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Industry Approaches to Environmental Policy  
in the Great Lakes Region

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# Industry Approaches to Environmental Policy in the Great Lakes Region

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## Introduction

This paper reviews economic theory and evidence regarding environmental regulation of the private sector. Private sector involvement, intentions, and outcomes with regard to environmental regulation have often been viewed as suspect, although to date the evidence supporting those views is weak. In the past, business policies toward environmental regulation has been contentious and hostile. It is perhaps for this reason that business involvement has been looked upon with suspicion. Nonetheless, it appears that business policies have since evolved for the better. In support of this proposition, the paper proposes a three part typology to describe current methods which industry uses to provide input to the policy process. The paper also examines specific efforts underway in the Great Lakes region which demonstrate how firms are pursuing greater involvement in the environmental policy arena.

Industry involvement in the design and implementation of environmental policy is increasing. Faced with stiffer global competition and a rising tide of environmental mandates, companies have become acutely sensitive to the costs of environmental regulation and in response have become more active in promoting policies that provide flexibility in meeting environmental regulations and that minimize the costs of compliance. Much of the current focus of industry involvement places environmental policy in a framework of technical efficiency. This has several meanings. First, good science should identify and prioritize the risks to the environment so that, in pursuing the objectives of a clean and safe environment, resources are not squandered trying to meet arbitrary standards. Second, companies should be allowed flexibility in how they reach environmental targets so that economic disruption is minimized. The old reliance on command and control environmental policies which often established not only pollution targets but also prescribed the method and procedures by which industry had to comply,

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has been exposed as inefficient and too costly. Resources were devoted to perceived rather than real risks and the increased costs often hurt firms in global competition.

Business involvement and active pursuit of environmental quality is not a new phenomenon in the U.S. For example, by the end of the Second World War, business leaders in Pittsburgh saw that pollution was choking economic activity and set out to curtail it. Organizations such as the Ford Foundation and Resources for the Future subsequently funded much of the economic inquiry into the market behaviors by which these "externalities" were generated, along with the potential corrections to these social problems. Today, private industry continues to find its own solutions to the emission of harmful wastes. Perhaps more surprising to some, business is increasingly teaming up with environmental interests in fashioning public policy and regulation. Nonetheless, despite the new directions of business policy toward policy efficiency and public cooperation, some observers aggressively question the resulting "social good" which results in having business as an active partner with environmentalists.

## The political economy of business involvement

Today's conventional view of environmental regulation is the view that a "social" problem exists with regard to pollution and that the government is compelled to take corrective action. Left to its own devices, private industry will ignore environmental costs in choosing among alternative modes of production. However, this view also includes the assumption that government is ignorant of economic principles, so that the corrective rules and regulations impose very high costs on industry--higher costs than those that are necessary. This comes about because the group which has recently provided the most aggressive leadership, i.e. environmentalists, are able to overwhelm the producer and other consumer interest groups who are not so well focused and organized. Owing to today's re-awakened environmental consciousness, even the aggressive and self-interested lobbying on behalf of producer interests fails, in many recent instances, to thwart ill-conceived environmental regulation. Accordingly, unnecessarily punitive rules are ultimately promulgated. These rules are often of the "command and control" type which impose technical standards on industry processes, and more recently, are also forcing "up-stream" implementation of pollution prevention technologies into law in ways that are highly prescriptive. In response to these defects of regulatory policy, today's business involvement is viewed as a beneficial and

corrective influence on well-intentioned government policy (of the command and control variety) which has gone awry.

In contrast to this view, an alternative and somewhat influential body of thought posits that business involvement in environmental decision making is anything but impotent or benign. Instead, government regulators (and their legislative sponsors) are motivated by self-interest, as are business groups. As a general observation, for example, it has been suggested that the powerful and unhealthy political prowess of the business sector can be seen from the fact that the economist's preferred method of controlling pollution, the "tax per unit of pollutant", has been universally ignored by legislators. Although it is highly efficient, the "green tax" method charges the business community for a "right" or "good" which they formerly consumed free of charge (Buchanan and Tullock 1975). More generally, proponents of the business-as-less-than-benign regulatory theory believe that *subsets* of business interests can become party to winning coalitions. Those business groups that are well organized and/or highly motivated are able to persuade regulators to implement environmental schemes which transfer significant sums of wealth in their direction; economic efficiency in regulation is often a secondary consideration to these business groups. Rather, restricting entry of competitors into their markets and raising product prices are paramount. These groups form successful coalitions with environmental interests who themselves "win" something for themselves by achieving their desired environmental goals. The losers are the dispersed body of consumers who must pay higher product prices, and also those unsuccessful business interests who lose out in the political struggle to fashion environmental regulations.

In support of this view, proponents have accumulated some statistical and anecdotal evidence. Ackerman and Hassler (1981) describe a coalition of eastern coal producers and environmentalists who put together the 1977 Amendments to the Clean Air Act so as to force continued use of eastern (high sulfur) coal (through mandated use of scrubbers), while taking steps to lower emissions in the west. Pashigian (1984) reports that small plants have been harmed relative to large plants by environmental regulations, thereby suggesting that large plants may benefit from their concentration of political power. Another prominent study was conducted by Pashigian (1985) on the policy of PSD (prevention of significant environmental deterioration) which was part of the 1977 Clean Air Act Amendments. PSD imposed minimum national standards to be met in all air control regions. However, those regions with superior air quality also had more stringent limits placed on them to prevent deterioration of quality. The author sees these laws as an attempt to

raise the economic profits of existing firms (which are located in slow-growth dirty air regions) at the expense of new firms in rapidly growing regions of the South and West. The authors subsequently marshalled evidence of Congressional voting behavior which lends support to this notion; the Northeast Midwest congressional votes tended to carry the day in passing the legislation. Maloney and McCormick (1982) provided further evidence along these lines that the PSD policy boosted the value of a portfolio of existing nonferrous metals companies following a favorable court ruling in support of PSD.

With regard to efficiency, this type of so-called "differentiated regulation" often tends to retard the goals of cleaner environment. In the latter case of PSD, in the absence of biased regulation, newer firms and their capital equipment which would have otherwise been created in industrializing regions, would have entailed newer and cleaner technologies. In another example, Gruenspecht (1985) demonstrates how the setting of auto emissions standards on new vehicles only *delayed* short run improvement in emissions by raising the value of and extending the life of the existing fleet of "dirty" autos.

*How does one assess this critique of business involvement?* It would be naive to pretend that business, or any other organized group for that matter, fails to behave in their own best interests. For this reason, it would be folly for analysts and policy makers to ignore the self-interested incentives of the business community as they inject their outlook into the policy discussion, and as they harmonize their policy goals with those of environmentally concerned citizens. However, an assessment of the body of studies produced to date would have to conclude that is far too early to conclude that business sector involvement in environmental policy has resulted in great waste and inefficiencies, or, for that matter, the creation and transfer of large rents between business subsectors or from consumers to business. The most notable evidence yet produced has been that regarding PSD policy in the Clean Air Act. However, given the wide spectrum of environmental regulation, the PSD findings appear to be more of an exception than rule. If so, how does one account for this instance as occurring? One answer may lie in the fact that the 1970s, (when PSD was promulgated), was a time of stark differences in regional performance. Energy producing regions were prospering while the energy dependent Northeast and Midwest languished. The New England miracle had not yet occurred; New York was fighting off a weak economy and fiscal default; and the Midwest auto/steel industries were taking their first wave of shocks from high energy costs coupled with foreign

competition. Were it not for PSD, the incentives for firm relocation to high quality air regions would have been sharp, and the impact on the labor force in the manufacturing belt acute. Unemployed labor in the manufacturing belt, with its own inherent waste and inefficiency, would have been much worse without PSD. Under these conditions, it is perhaps not so surprising that an effective and workable region-based congressional coalition was formed along geographic lines.

To take the second prominent example, the decisions to encourage the scrubbing of high sulfur coal *does* obviously coincide with the highly self-interested motives on the part of a particular segment of industry. But here again, high sulfur/low sulfur coal industries represent a distinct split between identifiable interest groups. Again, this may be a special case rather than the norm. In contrast, many other areas of environmental regulation represent common ground among all business interests. In particular, very high levels of inefficiency and costs have been imposed on industry by constructing command and control types of regulation rather than market based systems, which include the market trading of allowances and permits. Under a system of allowances and permits, industries have the flexibility to reduce emissions in their own unique way, and they have the incentive to develop emission reduction technologies over time in their innovative style. Efficiency gains also result because those firms with high abatement costs can obtain allowances to pollute, while the necessary abatements become concentrated in those (allowance selling) firms who can abate pollution most cheaply.

Business involvement in shaping regulatory policy mechanisms has contributed to the present movement toward the use of market mechanisms. For example, the SO<sub>2</sub> abatement reductions required under the 1990 CAAA move away from the high sulfur bias inherent in earlier Clean Air legislation. Rather than command and control methods being mandated, allowances for SO<sub>2</sub> will be traded nationwide. Schemes to trade the precursors of urban ozone have also been proposed. Economists at the Division of Economic Analysis and Innovations in the US EPA are estimating and documenting the potential savings that could be realized from adopting market mechanisms to abate pollution (where possible) across the entire spectrum of emission situations. Generally at the present time, the business community is finding that its interests lie in minimizing regulatory inefficiencies rather than in creating economic monopolies and rents which would hurt consumers or competitors. Meanwhile, the fail-safe strategy of the business community lies in those strategies that set and achieve internal pollution prevention goals

prior to subjecting itself to experiences which are best described as regulatory hell.

A much heightened awareness of environmental problems and processes among the general public is also encouraging the business community in these directions. Brand name firms reap consumer praise and loyalty from being perceived as environmentally conscientious. Meanwhile, during this present era of slow job growth, regulators and their legislative sponsors are penalized for imposing the types of regulation that businesses contend will unnecessarily stifle job creation.

But while the climate and conditions are now favorable for heightened business sector involvement, we also need to be cautious about assuming that the current state of affairs will continue, or at least continue in its present form. For one reason, while allowance trading systems have been approved or initiated, the systems are not yet in widespread use (e.g. SO<sub>2</sub>) or, in the case of ozone precursors, the system remains to be designed and implemented. With regard to policy making itself, the coalitions between business and environmental interests are as yet very young, and it is not yet certain that the coalitions will stay intact through the often difficult periods of actual practice and implementation. Certainly, policy approaches of the business community itself have taken wide swings in direction in recent decades.

## The evolution of business involvement in environmental policy

Business involvement in environmental policy making has gone through a series of phases since the 1970s.<sup>1</sup> Toner (1990) describes these phases for Canadian environmental policy as consisting of three periods which also appear applicable to industry involvement in environmental policy in the U.S. The first phase, lasting through much of the 1970s, was characterized by confrontation. Industry viewed much of environmentalism as a fringe movement and often tried to ignore and openly thwart many of the demands being proposed by these groups. However, reaching back into the 1960s, the success of Rachel Carson's best-selling book *Silent Spring*, had increased public awareness of environmental dangers so that public support gradually began to shift toward environmental activism, and significant legislative action was passed to regulate industrial pollution.

With regard to policy implementation, this was the era of command and control policy. The two most significant pieces of legislation were The Clean

Air Act Amendments of 1970 and the Federal Water Pollution Control Act Amendments of 1972. Both of these sets of amendments established specific levels of pollutants which firms could discharge and led to the Environmental Protection Agency having to certify whether a particular pollution abatement strategy was appropriate. For example, a fierce struggle ensued over whether electrostatic precipitators were an appropriate technology for reducing emissions by thermal electric companies during the 1970s. While the EPA claimed that this was a sensible approach, industry felt that this technology was erratic and expensive. Aside from the obvious waste of this type of regulation, having government establish the technology and an arbitrary standard for emissions did little to provide incentives for industry to develop their own methods for reducing emissions.<sup>2</sup>

During this first phase, industry tended to shy away from becoming directly involved in the establishment of environmental standards and instead left it up to government to establish both environmental standards and appropriate technologies for meeting targets. This proved extremely costly for industry. Industry, rather than government, had the best knowledge of production technology and by allowing government to establish how pollution targets should be met, firms were forced to use less than optimal technologies. This was particularly inefficient because it failed to recognize that the cost of pollution control not only varied from industry to industry but often within establishments within the same industry. Depending on the method of production, the use of a mandated technology to reduce pollution for one firm might be reasonable while its cost to another firm in the same industry would be exorbitant. This emphasis on command and control policy also frequently led to litigation and delays in meeting targets. By failing to participate more fully and cooperatively at the start of the policy process, industry's role was simply to respond grudgingly to government policy and to try and minimize their costs of compliance by avoidance and by direct lobbying.<sup>3</sup>

The second phase identified by Toner spanned the early 1980s. During this period industry for the most part got its way. A weak economy, a back-to-back recession and a second energy crisis made economic growth and establishing a secure energy supply of primary importance to policymakers. Environmental concerns tended to get pushed aside as concerns over economic growth dominated. For example, the desire for a secure energy source made it possible for firms to begin to explore remote geographic areas which were once seen as environmentally fragile. Furthermore, environmental policies were seen as something which would retard economic growth at a time when growth itself had experienced an unexpected



disappearance. Given the "command and control" nature of environmental policy, it was little wonder that environmental policy was perceived to hold very steep growth retarding consequences. The perception was still that growth and a clean environment were natural rivals.

By the mid-1980s perceptions began to change. As the economy revived, attention turned to a series of environmental disasters which made it evident that more had to be done in the environmental policy arena. Industrial disasters such as Union Carbide's experience in Bhopal, the Exxon Valdez oil spill in Alaska and the Chernobyl nuclear plant accident increased public awareness of the potential dangers to the environment. Furthermore, global environmental issues such as the destruction of the Amazon rain forest, the depletion of the ozone layer and fears of global warming all put environmental concerns into the forefront. Renewed interest in emissions standards and regulations governing all aspects of toxic discharge from air to water to disposal emerged during this period.

However, what has made this third era different from the 1970s is that industry is playing a more active role. They are investing far more time, effort and money into the process of environmental policy making. Part of this effort is to fuse economic growth and environmental protection under one banner, usually referred to as sustainable development. The idea is that processes can be devised which both permit economic growth and also accommodate a healthy environment. U.S. industry's interest in increasing its stewardship of the environment stems from several reasons. First is the cost of environmental regulation. The U.S. already spends more than any other nation on environmental cleanup, running at just over 2 percent of GNP and rising. To put this in perspective, this figure equates to roughly 40 percent of U.S. defense expenditures.<sup>4</sup> In 1990, total spending for just pollution abatement and control (in constant 1987 dollars) amounted to an estimated \$81.8 billion.<sup>5</sup> Even at the local level the cost of complying with existing environmental mandates is staggering and has implications for industry. A recent study on the cost of compliance for existing environmental legislation for the city of Columbus, Ohio estimated that the city will need to spend \$1.088 billion (in 1991 dollars) over the next ten years. The magnitude of these costs is obvious when considering that the entire city budget for 1991 was \$591 million.<sup>6</sup> It is likely that in order to pay for these environmental compliance costs, local governments will have to pass higher taxes which in part will have to be absorbed by industry. These high costs are coming at a time in which industry is increasingly being challenged to be a low cost producer of high quality goods. By becoming more involved in the policy

process industry hopes that efficient environmental solutions can be reached which do not erode the competitive position of U.S. firms. This new era is typified by industry becoming involved in the mechanics and process of environmental policy.

## A typology for industry involvement

There are different types of involvement which industry can use in attempting to influence environmental policy. The forms of business involvement and approaches to environmental policy are highly diverse, so that a typology becomes very helpful and insightful. Some forms are highly likely to survive the test of time. Because of their inherent logic, surely, internal efforts of firms to eliminate their own emissions and thereby circumvent the web or potential web of regulation illustrates the former. At the other extreme, efforts of the business community to form alliances with environmental interest groups or with wider groups of stakeholders must be seen as fledgling.

For the purposes of this paper three types of involvement are described with each requiring differing levels of interaction with other policy actors. These three types are:

- establishing company or industry-defined voluntary emissions targets which exceed current regulatory standards;
- increased industry initiated involvement in the regulatory process to insure efficient implementation of new standards, (while this can include traditional lobbying it is really intended to bring industries' technical and production expertise to the regulatory process in cooperation with regulators);
- industry led consensus based policy design, involving outreach to all stakeholders in the community, outside of and often circumventing the regulatory process.

In considering the first category, often the most accessible measure for industry is to set internal targets for environmental goals. For example, this is the case when firms voluntarily adopt goals for toxins and hazardous waste. In adapting to such a reduced emissions production process, the firms want to establish their own timetable for meeting intermediate objectives and to be able to use the best technology available for efficiently reaching these goals.

A good example of this is 3M's strategy to reduce air emissions by 90 percent by the year 2000 and solid waste discharge by 50 percent by the year 2000. 3M wants to accomplish this by using the most efficient technologies available for reaching these environmentally desirable goals while at the same time reducing the inflation adjusted cost per unit of most products by 10 percent.<sup>7</sup> Such an approach allows companies to alter their production process to meet environmental targets while enhancing (or at least doing minimal harm) to the company bottom line. Such goals can be facilitated by taking a "complete lifecycle" approach to designing products. For example, prior to actual production, AT&T designs products that can be more easily recycled at the end of their useful life. Through such efforts companies are able to promote a "green" image and to promote both environmental and sound industrial policies, often forestalling outside regulation. Since these processes are internal within companies, they are achieved without significant direct involvement of government or environmental groups.

Other internal "green" policies include expanding and elevating the influence of corporate environmental staffs.<sup>8</sup> IBM has created a new position of vice president of environmental health and safety with a staff of 30 people in an effort to insure that corporate policies on the environment are carried out. The goal is to prevent plant managers (who may be more interested in production than prevention) from ignoring corporate standards for pollution control. Similar offices have been established by DuPont and Polaroid. In the case of DuPont, the company's CEO is the chief environmental spokesman. Ciba-Geigy has set up a special environmental auditing group which reports directly to the firm's CEO to ensure environmental compliance. These are all examples of companies setting up internal enforcement mechanisms to insure that internal pollution control measures are adhered to, thereby forestalling regulatory intervention.

The second approach in this typology is to become more active in the regulatory process while also changing the character of the involvement. Industry has long used lobbyists to represent their views in front of legislative and executive offices. However the more recent wrinkle is to provide testimony and input to regulatory bodies by using technical experts rather than industry spokesmen. The concept is not to try and prevent or reverse environmental regulation but rather to insure that the regulation takes into account the available technology for meeting environmental goals. By taking a more active role at the regulatory level, industry is trying to share what it knows about the production process with regulators to insure that economic dislocation can be minimized and reasonable standards can be devised for

environmental regulation. If industry fails to take the opportunity to share its technical knowledge during the regulatory process, it is likely that the regulations may be unduly harsh. Similarly, industry can provide similar technical guidance at the legislative stage where information pertinent to proposed policy is synthesized and interpreted. For example, during the reenactment of the Clean Air Act, the EPA asked the American Electric Power Institute if industry would support the Act if certain points which had previously been supported by industry were included. When industry balked at supporting the Act, they were closed out of the legislative process and the reduction of SO<sub>2</sub> emissions standard was set at a much higher threshold than had been originally discussed. To insure that such standards are set responsibly from industry's perspective they must be willing to share their knowledge of the production process and technology to guide regulators to provide efficient regulations.

The third level of involvement requires the greatest outreach on the part of industry. This is the attempt by industry to become involved in environmental policy at its inception through a program of consensus based policy making. At this level a process of industry outreach is used to build a cooperative environmental policy for all stakeholders. An example of this is occurring in Canada under the name "the New Directions" group.<sup>9</sup> In the case of the New Directions group, environmentalists and business leaders have sat down to establish environmental goals for the nation. This multi-stakeholder group has set an agenda which focuses policy on establishing a prioritization scheme for toxic pollutants. This should in time be followed by a process for reducing or eliminating them. The emphasis here is to clearly define the risks of various toxic emissions and to insure that through the dissemination of good science, industry and the public can arrive at a consensus on how priorities are set to reduce toxic effects on the environment.

A clear example of the costs of not becoming more involved in this process is shown in the costs of toxic cleanups as mandated under Superfund and related state legislation in the U.S. Superfund has already cost the U.S. government \$10 billion in cleanup while companies found liable for contamination have been assessed \$4 billion. This cost has been borne despite the fact that only 63 sites have been cleaned up out of 1,200 on the Superfund list.<sup>10</sup> In the process, Superfund has vastly expanded the liability for toxic waste cleanup to include previous owners, banks and other lending institutions. Because industry largely failed to try and build a consensus as to how toxic waste cleanups should be handled and failed to provide information on the actual extent of contamination and its risks, cleanups have been undertaken at

staggering costs. Even within the designated Superfund sites, there are wide ranging and uncertain risks from contamination. Poor communication between industry and the public has led to perhaps erroneous public perceptions that anything short of complete removal of the soil in the affected site is inadequate. Unfortunately, such a policy may result in massive cleanup efforts when a more limited cleanup effort would result in greater overall health and aesthetic benefits per dollar expended. For example, an abandoned factory located in Holden, Minnesota containing toxic chemical residues could be sealed off for approximately \$71,000. Another \$3.6 million would clean up virtually all remaining residues and bury the remains under a clay cap. However, the EPA will be spending from \$13.6 to \$41.5 million to make the site immaculate even though it is unclear whether such an effort is needed to protect human health.<sup>11</sup> Fortunately, industry will have the opportunity to try and revise the Superfund cleanup guidelines when the program comes back up for reauthorization in 1994. By applying standards of good science and building a broader understanding with other constituencies, industry has the opportunity to help craft a Superfund cleanup provision that provides greater benefits for society.<sup>12</sup>

## The Great Lakes as a laboratory for industry involvement

This three level typology provides examples of how industry can influence the environmental policy process using varying levels of involvement with outside actors. Environmental policies can be established internally to forestall action by government; they can be established during the regulatory process in order to assure that the legislatively established target can be reached efficiently or they can be established during the inception of policy by meeting with various stakeholders and establishing consensus based policies.

Recent developments in environmental policy in the Great Lakes region provide an excellent example of how industry actions relate to this typology. The Great Lakes region is a natural laboratory for examining such policy developments given its heavy concentration of industrial sites and the existence of a well-defined and well-studied ecosystem. For example, 70 percent of Canadian manufacturing and 60 percent of auto manufacturing is located in the Great Lakes Basin. At the same time significant environmental cleanups are already underway in 43 areas. Figure 1 illustrates the relatively high concentrations of toxic waste, water and air emissions in the region. The Great Lakes region also provides an interesting policy laboratory since binational policies are required given the economic and environmental

integration of the region between Canada and the U.S.. Binational treaties dating back to the 1909 Boundary Waters Treaty demonstrate the long history of policy making in the region. The interconnectedness of the Great Lakes basin as both an economic and environmental resource is well illustrated by the number of binational agreements which have been crafted particularly since the 1980s (see table 1).

Additionally, the concentration of industry in the Great Lakes means that there are some well identified environmental challenges. Great Lakes states are disproportionately represented among those states with either the highest or above average levels of toxic waste, tainted water and polluted air.

Enhancing the potential for effective environmental policy making in the Great Lakes is the existence of more than 650 organizations which focus on the Great Lakes region. They range from the governmentally established U.S.-Canadian International Joint Commission which is charged with resolving boundary water disputes and dealing with water quality concerns to numerous non-profit organizations such as the Great Lakes Commission, and the Council of Great Lakes Governors to name just a few. All of these organizations are actively involved in charting environmental policy for the region. However, prior to the formation of the Council of Great Lakes Industries (CGLI) in 1990, there was no organization whose primary interest was in providing an industry point of view on these issues. The Council was built on the active interest of firms located in the region to promote an economically and environmentally viable Great Lakes.

CGLI is designed to allow firms to access the policy process at all three levels of the typology suggested in this paper. At the first level, the setting of internal standards by firms, the Council has created a Baldrige-type total quality environmental management award (TQEM). Just as the Baldrige Award is designed to recognize firms that integrate total quality into their management practices and principles, the Council's award recognizes firms that show a commitment to environmental management. The award will provide industry models and benchmarks for techniques used by firms to integrate quality environmental management practices. The award fulfills this first level of industry involvement by showcasing internal efforts by companies to establish good environmental practices. But TQEM as a management system in and of itself is of great value. independent of the award, and the system proposed by CGLI provides a model for TQEM implementation. Efforts such as these point the way toward how firms can set programs which enhance the environment while contributing to company

economic objectives by producing programs before they are required by government regulation.<sup>13</sup>

The CGLI also is active at the second level of industry involvement in the environmental policy process by offering industry's technical perspective on regulatory matters. For example, Dr. Grace Wever of Eastman Kodak and the first president of the Council testified before the International Joint Council on recommendations to revise the Canada/U.S. water quality agreement in November of 1991.<sup>14</sup> Dr. Wever's testimony provides a good example of how industry stewardship and increased involvement in the policy process can help reduce misunderstandings and improve policy making. In her testimony, Dr. Wever noted that voluntary programs such as "Responsible Care" created by the Canadian chemical industry and adopted by many U.S. firms, have helped promote the agreement's 1987 goals of restoration and preservation of the lakes. This testimony also reflects industry's belief that environmental policy is rarely static and that agreements such as this need to be constantly updated to reflect the changing knowledge base in the field. Static lists of objectives for chemicals of concern fail to recognize new understandings of aquatic ecosystems. Similarly a static goal of zero discharge is not appropriate if it is a goal in itself. The concerns should be the protection of health and the environment guided by a goal of phasing out bioaccumulative toxic chemicals in applications where the risks outweigh the benefits of continued use and where acceptable substitute chemicals and/or processes exist. Providing an industry wide perspective is a new approach. The Council also works directly as an advisor to both the U.S. EPA's Great Lakes regional office as well as serving a similar role or joins EPA/Environment Canada committees.

Finally, the CGLI is trying to reach out to other stakeholders in the region to develop a consensus on future policy options. At its first annual meeting held in Rochester in September of 1992, leaders from business, academia, government and environmental organizations came together to build a better understanding of policies which can support both a strong industrial base and a healthy environment. By opening up such a dialog, new policies can be crafted which have the potential of being in the interests of both parties. An example of this are the market based emissions trading allowances which are a part of the Clean Air Act Amendments. While this establishes an environmentally desirable goal of reducing SO<sub>2</sub> emissions, it allows this goal to be reached by allowing firms to trade emissions allowances. To use the example of the utility industry, this allows firms to meet the more stringent standards by either switching to a cleaner fuel source, installing pollution

control devices or buying emission allowances from a clean utility. This type of policy design is consensus based and can point the way to more efficient and effective environmental policy.

## Can such an approach work for Great Lakes Industries?

Great Lakes industries are making strides toward pollution reduction and increasing their voice in the policy process. By guiding their environmental strategies by responsible stewardship of the environment and intelligent economic decision making, industries in the region are demonstrating credible programs for meeting environmental challenges in efficient ways. One excellent example of this approach was a recent joint project between Chicago headquartered Amoco and the U.S. EPA designed to find new approaches to environmental control. The "Yorktown Project" allowed the EPA to do extensive testing for emissions at an Amoco refinery in Virginia. Amoco was already spending nearly \$41 million to meet current EPA regulations, although the company suspected that emissions targets could be met more cost effectively if EPA regulations could be tailored to recognize differences between industrial facilities. In an unusual move Amoco and the EPA decided to cooperate and measure specific emissions from sources throughout the refinery. In the process, Amoco and the agency were able to develop a consensus on how to handle the emissions.

The findings of the study were surprising. First, it was discovered that the refinery could achieve even greater pollution reduction for about \$11 million--far less than \$41 million required under current regulation. Second, current regulations completely ignored a much larger pollution source in the refinery, which could be corrected for about \$6 million. While the process of the joint study was at times difficult, it demonstrated that the goal of fewer emissions could be met at a lower cost than had originally been mandated through EPA regulations.<sup>15</sup>

The following are just a handful of other examples which demonstrate industry efforts in this area.

- General Motor's Harrison Radiator facility in Ohio has eliminated the use of 1,1,1-Trichloroethane in its degreasing operations. This was accomplished through a material and process substitution and the elimination of a manufacturing step. While the project cost GM a \$144,000 capital investment, it produced an annual savings of \$118,000



and reduced 1,1,1-Trichloroethane emissions by 300,000 pounds per year.<sup>16</sup>

- Illinois' "cash for clunkers" program is a cooperative program between industry and the Illinois Environmental Protection Agency to remove high emissions vehicles from the road. This is patterned after a program initiated by Unocal Corporation in California where the company paid \$700 per vehicle for pre-1971 cars which were then scrapped.
- Stelco, a Canadian steel company has had less success recovering the costs of its environmental programs but it has still made progress in the area. For example the company now has an acid regeneration facility for recycling hydrochloric acid used to clean the surface of steel. While the process allows the company to recover \$3.3 million in acid, the maintenance cost of the procedure is \$6.3 million.<sup>17</sup>
- the pulp and paper industry has aggressively pursued both recycling and the reduction of mill wastes. The industry is the largest post consumer recycler in the nation, recovering 30 percent of all of the paper and paper board in the nation and with a goal of reaching 40 percent by 1995. During the decade of 1978-87 the industry reduced airborne lead pollution by 88 percent, sulfur dioxide pollution by 38 percent, carbon monoxide by 27 percent and particulates by 23 percent. In two years the industry's bleached pulp mills have been able to reduce dioxin emissions to 1 percent of the total in the U.S. from natural and man-made sources. In the Great Lakes, this equates to about 20 drops per year. Similarly on the Canadian side of the border, 99 percent of the dioxin emissions will be eliminated by 1993.<sup>18</sup>

For U.S. industry as a whole, the EPA estimates that the volume of toxic chemicals released by the 22,650 industrial plants in the U.S. has fallen by 1.3 billion pounds to 5.7 billion pounds a year since the SARA toxic inventory list was begun in 1987.<sup>19</sup>

## Limitations to this approach

Industry led environmental policy making does have its limits. To begin, even large companies have found it hard to implement stringent environmental regulations in the face of profit pressures. Individual production facilities are still going to be more interested in meeting

production targets than even company supported environmental standards. Without close monitoring, well-intentioned company pollution standards may be ignored. This monitoring problem is particularly a dilemma when it comes to pollutants from small companies. While large industrial sites are visible and easy targets for monitoring, smaller operations with less visible emissions may be able to avoid regulatory scrutiny. Furthermore, these small companies are unlikely to have the resources to hire environmental managers and to have the access to the "good science" which is needed to know whether their pollution levels are a hazard to the environment. However one possible model for bridging this gap may exist with the National Center for Manufacturing Science (NCMS).<sup>20</sup> In 1991, NCMS launched the Environmentally Conscious Manufacturing Program designed to bring together a broad range of mostly mid and small sized manufacturers to solve environmental problems. The program is already looking at environmentally acceptable alternatives to the use of lead in solder used by electronic firms as well as working toward a comprehensive database on the physical properties and pertinent environmental information on popular solvents. Collaborations such as these can help small and mid sized companies move toward greener production even if they lack the resources to set up internal programs by themselves.

Compliance monitoring costs also provide a hurdle to market-based approaches. In command and control programs, regulators typically prescribe the technique for meeting a given standard. Since the ability of the technology to meet the standard was known, regulators could be relatively certain that installation of a particular apparatus would lead to compliance. In contrast by allowing companies to adopt voluntary discharge flexibility in meeting targets, it is far less certain that a company's internal program will meet those target levels without monitoring of emissions from point sources.

An additional problem which may make industry led efforts less satisfactory is a lack of green technologies to replace more established production methods. For example, consider the printing industry and attempts to substitute natural inks based in soy beans, and to use less harmful solvents for cleaning their equipment: in both cases, the green technology could only be used in a limited number of cases. While soy ink is used by most newspapers, it has not proven to be a good substitute in other forms of printing. Similarly the use of citrus juices to clean presses has proven to be seriously inferior to the use of more environmentally damaging petroleum based products.<sup>21</sup> A suitable green technology must exist for industry led approaches to succeed.

There is also an information problem which needs to be addressed. The costs of environmental control are often hard to measure so that setting appropriate emissions target levels, tax penalties, or emissions allowances is highly uncertain. The case of stabilizing U.S. emissions of carbon dioxide provides a good example. Two studies looking at the use of a carbon tax to reduce carbon dioxide emissions by encouraging conversion to cleaner energy technologies projected the necessary cost of the tax as ranging from only \$6.51 per metric ton of coal to \$100 per metric ton.<sup>22</sup> Such a wide disparity shows how easy it is to arrive at two widely differing costs for the same pollution control strategy. This points to the need for consensus on estimation techniques and starting assumptions when establishing environmental control costs. These disparities become even more pronounced when trying to determine how much should be spent today to avoid future pollution. Depending on what discount rate is used, the amount which should be spent now to avoid future pollution can show a similar range. For example assume that a particular pollutant will cause \$100 million dollars in environmental damage 100 years from now. Society can either choose to invest in new technology and prevent the pollution or it can invest in other aspects of the economy and hope that a century from now the economy will be richer and will be able to absorb the \$100 million easily. If a 10 percent discount rate is used to judge the value of investing in pollution abatement to avoid the \$100 million environmental problem in 100 years, a total investment of only \$7,305 would make sense right now. Spending more would only reduce the investment which could be made in other valued social goods such as education without an appreciable benefit. However, if a two percent discount rate is used, \$14 million in expenditures today can be justified to avoid \$100 million in pollution expenditures.<sup>23</sup>

Finally, there is the critical issue of whether these fledgling alliances between business and environmentalists, or between business and all stakeholders, will be able to stand the test of time. While an approach designed to build broad consensus holds great promise, it is unknown whether stakeholders will be willing to stay committed to such an approach if they do not get their way. Finding consensus on some environmental issues has already proven difficult even when industry has tried to work with other parties. For example, the April Timber Summit showed that proposals to use low impact logging techniques were met with opposition by environmental groups who are opposed to any harvesting of the forest.<sup>24</sup> Even industry's own internal efforts to set emission goals may ultimately prove to be their own undoing. Legislative and regulatory response to such initiatives has not yet unfolded. When it does unfold, the "reward" for green initiatives may only prove to be

increased regulatory stringency rather than improved industry profits. This points out that industry will need to become increasingly savvy in their dialogues with the public and public regulators.

## Conclusion

Business involvement in formulating environmental policy is growing and it has the potential to lead to more efficient and better environmental regulation. Organizations such as the Council of Great Lakes Industries provide models for channeling industry participation and ensuring that economic and environmental concerns can be successfully merged. While this industry interest is not without potential difficulties, the outcome can provide greater benefits than the previous policy reliance on command and control strategies.

## Footnotes

<sup>1</sup>See, Glen Toner, *Whence and Whither: ENGOs, Business and the Environment*, Carleton University, Ottawa, Canada, October, 1990.

<sup>2</sup>Edwin Mills, *The Economics of Environmental Quality*. W.W. Norton, New York, 1978 , pp. 181-223.

<sup>3</sup>For a discussion of the limitations of conventional environmental protection strategies see, Cale Case, *Emissions Reduction Trading in the Chicago Metropolitan Area*, prepared for the Illinois Environmental Protection Agency, May, 1992, pp. 2-2:5.

<sup>4</sup>*The Economist*, "Environmentalism runs riot," August 8, 1992, pp. 11-12.

<sup>5</sup>Gary L. Rutledge and Mary L. Leonard, "Pollution Abatement and Control Expenditures, 1972-90", *Survey of Current Business*, U.S. Department of Commerce, Bureau of Economic Analysis, June, 1992, pp. 25-41.

<sup>6</sup>Environmental Law Review Committee, *Environmental Legislation: The Increasing Costs of Regulatory Compliance to the City of Columbus*, Report to the Mayor and City Council of the City of Columbus, May 13, 1991.

<sup>7</sup>*Business Week*, "The next trick for business: taking a cue from nature," May 11, 1992, pp. 74-75.

<sup>8</sup>Claudia H. Deutsch, "Giving the environment teeth," *New York Times*, March 3, 1991, section 3, p. 29.

<sup>9</sup>for more on the New Directions group see, Denis Wilcock, "Living in a goldfish bowl: environmental consensus building in the '90s," *Economic and Environmental Challenges to Great Lakes Competitiveness*, Remarks presented at the annual meeting of the Council of Great Lakes Industries, Rochester, N.Y., September 16, 1992, pp. 13-17.

<sup>10</sup>Michael Fumento, "Superfund: Hazardous Waste?" *Investor's Business Daily*, October 22, 1991 pp. 1-2.

<sup>11</sup>Fumento, p. 2.

<sup>12</sup>Susan J. Sadler, "Enter the world of CERCLA and leave your rights at the door," *Economic and Environmental Challenges to Great Lakes Competitiveness*, Remarks presented at the annual meeting of the Council of Great Lakes Industries, Rochester, N.Y., September 16, 1992, pp. 28-31.

<sup>13</sup>Grace Wever and George F. Vorhauer, "Development of a Baldrige-type total quality environmental management award for the Great Lakes region," *Corporate Quality/Environmental Management II*, 1992, pp. 195-200.

<sup>14</sup>Grace Wever, "Policy advice and recommendations on revision of the Canada/U.S. water quality agreement," testimony presented before the *International Joint Commission Water Quality Board*, November 20, 1991.

<sup>15</sup>Caleb Solomon, "What really pollutes? Study of a refinery proves an eye-opener," *The Wall Street Journal*, March 29, 1993, section A, p. 1.

<sup>16</sup>P.E. Gerwert, "Pollution prevention initiatives in the automobile industry," *Remarks Presented at the Pollution Prevention Forum*, International Joint Committee Biennial Meeting, Grand Traverse Village, Michigan, September 30, 1991. pp. 6-9.

<sup>17</sup>Alexander E. Adam, "Pollution prevention and its costs in the steel industry in Canada," *Remarks Presented at the Pollution Prevention Forum*, International Joint Committee Biennial Meeting, Grand Traverse Village, Michigan, September 30, 1991, pp. 10-13.

<sup>18</sup>J. Kirk Sullivan, "Environmental alternatives and the pulp and paper industry: an American perspective," *Remarks Presented at the Pollution Prevention Forum*, International Joint Committee Biennial Meeting, Grand Traverse Village, Michigan, September 30, 1991, pp. 22-24.

<sup>19</sup>Keith Schneider, "Toxic pollution shows drop in '89," *New York Times*, May 17, 1991, section D, p. 2.

<sup>20</sup>James A. Richter, "Advanced Manufacturing Application and Education Centers", *Shaping the Great Lakes Economy*, Federal Reserve Bank of Chicago, 1993. p. 20

<sup>21</sup>John N. Maclean, "Printers find that going 'green' can get sticky," *The Chicago Tribune*, December 27, 1992, Section 7, pp. 1,8.

<sup>22</sup>Margaret E. Kriz, "The New Eco-nomics" *National Journal*, May 30, 1992, p. 1285.

<sup>23</sup>Bruce Stokes, "What a difference a discount makes," *National Journal*, May 30, 1992, p. 1283.

<sup>24</sup>Charles McCoy, "Cut down", *The Wall Street Journal*, April 1, 1993, Section A, p. 1.

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**Table 1  
Global/Binational/National Agreements and Acts concerning  
the Great Lakes**

1909	Boundary Waters Treaty
1912	International Joint Commission established
1955	Great Lakes Commission legislation; Great Lakes Fisheries Commission established
1966	Sea Grant (NOAA) established
1968	Great Lakes Commission established
1972	Great Lakes Water Quality agreement (solid wastes, oil, phosphorus)
1978	Great Lakes Water Quality agreement (toxics)
1983	United Nations World Commission on Environment and Development
1985	Great Lakes Charter
1986	Oil drilling ban agreement; Toxic substance containment agreement; Great Lakes Survey plan update; Great Lakes Senate task force
1987	Revised Water Quality agreement; Bruntland Commission
1988	Great Lakes Border compact; Council of Great Lakes Governors Economic Development Commission/trade Act; Canada-U.S. Free Trade Act
1989	TSCA/Great Lakes Research Network; International Joint Commission Biennial Meeting
1990	International Joint Commission task force and roundtable on virtual elimination; Council of Great Lakes Industries established
1991	International Joint Commission Biennial Meeting; Lake Superior demonstration project

**Figure 1**  
**Toxic waste, water and air emissions in pounds per square mile, 1989**

