? Will the process become politicized and create new problems?

The fourth question is where tradeable permit schemes come into play. If government intervention will help, what sort of intervention is appropriate? Sometimes the proper role will be providing information, other times it might be better to regulate through command-and-control or incentive-based mechanisms.

WHERE THE RUBBER MEETS THE ROAD: Robert Hahn, Resident Scholar, American Enterprise Institute for Public Policy Research

Market-based incentives are only the answer for a limited set of problems. We may find, for example, that levying a tax or instituting a tradeable permit scheme on the primary production of lead or on secondary smelters does little to reduce risk in the U.S. or worldwide, but does export jobs offshore. On the other hand, we should have used a tradeable permit system when we were phasing out the use of asbestos instead of applying a ban. We must make sure we choose the right problem to address with incentive-based solutions.

With regard to toxic and hazardous substances, we should be concerned with giving firms positive incentives to treat their own wastes. The current rules under the Resource, Conservation, and Recovery Act (RCRA) give firms no incentive to do this because they define anything which has been treated as "hazardous." There is a great need for environmental policy-makers to develop regulatory schemes which offer firms the incentives to do what is environmentally proper, instead of the opposite, which is what many current regulations do.

DISCUSSION:

a. RCRA Rules

It was widely agreed that RCRA gives businesses a number of perverse incentives, and that the "mixture and derived from" rules are a major part of the problem. Because RCRA regulations are designed to minimize risks, they may encourage firms to dilute hazardous materials to safer concentrations rather than to treat, recycle, or reduce their use of these materials. In addition, RCRA places considerable burdens on those firms which choose to treat or recycle their wastes. A number of participants stated that RCRA's requirements should be altered so as to align environmental policy concerns with the interests of the firms being regulated, but they recognized the difficulties inherent in making such changes.

A few participants debated whether or not RCRA's manifest system would provide useful information for policy-makers developing incentive-based regulations for toxic and hazardous substance management. One noted that a California agency tried to use the manifests on one of its projects, but found that the information they provided was not useful.

b. Resistance from Business and Environmentalists

One participant wondered why the business community is often surprisingly resistant to such market-based policies as tradeable permit systems. Another explained that business people are often concerned that the solution being proposed will cost more than its expected benefits and/or that only one segment of the economy is being asked to bear the costs of environmental improvements. A third participant suggested that businesses are often resistant to market-based solutions because they change the operating environment of the firm. Firms who are operating profitably under one regulatory scheme may have to change their institutional structure and culture in order to succeed in this new market.

Other participants explained that environmental organizations have opposed tradeable permit systems because of concerns that enforcement will be too difficult, that potential pollution hot-spots might be created if significant discharges occur in a limited area, and that it is unwise to give firms a property right to pollute sometime in the future.

c. Allocating Permits

Participants agreed that the way in which permits were distributed could have important equity implications. For example, if permits were distributed based on current use or emissions, regulators might be rewarding laggards who had not yet made their operations more efficient. Allocating permits based on production levels, on the other hand, would reward those firms who have taken steps to reduce their discharges. The government could also have an auction for permits. One participant pointed out that the concerns raised about equity issues make clear the substantial benefits which result from a permit system. Because of its flexibility, a permit system encourages firms to seek technological improvements in their manufacturing processes, but does not necessarily drive less efficient firms out of the market.

SESSION III: FACILITATING CLEANUPS -- BETTER LIABILITY STANDARDS

INTRODUCTION: Joseph P. Kalt, Professor of Political Economy, John F. Kennedy School of Government, Harvard University

Nobel prize winner Ronald Coase believed that the way to bring market incentives to bear on environmental problems was through judicial and quasi-judicial enforcement of liability standards, under tort law and the law of trespass. In that sense, today's Session III is really a continuation of Coase's work from 1958. We will be examining how the legal liability standards created as part of the Superfund legislation work, or don't work, in addressing environmental problems caused by the use of toxic and hazardous substances and whether these standards should be changed.

ALTERNATIVE LIABILITY STANDARDS: Paul Portney, Vice President and Senior Fellow, Resources for the Future

There are two major issues that we have to confront in the Superfund debate. The first is how much we are going to clean up at particular Superfund sites. Although I have been asked to steer clear of this "how clean is clean debate," I want to state my view that this is a benefit-cost question. Economics has a great deal to contribute and economists should not cede for a minute the very important question of what is the appropriate standard for cleanliness.

The second issue, which goes to the liability question in the title of my talk, concerns who is going to pay for the clean ups. To pay the cost of Superfund clean ups we now use retroactive, strict, joint, and several liability. In addition, for those sites where we cannot identify the guilty parties or we need to initiate clean ups prior to initiating legal actions to recover costs, there is a fund created by monies raised from taxes on petroleum and chemical feed stocks and from budget revenues. In 1986, those revenues were augmented by the creation of a corporate environmental tax. Nevertheless, the current Superfund program is widely unpopular in both the business and environmental communities, primarily because of the liability issue in the former and enforcement and clean up concerns in the latter.

A number of alternative liability standards for Superfund have been suggested to remedy some of the existing problems. These include exempting municipally-owned landfills; exempting all municipally-owned sites; exempting sites that ceased handling wastes before a certain date; exempting certain kinds of Potentially Responsible Parties (PRPs), such as municipalities, banks, and lenders; exempting transporters of wastes; and exempting future (not yet discovered) liability. Another suggestion made is that the government make Superfund a public works program and fund all the clean ups out of general revenues. While each of these has certain advantages, each unfortunately has significant disadvantages associated with it.

There are several reasonable criteria with which to evaluate these alternatives. One criterion should certainly be to what extent the new standard would reduce transactions costs. Although there is little hard data, anecdotal evidence suggests that transactions costs associated with Superfund are enormous. Fairness is another criterion which could be used. This criterion is difficult to work with, however, because fairness is in the eyes of the beholder. Each system will be fair according to some conception of fairness but each and every alternative will also be unfair according to other notions of fairness. A third criterion might be the economic impact of the new standard on PRPs. A fourth could be the budgetary impact of the new standard; and a fifth could be whether the standard speeds clean up.

Paradoxically, retroactive liability under Superfund may have prospective advantages. Because businesses have seen that they may be held liable for something they did twenty years ago, they may take better care with the wastes they handle today. Some people are worried that removal of retroactive liability standards will not only reduce this sort of business prudence, but will also stop firms from continuing to clean up existing non-Superfund sites for which they are currently held liable. Finally, another determination we should make in evaluating alternative liability standards is whether the proposals are politically feasible. A public works program that costs $20-30 billion a year for the next thirty years, for example, is not likely to find many friends in Congress.

CRITERIA FOR EVALUATING ALTERNATIVE STANDARDS: Jan Acton, Assistant Director and Division Head for Natural Resources and Commerce, U.S. Congressional Budget Office

Although I disagree with almost nothing Paul Portney had to say, I will try to create some artificial conflict in the spirit of stimulating some discussion.

Superfund poses the question of what should we as society do when we decide *ex post* that something we have done is a mistake. On one level, that is simply a financing question, a determination of what source of revenue should we use to rectify the problem. While I agree that fairness is in the eye of the beholder, for argument's sake, we can ask whether some alternatives are "more fair" than others. But when I evaluate the alternatives to the current liability standard, I see equally objectionable aspects to each of these.

Another criterion to use could be efficiency. The soon-to-be-released Rand Corporation study of transaction costs associated with Superfund shows enormous variation. There are some parties spending 20 percent of clean up costs and others spending 88 percent -- strictly on lawyers. If those numbers are correct, efficiency dictates that we look for a better or more efficient standard. That does not mean we exempt the parties who are currently liable. We could declare legislatively that they are to pay for it without requiring each party to go to court.

Anecdotal evidence also suggests that Superfund has significantly influenced the perspectives of CEO's with regard to environmental exposure and potential liabilities.

Additionally, because they have seen that the government can change the rules retroactively, they have been encouraged to exercise more prudence in the way they run their businesses. In another area, both buyers and lenders are much more careful when buying property that was previously used for industrial manufacturing purposes, and now will perform an environmental audit. Superfund may not have been an efficient way to bring about these changes, but we should not disregard the benefits associated with the current system.

TEN GOALS FOR SUPERFUND: Erik Olson, Senior Attorney, Natural Resources Defense Council

There are a number of ways to evaluate the fairness of current liability standards. I would argue that having the polluters pay is an important element of fairness. The ability to pay is also clearly a fairness question. Those who benefit from an activity should be the ones that bear the cost, and that again plays into the fairness issue. Another question of fairness is whether future generations should bear the costs of our activities from which we derive benefits. With regard to joint and several liability, this goes back several hundred years in Anglo-American jurisprudence. The principle it relies on is that those who are in the best position to avoid injury should bear responsibility. The most important issue of fairness is that those people who are unknowingly put at some sort of risk are the most deserving of protection.

But I think our debate so far has overlooked a number of other important aspects of the Superfund program. Enforcement is one area where there could be substantial improvement. My ten goals for the Superfund program would be:

(1) protection of public health;
(2) restoration of natural resource damage in the environment;
(3) rapid clean up;
(4) permanent clean up;
(5) protection of future generations;
(6) fairness;
(7) economic efficiency;
(8) creation of incentives for proper waste handling;
(9) punishment for bad past-practices; and
(10) minimizing government expenditures vs. private expenditures.

Transactions costs are certainly a significant problem. Part of the solution might be in making more adequate use of the settlement provisions in the law. Another part of the problem is that the law is so new that the courts and litigants are unsure about what constitutes a typical outcome. As time goes on, many of the transactions costs should be reduced.

DISCUSSION:

a. Fairness

Although there was almost universal agreement that some aspects of Superfund's current liability standards were unfair, a substantial number of participants admitted that these standards were probably preferable on fairness grounds to any of the proposed alternatives. Nevertheless, there were several participants who disagreed with this view.

b. Signals Sent by Current Liability Standards

A number of participants noted that the primary signal sent by Superfund was that those companies with "deep pockets" would bear the greatest clean up expenses. If that was a practical necessity to get the law funded, one asked, then why did the Congress try to describe Superfund as a law designed to punish polluters? Another participant pointed out that going after those firms who are most able to pay merely punishes those firms who are most successful.

c. Settlement Mechanisms

In response to many comments about how the EPA could better use settlement mechanisms provided under the Superfund law, an explanation was offered. The single dispute resolved using the Nonbinding Allocation of Responsibilities (NBAR) process, was expensive, costing $2 million. Furthermore, few PRPs want to use alternative dispute resolution procedures. With regard to *de minimis* settlements, the EPA intends to pursue this avenue to a greater degree in the future.

d. Documenting Risk Reduction at Superfund Sites

A number of participants commented that the public health risks at most Superfund sites have been substantially reduced over the past decade, but that the public and many environmental groups continue to believe that the clean ups are not progressing. In response, a number of economists at the workshop suggested that the EPA undertake an effort to document the proportion of risk reduced at various stages of the clean up process as a way of measuring the agency's success at carrying out the Superfund mandate. Instead of announcing when a site was removed from the National Priorities List (NPL), something which requires 100 percent risk reduction, participants suggested that the EPA make intermediate announcements indicating what percent of the public health risk had been reduced at the various sites.

HARVARD UNIVERSITY
JOHN F. KENNEDY SCHOOL OF GOVERNMENT
CAMBRIDGE, MASSACHUSETTS 02138

MARKET-BASED POLICY MECHANISMS FOR TOXIC AND HAZARDOUS SUBSTANCE MANAGEMENT

A PROJECT 88/ROUND II WORKSHOP
Hart Senate Office Building, Room 216, January 16, 1992

8:30 AM Continental Breakfast

9:00 AM Welcome: **Albert Carnesale, Dean**
John F. Kennedy School of Government, Harvard University

Richard Morgenstern
Acting Assistant Administrator
Office of Policy, Planning and Evaluation
U.S. Environmental Protection Agency

9:15 AM Overview: **Robert Stavins**
John F. Kennedy School of Government, Harvard University

9:30 AM Session I: Getting Prices Right -- Charges, Fees, and Deposit-Refund Systems

Chair: **Robert Stavins**
John F. Kennedy School of Government, Harvard

Presenter: **Molly Macauley**
Resources for the Future

Responses: **Lynn Scarlett**
The Reason Foundation

Bradley Whitehead
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Discussion

11:15 AM Coffee Break

Project 88/Round II Workshop Agenda (Continued)

11:30 AM Session II: Allocating Responsibility -- Tradeable Permit Systems

Chair: **Henry Lee**
John F. Kennedy School of Government, Harvard

Presenter: **Terry Dinan**
U.S. Congressional Budget Office

Responses: **Ray Squitieri**
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Robert Hahn
American Enterprise Institute for Public Policy Research

Discussion

1:00 PM Lunch

2:00 PM Session III: Facilitating Cleanups -- Better Liability Standards

Chair: **Joseph Kalt**
John F. Kennedy School of Government, Harvard

Presenter: **Paul Portney**
Resources for the Future

Responses: **Jan Acton**
U.S. Congressional Budget Office

Erik Olson
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Discussion

4:00 PM Adjourn

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This workshop is part of Project 88/Round II, co-chaired by Senator Timothy Wirth and the late Senator John Heinz, and dedicated to the memory of John Heinz and his vision of improving environmental policy through the application of economics. In addition to this workshop, the project includes a seminar series, three other policy workshops, a public affairs forum, policy reports, and student internships.

Financial support is provided by the W. Alton Jones Foundation, the Pew Charitable Trusts, the Surdna Foundation, and the U.S. Environmental Protection Agency. The Project 88/Round II report, *Incentives for Action: Designing Market-Based Environmental Strategies*, was funded by a grant from the Carnegie Corporation of New York.

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HARVARD UNIVERSITY
JOHN F. KENNEDY SCHOOL OF GOVERNMENT

MARKET-BASED POLICY MECHANISMS
FOR TOXIC AND HAZARDOUS SUBSTANCE MANAGEMENT

A Project 88/Round II Workshop
January 16, 1992
Washington, DC

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A Project 88/Round II Workshop
January 16, 1992
Washington, DC

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