

THE ENVIRONMENTAL TRANSFORMATION of AMERICAN INDUSTRY:
AN INSTITUTIONAL ACCOUNT of ORGANIZATIONAL EVOLUTION in
the CHEMICAL and PETROLEUM INDUSTRIES (1960-1993).

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and the Sloan School of Management
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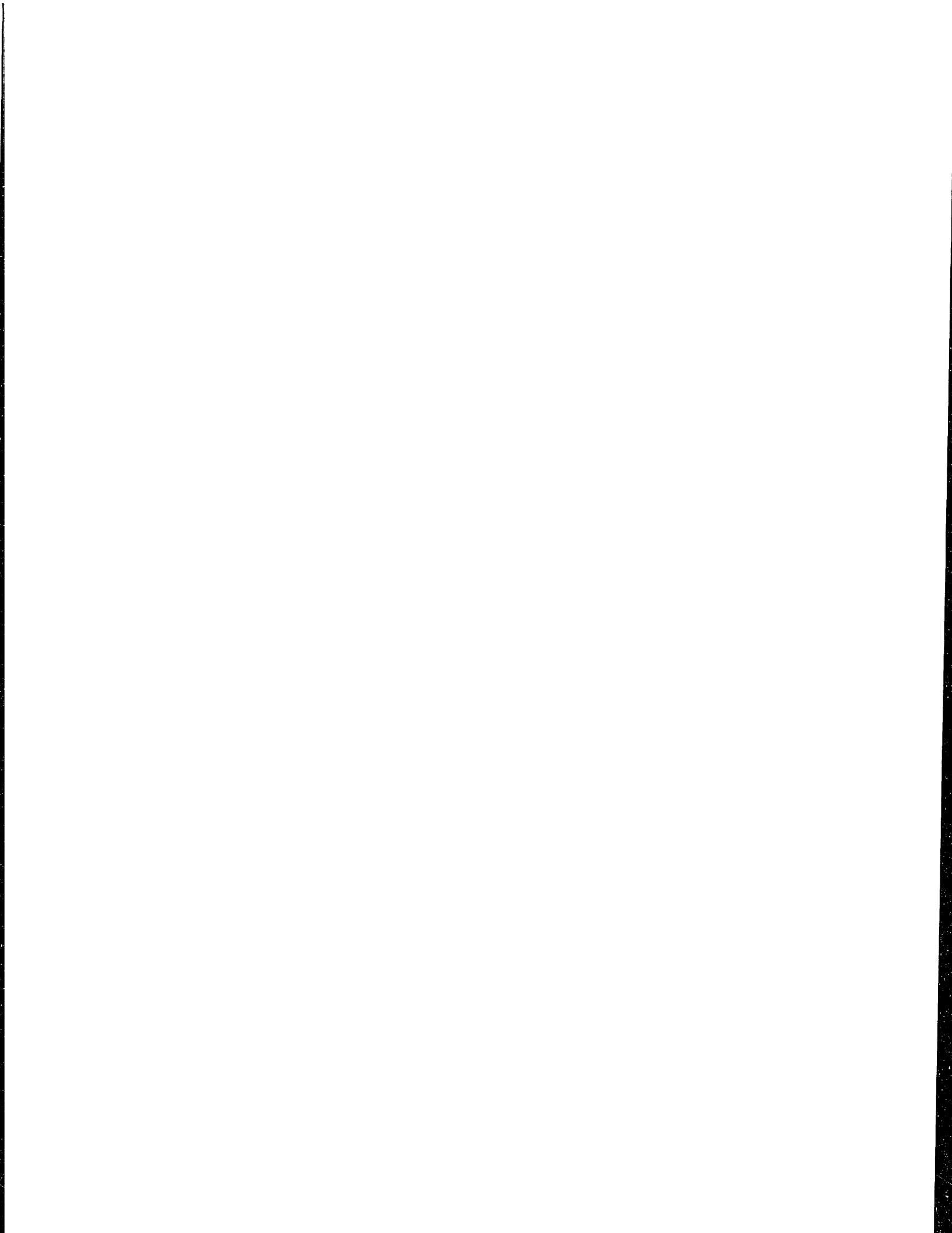
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ABSTRACT

How have the structure and strategy of the American industrial enterprise evolved in response to environmentalism, and what are the dynamics by which this transformation has taken place? To answer these questions, this dissertation draws upon the theoretical field of organizational behavior and in particular, institutional theory. In explaining the emergence of corporate environmental management strategies, I find that what we have been witnessing over the past three decades has been the co-evolution of *institutions* outside the firm and the structures and strategies inside the firm. Both have been continually evolving as new events or crises call attention to the need for new forms of broadly accepted legitimate behavior. The status of corporate environmental management is explained as the historical product of this external examination, the result of what is described as a negotiation among the internal members of the firm and external members of the *institutional field*: primarily the government, other firms sharing similar technological and political constraints, and external environmental interests.

Using a content analysis of two trade journals and a statistical review of federal case law, both studies being longitudinal from 1960 - 1993, this dissertation links the evolution of corporate attention and strategy, not simply with shifts in environmental costs, but rather with shifts in the makeup and power balances in the institutional field. Observed to be in an interactive relationship, the institutional field, corporate attention and corporate strategy were found to have evolved through a concurrent four stage evolution, with transitions in 1970, 1981-1983 and 1988-1990. To further build this analysis, case studies of the Amoco Corporation and the environmental investor group, the Council of Environmentally Responsible Economies (CERES) provide additional insights into the institutional model. These results have practical implications for the business manager, policy analyst and environmental activist and theoretical implications for the organizational theorist.

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Preface

"From Heresy to Dogma"

On February 9, 1993, the Amoco Corporation held its Worldwide Senior Management Meeting in Houston Texas. Three hundred fifty managers from the Corporation's oil, chemical and exploration subsidiaries questioned senior executives for two hours. When it came his turn to speak, Vice Chairman Lawrie Thomas carefully laid out the corporation's strategic framework for the coming decade. Integral to that framework was the company's goal of becoming an environmental leader. He explained, "It must be kept in mind that environmental costs will place an increasing burden on the industry cost structure as developing countries expand legislation. For an environmentally progressive company like Amoco this trend may represent a competitive advantage." As the Vice Chairman concluded his remarks, the Deputy Managing Director of Amoco UK, leaned over to Mark Eden¹, the Corporate Vice President for Environmental Health and Safety (EH&S) and asked "How does it feel to hear your heresy become dogma?"

From heresy to dogma. There's a poetic elegance to his choice of words. With succinct clarity, they capture the full range of the environmental transformation that this, the fifth largest US oil company and the eighteenth largest overall US company, has undergone. To move from heresy to dogma suggests not merely the technological transformation typically associated with corporate environmentalism, but goes to the heart of the transformation in values that has also taken place.

Bob Eden knows well the implications of what he has just heard, and how much work it has taken to get there. He joined Amoco in 1974 when environmental management had only 6 employees. Today, he oversees an independent department that numbers over 300. In 1974, he was a staff ecologist for a department with reporting responsibilities to Research and Development.

¹ A pseudonym.

Today, he is a Vice President, counseling the Board of Directors on the environmental implications of the company's strategic objectives.

The Vice Chairman's view that environmental protection can represent a strategic opportunity to this oil company was heresy when Mr. Eden first presented the idea over ten years ago. At that time, Amoco was part of an oil industry that generally agreed with the Chairman of Getty Oil's pronouncement that "the EPA is the worst enemy the oil industry has" (Oil & Gas Journal, 1979). Today, showing a completely different tack, the company is being lauded for a recently completed collaborative research project with the EPA at its Yorktown refinery.

I met with Mr. Eden to discuss Amoco's environmental transformation on two occasions, first in August 1993 and again in March 1994. In the first of those meetings, I ask him how it feels to have your heresy become dogma. "It scares me to death" is his response. "It's hard when your dreams are not only met but exceeded. What do you do then? Do you simply set new dreams? Its not that easy. I think I might be on my third or fourth plateau. The first may have been the establishment of the Environmental Health and Safety Coordinating Committee in 1982. The second may have been the creation of the Environmental Health and Safety Council in 1989. The revised Environmental Health and Safety Policy in 1991 may yet be another."

I find his selection of critical moments in the company's environmental evolution compelling. Rather than highlighting the company's technical accomplishments, such as the development of Amoco Ultimate gasoline which contains less poly-nuclear aromatic compounds and therefore produces less polluting emissions (and, incidentally is clear), or the chemical company's hazardous waste reduction program which has decreased the production of hazardous waste by over ninety-five percent since 1983, he has highlighted key

developments in the company's organizational evolution. I see, in his choices, an acknowledgment that the true measure of the depths to which environmentalism has been integrated into this corporation lies less in its technical accomplishments and more on changes in the organizational structure and strategy that direct such accomplishments. These represent the fundamentals of how a company gets things done and reveals the depth and permanence of any change for guiding future strategy.²

But, as the words heresy and dogma imply, the environmental transformation is not simply structural. It also involves a shift in the values of the company, in the way it views both the world and its place in it. As he states, "The only thing that makes environment different from other parts of the company is that it has a moral/ethical side to it. From a management systems standpoint it is no different. Cash management, for instance, has no moral implications." After a short pause, he continues "Well maybe, there is one other factor that makes environment different. Things like finance have only facts. But in environment there are 'facts' and there are 'gut-facts'. For example, on the fact side, it is true that carbon dioxide levels are going up. On the gut-fact side, sixty-four percent of Americans believe global warming is happening."

He sees the significance of this on his own company, "Companies like Amoco are very digital and deductive. What's amazing about this company is not what it does wrong, but what it does right. The process of getting oil out of

² So important are organizational considerations that the Environmental Protection Agency recently mandated management changes as part of an enforcement action against the United Technologies Corporation (UTC). On August 19, 1993, the region 1 office of the EPA fined UTC a record \$5,301,910 for violations of federal and state hazardous waste and water pollution control laws. As part of the settlement, UTC will implement an extensive multi-media environmental audit of all 26 of its New England facilities. The company must retain a management consultant to make recommendations on how to develop management improvement strategies to achieve compliance with every major environmental law at all of its facilities. According to the Press Release, "this is one of the most extensive environmental audits ever agreed to in an enforcement action. . .by this settlement we have not only corrected past problems, but have also acted to assure future violations will be deterred."

the ground, transporting it, refining it, marketing it and selling it is truly amazing. You have to ask how do we do these things right. Its because Amoco has a digital way of doing things that adds individual pieces up and makes the whole. But, environmental issues aren't entirely digital. They are also analog. The political world is wired completely the opposite way. They are an analog system. In the deductive world, we say if you don't agree with me, I'll get more data and convince you. In the political/analog world, they say that there is no idea that they can't sell, regardless of the data."

This is an important consideration for the engineers that manage Amoco's operations. No longer able to focus simply on the end-based results of engineering calculations, they must now understand the social, political, economic and cultural context of their task. Environmentalism signifies a redefinition of both technology and the engineer's role in developing it. So, whether it is the "moral/ethical" or the "digital/analog" implications of the issue , responding to environmentalism has initiated a completely new viewpoint from which Amoco has had to deal with its external environment, both the physical and the social. New concepts such as waste minimization, pollution prevention, and product stewardship are finding their way into all aspects of operations, from gasoline reformulation to process design and implementation.

But, what drives a major petro-chemical company like Amoco to make this fundamental transition? This is the central question I have tried to address in this dissertation. Was it internal leadership and foresight? Was it the demands of others outside the firm? Was it a response to external events? Was it the costs of environmental compliance? Through successive questions, [the EH&S Vice President] slowly reveals the complexity of what I see as the underlying answer.

Initially, he cites internal leadership and regulatory compliance. "In 1970, the start of the Environmental Health and Safety (EH&S) function was due to the

development of NEPA and the requirement for environmental impact statements. We started to have to build and maintain pollution control plants. These were mostly water treatment plants. Around 1979, there was a change of heart within the EPA from looking at environment as a 'bugs and slugs' issue to an issue of human health. It was no longer an animal issue. This was accompanied by a focus on occupational medicine and air pollution control. The centralization and growth that Amoco experienced in the late 1970s was not an attempt to follow what other companies were doing. We're too stubborn for that. It was an attempt to respond to this shift within EPA."

His response suggests a completely self-directed company attempting to comply with federal and state environmental laws. But, did external events have any impact? I ask him about the corporate effect of the 1978 Amoco Cadiz shipwreck off the Brittany Coast of France. At this, he acknowledges some external influence. "The Amoco Cadiz disaster was coincidental in its timing with the growth in EH&S in the early 1980s. It did have its effect though. It forced people to reconsider the implications of environmental mismanagement. It taught us that if you don't do the right thing it can cause much pain. The consequences can be expensive both financially and in terms of the company reputation. It was a real wake-up call." Quick to add the positive, he adds, "There was another major event at that time that you are missing. The other wake up call was the construction of the Cooper River plant. It started in 1978 and won a national award for best environmental development. This was around the same time that Dow was having its troubles siting a plant in California. This taught us that if you do the right thing there can be great benefits."

If external events can affect corporate change, then it stands to reason that external interpretations of those events can also be influential. I ask him what

caused the company's 1989 explicitly stated shift from compliance focus to proactive management in its 10-K and internal reports. Was it his and his department's ability to cause Amoco to change or was it Amoco following along with the changing times? At this point, he finally acknowledges the role of external players. "I've always felt strongly about being proactive. My ability to cause the organization to think like that has grown. I'm not sure what the factors were that allowed me to do that. Many of them were probably external. But, I look at it like football. Other people can make you an opening, but you still have to guide the football through it. Incidentally, that may hold true for the EPA as well. They may have to follow the times. But then again, the EPA is also the referee. They can call back the play, and often do."

Reflecting on the evolution of the external environment, he believes that "In the last ten years, environment has been driven by an owner's movement placing pressure on companies for greater environmental performance. I think Joan Bavaria [founder of the Council for Environmentally Responsible Economies (CERES) and co-author of the Valdez Principles] sensed the owner's movement and acted on it. CERES represented a piece of what was fundamentally going on, owners of corporations trying to effect change in corporate governance of environmental issues. Without CERES things could have happened as they did, but perhaps later. It was part of a whole owner's movement. I believe that the next ten years will be driven by customers. Just look at what is happening in Europe with things like the green seals program."

In the fabric of Mr. Eden's words, I see the threads with which to weave the layout for the dissertation I am presenting here before you. The issue of environmentalism represents a blending of the physical ("facts") with the social ("gut-facts") aspects of the corporate reality. Adapting to this dual-faceted issue requires a completely new concept of the firm's purpose and how it is achieved

(shifting from "digital" to "analog"). In essence, it requires the redevelopment of new values corresponding to the "moral/ethical" implications of the issue.

The essence of what environmentalism means for the corporate enterprise lies not primarily in its technical accomplishments but more importantly in its structural, strategic and cultural transformation. This transformation is driven by decisions made internally but within the bounds and perspectives of the external social environment in which the organization exists, or what I will refer to as the *institutional field*. As Mr. Eden put it, his ability to direct change within Amoco was both internally and externally empowered. External interests made the opening, but he and the EH&S department got the ball through it. Events play a critical role in facilitating the evolution of this institutional field. Whether they are events specifically directed at the individual firm, to which it can extend its own interpretations (such as the Amoco Cadiz spill and the construction of the Cooper River Plant), or events that affect the entire industry through one firm (such as Dow's problems in siting a plant in California in the mid 1970s), both the institutional field and the internal structure of the firm is altered. This alteration of the institutional field is marked by the empowerment of new institutional interests, such as what he calls the owner's or the customer's movements, which, in turn, push corporate management to initiate the creation of new organizational forms and strategies.

His assessment that CERES is as much a product of the institutional field as it is a change agent of that field acknowledges the circular nature of this entire process. All institutional members — industry, external interests, and the government — both affect and are affected by the institutional field. Corporate strategy and structure emerge in response to institutional demands. Yet, that resultant strategy and structure, in turn, cause changes within the institutional field. The process is continually driving towards convergence until external

events disrupt the emerging status quo and start the process again. However, events are time and context specific. It is not simply their emergence that causes change, but the social interpretation that causes change. Who makes up the institutional field that will form that social interpretation becomes as important as the event itself.

To look at the environmental transformation of American industry, one cannot isolate the individual firm as the sole unit of analysis. Corporate environmentalism must be viewed less as a purely internal process and more as a social interaction in which external interests and actions empower an internal transformation. As those external interests change in both makeup and power balances, so too will the internal structure and strategy of the firm. In other words, the firm changes within the context of an economic, political and social system that is itself, also changing. To profess, as many today do, that industry is finally seeing the light is to argue that the light has always been there to see. In fact it has not. How companies define their responsibility towards the environment is a direct reflection of how we, as a society, view the environmental issue and the role of business in responding to it.

In the 1970s and early-1980s, government was the primary definer of those societal expectations, thereby limiting uncertainty and allowing industry to respond with compliance strategies of secondary importance to the mainstream operations. Today, the symbol of regulatory compliance no longer represents to society the goal of environmental responsibility. The institutional field has grown to include an ever-widening variety of institutional interests, such as environmental groups, investors, and insurers. In responding to such wide-ranging demands, companies are searching both inward and outward for answers to what society expects of them.

The external component of this search process is exemplified in part by an aspect of the dissertation you have before you. That I was granted admittance, and more importantly that Amoco chose not to remain anonymous³, demonstrates the company's growing external focus. The company wants both its efforts known and new perspectives on how to deal with the environment. In writing this thesis, it is my hope to develop a greater understanding for this phenomena and, in the process, aid in their search. While, I have an academic responsibility to maintain sound logic and offer contributions to the academic community, I also have a professional obligation to develop conclusions that are useful and relevant to the industrial community. As the various members of my committee have made clear, it is difficult to accomplish both purposes. I hope that I have succeeded in that goal.

³ Although it is questionable whether a description such as: "a *Fortune* 50 oil company based somewhere in the midwest" could actually hide its identity.

ACKNOWLEDGMENTS

Just as my research asks how the external social environment influences the evolution of the corporate organization, so too must I ask how much my own external social environment has influenced the thoughts and perspectives I have developed herein. In the final analysis, every personal endeavor is, in part, a collective effort. With this in mind, I must give credit and thanks to those around me with whom I have discussed my thoughts, hopes and concerns.

My thanks to Professor Fred Moavenzadeh for funding my research, thereby opening new doors to expand my understanding of the full social, political and economic implications of engineering as it is practiced today. My thanks to Dr. John Ehrenfeld, my teacher in environmentalism. The informal discussions, the countless books to which he has directed me and the general enthusiasm he has brought to my research has helped me to remain true to my practical side of understanding corporate environmentalism. Likewise, to Professor Bill Pounds, my thanks for his continually important reminder "what's the point." This is a question that I tried to ask myself in each step of my progress.

In what may seem a contradiction, I also thank Professors Willie Ocasio and Bob Thomas who pushed on the theoretical relevance of my work, thereby creating the difficult balance I tried to maintain between theory and practice. Although Willie admittedly expressed more interest in the theory than the phenomena, his infuriatingly constant comments of "you're getting close, but your not quite there yet" pushed me to focus with ever greater clarity on what exactly I was trying to say. To my surprise, I have found that the theory, rather than being merely an explanatory tool, can also be an enlightening lens, helping to see things not otherwise visible. And, although Bob "pulled out" of my committee over a year ago, his private tutoring in field research methods and his

extensive comments on my drafts have been a more than generous contribution of his time. His theoretical prodding of the question, "what is environmentalism" have taken me to new depths in understanding what I initially took as plainly obvious.

My thanks to Professor David Marks, who acted as my guidepost on the general doctoral process. Whenever confusion and desperation began to set in, he would show me where I was in the context of the entire process, helping me to relax and see that this would all end one day. Many an eyebrow has been raised at my having such a large committee, and I do not freely recommend it to those who follow me, but I feel the richer for it.

My thanks also go to the executives at Amoco who provided such generous financial, intellectual and personal support by participating in this research. In particular, I thank: Walter Quanstrom, Jerome Houren, Robert Batch and Lawrence Heidemann.

The list cannot end with those directed my research. There are so many that have supported my stay here at M.I.T. I will extend my thanks to each of you personally, but recognition is in order. Thanks to my friends from Engineering, Sloan and Harvard: Dan Crews, Scott Phelan, Pat Vargas, Danielle Severino, Maurizio Sobrero, Florian Zettlemeyer, Mary O'Sullivan, Nancy Staudenmeyer, Leslie Perlow, Wendy Guild, Beth Anne Wilson and Omar Toulan.

Part One: Introduction

*"We reduce things to mere Nature in order that we
may 'conquer' them. We are always conquering
Nature, because 'Nature' is the name for what we
have, to some extent, conquered"*

C.S. Lewis (1953: 44)

Chapter One: Introduction

1.1 Introduction

In a 1970 *New York Times Magazine* article, economist Milton Friedman described the actions of any company making pollution control expenditures beyond that which "is required by law in order to contribute to the social objective of improving the environment" as "pure and unadulterated socialism" (1970: 32). Consistent with Friedman's dim view of proactive environmental management, a Conference Board report found that the majority of companies in 1974 viewed environmental management as a "threat", noting "a widespread tendency in most of industry to treat pollution control expenditures as non-recoverable investments" (Lund, 1974: 2).

Today, representing what many are calling the "environmental decade", CEOs from corporations such as Dow, Monsanto, DuPont and Union Carbide are

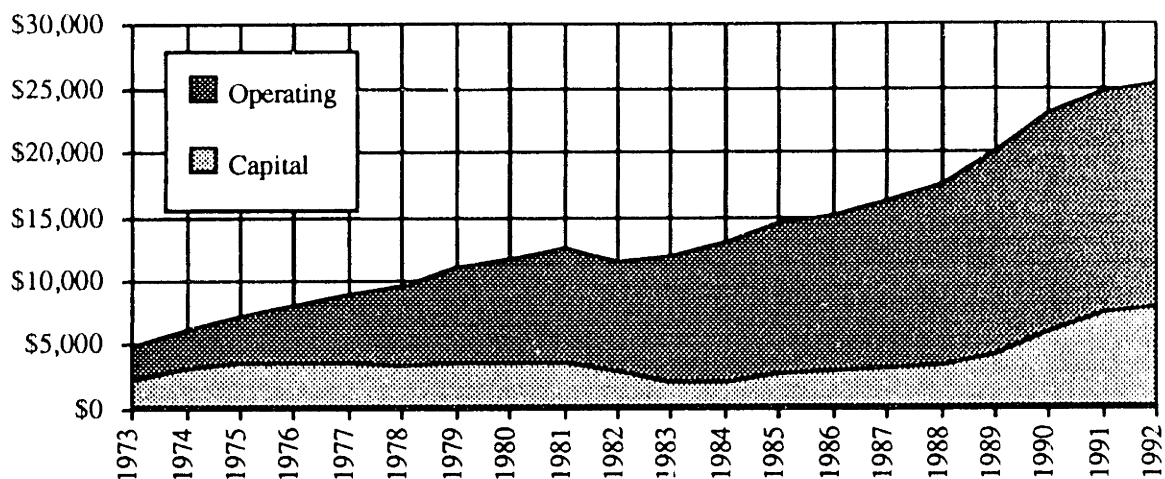
espousing the benefits of pro-active environmental management, while instituting programs for community relations, product stewardship, pollution prevention and environmental leadership as being consistent with the objectives of increasing shareholder equity. A 1991 follow-up report by the Conference Board shows that 77 percent of US companies now have a formal system in place for pro-actively identifying key environmental issues, noting that "social responsibility" ranked second out of five most important factors motivating environmental policy decisions (Morrison, 1991: 18). Why is this transformation occurring? How did industry move from a posture of such vehement resistance to that of proactive environmental management?

Rational Actor Explanations. One prominent answer lies in the related costs associated with environmental management activities. For example, economic literature has long treated environmental protection in the context of the well established framework of externalities and associated market failures. Pollution is the consequence of an absence of prices for certain scarce environmental resources, such as clean air and water (Cropper and Oates, 1992). Economic theory (and its sociological derivative, rational choice theory) assume the firm to behave in a rational and opportunistic fashion. To trigger action, economists prescribe the introduction of surrogate prices in the form of unit taxes, "effluent fees", or more recently market incentives, to provide the needed signals to economize on the use of these resources (Stavins, 1991). These will guide the firm to seek cost-effective pollution control efforts at the level at which the marginal benefits of control equal the marginal costs (Hahn & Stavins, 1991). If this is in fact, what motivates corporate environmental strategy, then historical evidence should show that shifts in strategy coincide with shifts in regulatory and related environmental costs. However, this is not the case.

US EPA data shows the total annual costs for pollution control in the United States rising from \$27 billion in 1972 to more than \$90 billion in 1990, and are projected to reach \$155 billion by the year 2000, in 1986 dollars (Pendleton, 1992). As environmental compliance costs have continued to rise, the recent pronouncements of proactive environmental ethics may be an attempt to preempt this increasing trend by adopting self-controls and regaining control of the firm's assets. However, such an explanation falls short in explaining the full complexity of the dynamics by which firms have adopted environmental management practices.

In the first place, interest in environmental issues has not followed the steady linear trend suggested by these cost figures — see figure 1-1. For example, in terms of public opinion, Dunlap (1991) has observed a much more complex evolution. Piecing together several relevant longitudinal data -- covering the late 1960s to 1970, the early 1970s, the mid to late 1970s and the 1980s -- over the past quarter century, he found that: "(a) Environmental concern developed dramatically in the late 1960s and reached a peak with the first Earth Day in 1970; (b) such concern declined considerably in the early 1970s and then more gradually over the rest of the decade, but remained substantial; (c) the 1980s saw a significant and steady increase in both public awareness of the seriousness of environmental problems and in support for environmental protection, with the result that by the twentieth anniversary of Earth Day in 1990, public concern for environmental quality reached unprecedented levels" (Dunlap, 1991: 285)

FIGURE 1-1
Industry Environmental Expenditures (\$ millions)

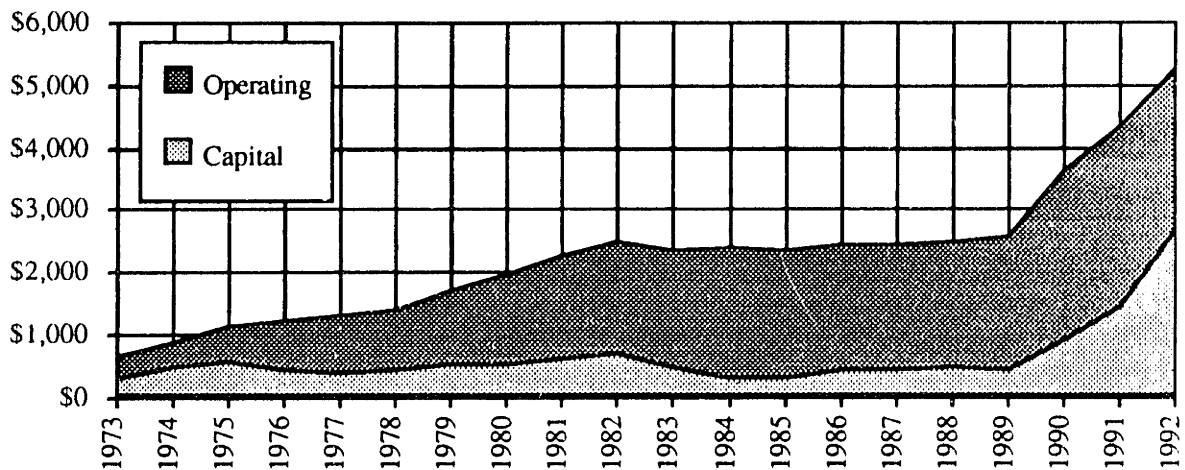


(Source: US Department of Commerce (1973-1992))

Secondly, history reveals that industries have made these organizational shifts in relative unison, thereby suggesting a lack of autonomy. For example, a significant number of companies established Vice President positions for environmental affairs in the mid-1980s (De Boerr, 1992) and established board level committees in the early 1990s (Cahill & Engelman, 1993). Still further, many chemical industry CEOs appear to have gone public with their newfound corporate environmental ethics in the early 1990s (i.e. Lefferre of Monsanto (1990); Popoff of Dow (1991); Kennedy of Union Carbide (1991); and Woolard of DuPont (1992)). And, the initiation of formal industry-wide environmental principles occurred within the same time frame: the Coalition for Environmentally Responsible Economies (CERES), established the *Valdez Principles* in 1989; the Chemical Manufacturers Association's (CMA) *Responsible Care Program* and the American Petroleum Institute's (API) *Strategies for Today's Environmental Partnership* (STEP) program were unveiled in 1989 and 1990 respectively; and the U.S. Council for International Business drafted the *Business Charter for Sustainable Development* in 1991.

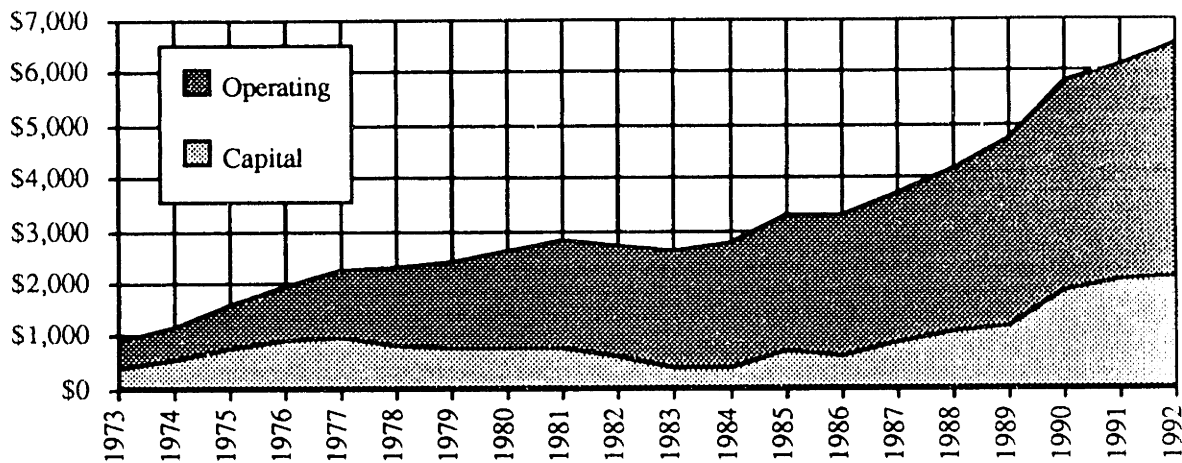
Still further, the development of these programs has not occurred in isolation from the influence of the others. For example, the Chemical Manufacturer's Association (CMA) and the American Petroleum Institute (API) successively created similar proactive environmental management principles for their members to adopt in 1989 and 1990 respectively. The API program is nearly an exact copy of the CMA program. These were introduced around the same time as other similarly structured industry-wide programs (i.e. CERES, GEMI, USCIB, PERI). Yet, the environmental cost structures in these two industries are quite different — see Figures 1-2A and 1-2B. Basing industry action completely on cost, it would be more plausible to expect the API rather than the CMA to have first initiated its industry-wide principles in response to the dramatic increase in costs that they encountered. Or, at the very least, the API should have felt a direct threat to their industry from the sudden increase in costs in 1990 and designed an independent program tailored to their specific needs. Instead, they effectively copied the CMA program verbatim.

FIGURE 1-2A
 Petroleum Industry Environmental Expenditures (\$ millions)



(Source: US Department of Commerce (1973-1992))

FIGURE 1-2B
Chemical Industry Environmental Expenditures (\$ millions)



(Source: US Department of Commerce (1973-1992))

These examples are inconsistent with purely economic explanations that should see different industries, as well as different firms within these industries, reaching autonomous organizational decisions based on their own cost structures and strategic objectives. Viewing costs as the primary driver assumes that firms exist strictly in *technical* environments — where products and services are exchanged in a market such that organizations are rewarded for effective and efficient control of the work process (Scott & Meyer, 1992). While costs cannot be ignored as an important driver in corporate action, the commonality of both the timing and the type of organizational response suggests the presence of other signaling mechanisms for which rational actor models may be insufficient to explain. The presence of such mechanisms directs attention away from the individual organization as the unit of analysis and towards the field of organizations⁴, focusing attention on the firm's *social* environment.

⁴ In concept, a focus on the field is not inconsistent with economic theory. Group interests and group behavior are often primary forces in economic as well as political behavior (Olson, 1971: 118). For example, few modern writers on economics would be able to discuss their subject matter without references to aggregations, clusters, blocs and combinations of people and things. Using terms such as "oligopoly", "imperfect competition" and "monopolistic behavior",

Institutional Explanations. To provide a more encompassing explanation, this thesis draws upon the theoretical field of organizational behavior and in particular, institutional theory (Thomas, Meyer, Ramirez & Boli, 1987; Zucker, 1988; Powell & DiMaggio, 1991; Meyer & Scott, 1992). The general theoretical area of organizational behavior calls attention to the effects of this broad social change on the internal structure of the industrial organization as the focus of analysis. This is where the subtlety and permanence of corporate change will be found. Corporate environmentalism represents a reassignment of responsibilities and functions. New job tasks are created while old job tasks are altered to incorporate new perspectives and responsibilities that reflect broader social demands. An accurate representation of this corporate transformation must consider the many aspects of the shifting structures, strategies and functions within the organizational framework. Clearly, the firm that actively embraces such practices as clean production, life-cycle analysis and pollution prevention will differ in both strategy and structure from the firm that deals with environmentalism through mere end of the pipe solutions. Fundamentally, what evolves is a new firm, not merely new outputs.

But, from where does this new firm emerge? This is where the contribution of institutional theory lies. Institutional theory calls attention to the source and motivations for this organizational change as lying beyond the firm boundaries in the broader group of organizations within which the firm resides. While firms can direct their organizational change based on internal objectives

economists often refer to a firm's external field in defining its type of behavior (Latham, 1952: 4-5). Just as competitor behavior influences firm strategy, environmentalism affects the economic processes of the firm. However, it would be simplistic to restrict this view to simply the individual firm and its competitors. The government and third party environmental interest groups also play a significant role in the greening of corporate management practices. The inclusion of these types of influences goes beyond economic attention to the field.

and motivations, they are influenced and bound by the norms, values and expectations of those with which they interact. In other words, while the technical environment is one aspect of the nature of the corporate organization, firms also exist within institutional environments—the socially constructed normative worlds in which organizations focus on organizational conformity with social rules and rituals rather than with the technically efficient processing of inputs and outputs. It is a perspective concerned more with legitimacy than efficiency (Orru, Biggart & Hamilton, 1991). An accurate explanation of corporate environmental action must consider both internal/technical and external/institutional forces for organizational change.

Clearly it would be naive to argue that increasing costs do not influence corporate decision-makers. But, rather than viewing costs as the dominant variable, I present it as one mechanism in many by which the institutional field applies pressure on the firm. In explaining the emergence of corporate environmental management strategies, I propose that what we have been witnessing over the past three decades has been the co-evolution of institutions outside the firm and the structures and strategies inside the firm. Internal structures and strategies become a reflection of the perspectives and underlying assumptions (Schein, 1990) of the institutional field. Simultaneously, those structures and strategies affect how those institutional perspectives have evolved. In an interactive relationship, both have been continually evolving as new events or crises call attention to the need for new solutions and increasing controls.

To understand how firms have evolved, one must also understand how the institutional field has evolved. And likewise, to understand what options are open to the organization for future action, one must understand the dynamics within the existing institutional field. The analysis in both cases requires a strong

historical component. Over the past three decades, the institutional field has evolved in its makeup, power relationships and institutional perspectives. Most notably, the constituency pressing for increasing corporate environmental responsibility has evolved to include an increasingly diverse set of interests and interested parties: conservation/environmental groups, employees, the community, insurers, owners/investors and customers. In addition, industry membership has evolved to include both new types of firms (i.e. environmental service firms) as well as a more pronounced role for trade associations. Furthermore, the balance of power among the institutional actors has evolved as to their relative influence within the institutional field, to affect both the direction of the field and the actions of its members. As this evolution occurs, corporate structure and strategy evolve as well. Therefore, if institutional fields are the primary driver in the development of corporate environmental strategies, the shifts in such strategy should occur, not necessarily with shifts in costs, but with shifts in the makeup or power balances of the institutional field.

Contrary to traditional institutional accounts, however, corporate action is not to be viewed as subservient to the demands of the institutional environment (Oliver, 1991; Powell, 1991). As integral members of the field, corporate decision-makers have the power both to resist or to rapidly respond to shifts in institutional pressure. Such strategic action may be observed as a lag (in the former case) and a lead (in the latter case) between institutional change and organizational action. Going further in this integration of power/agency and institutional theory, corporate decision-makers also have the power to initiate institutional change (DiMaggio, 1988). Again, as integral members of the field, the final makeup, characteristics and power relationships within the institutional field are within the bounds of influence of its individual members. This power is

not universal and firms vary individually and as a group in their ability to either resist or alter institutional pressures (Fligstein, 1990).

1.2. Outline of Dissertation

The dissertation is presented in ten chapters, divided into five sections. The first section, consisting of two chapters, sets the stage for the research by providing this introduction and a discussion of the characteristics of corporate environmentalism. The second section, consisting of three chapters discusses 1) the relevant organizational theories and the research propositions, 2) the industrial and regulatory setting for the research, and 3) the research methodology. The third section, encompassing two chapters, is the first of two central contributions of this dissertation. This is a presentation of the data and hypotheses regarding the emergence and historical development of two central variables: 1) the institutional field and 2) corporate environmental attention and strategy. The fourth section, also consisting of two chapters, broaden this analytical work by testing section three's hypotheses through an analysis of the environmental evolution of two institutional actors: the Amoco Corporation and the Coalition of Environmentally Responsible Economies (CERES). This analysis considers the evolution of corporate structures within one prominent firm and analyzes in more breadth, the institutional dynamics within a fixed period of this evolution. Interspersed within these analyses will be an identification of significant events which have been influential in this evolution. Finally, in the fifth section, I provide a summary of the research findings, discuss the theoretical and practical implications of this research and consider opportunities for future research. Below is a more detailed description of the chapters that follow.

Chapter 2: Deconstructing Corporate Environmentalism. As part of the introduction, I present an overview of the implications of environmentalism for the firm. In essence, environmentalism represents both a social issue (such as racial or gender equity) and a technical issue (affecting the strategic production goals of the firm). At its most fundamental social level, environmentalism represents the creation of a new type of value.

Chapter 3: Theoretical Development. The analysis of this dissertation follows aspects of both traditional and neo-institutionalist thinking while attempting to expand both still further. It uses as its primary theoretical base the "new institutionalism" of Powell & DiMaggio (1991) and the "political-cultural" work of Fligstein (1990). In my effort to expand the theory, I draw theoretical support from the work of two authors, White (1992) and Bourdieu (1990). I see a parallel between White's notion of "control" and Fligstein's notion of the "conception of control", and between Bourdieu's notions of "identity" and "habitus" and the concept of enduring institutionalized beliefs. While this clearly presents a divergence from what may be considered the mainstream of institutional theory, it is may be necessary as institutional theorists themselves argue that the sources of change and innovation generally come from the periphery, away from isomorphic forces (Powell, 1991).

Five research propositions are developed, not as testable hypotheses, but as guiding principles by which to focus the research inquiry. They support an interpretive account of corporate environmental evolution rather than a discrete experiment. As a central focus, they direct attention on the linkages among the central variables: the institutional field, organizational strategy, organizational structure and external events. They are tied together in five sections:

- 1.) Linking the institutional field to organizational strategy;
- 2.) Linking organizational strategy to the institutional field;
- 3.) Linking the institutional field to internal organizational structure;
- 4.) Linking the institutional field to the convergence of its members;
- 5.) Linking events to the institutional field.

Chapter 4: Overview of the Environmental Protection Agency and the Chemical and Petroleum Industries. I provide historical background information on both the evolution of the EPA and the makeup of the chemical and petroleum industries. Of particular relevance in the first case, it is important to acknowledge that the EPA has not been homogenous throughout the period of the study, thereby affecting institutional evolution. Of particular relevance in the second case, information regarding the similarity and differences of the effects of environmentalism on these industries is discussed.

Chapter 5: Research Methodology. The data used to analyze the research propositions has come from five sources: 1) A content analysis of the trade journals *Chemical Week* and *Oil & Gas Journal* from 1960 until 1993; 2) A statistical review of all environmentally related federal case law from 1960 until 1993; 3) a statistical review of all investor initiated environmental proxy statement proposals; 4) a case study of the environmental evolution of the Amoco Corporation; and, 5) a case study of the emergence and evolution of the environmental investor group, the Council for Environmentally Responsible Economies (CERES). Methods of data collection and sources of biases are considered.

Chapter 6: The Evolution of the Institutional Field. The institutional field was found to have gone through a four stage evolution marked by shifts in the makeup and power balances of its actors. In stage 1 (1960-1970), industry managed control of its internal and external environments while their institutional field consisted primarily of themselves. Environmentalists were not influential, nor was government regulation a significant concern. In stage 2 (1970-1982), the formation of the EPA emerged to gain increasing power in directing corporate actions. Environmentalists would remain external to the institutional field, relegated to influencing industry not directly, but through the government. In stage 3 (1982-1989), industry shifts the preceding trend of increasing government power in the institutional field and begins to regain power for itself. Environmentalists enter the institutional field and now affect industry directly. However, this relationship is uni-directional as industry seeks cooperation primarily with the government. Finally, in stage 4 (1989-present), investors and insurers emerge to affect significant influence on the strategy and structure of corporate environmental management. Concurrent with the emergence of this stage, industry, government and environmentalists emerge as full members of the institutional field while avenues of influence are equally shared among all three constituents of the field.

Chapter 7: The Evolution of Corporate Strategy. Concurrent with the four-stage evolution of the institutional field, corporate attention to environmental protection was found to have followed an evolution similar to that in public opinion observed by Dunlap (1991). Environmental attention: (a) developed dramatically in the late 1960s and reached a peak in the early 1970s; (b) declined considerably in the early 1970s and then more gradually over the rest of the decade; (c) increased steadily through the 1980s, and; (d) grew

dramatically at the turn of the decade. By 1993, attention to the environment had reached unprecedented levels within the chemical industry, while petroleum industry attention dropped off.

Concurrent with this evolution in attention, corporate strategies were found to have evolved through four-stages. In stage 1 (1960-1970), industry sees the pollution problem as one it can handle itself. In stage 2 (1970-1982), industry becomes increasingly defensive as it sees itself viewed as the problem and government regulation as unfairly driven by environmentalist concerns. In stage 3 (1982-1988), industry begins to adopt a more cooperative stand towards government and environmentalists as it once again sees itself as part of the solution. And finally, in stage 4 (1988-present), industry adopts a proactive stand towards environmental protection as it once again sees the problem as one it can handle itself. However, in a significant deviation between these industries, production is sustained until 1993 for the chemical industry while the oil industry enters stage 5 (1990-present), marked by a defensive posture similar to that of stage 2.

Chapter 8: The Environmental Evolution of the Amoco Corporation.

Using the Amoco Corporation as a case study to build further on the observations and hypotheses developed in the previous two chapters, the evolution of Amoco's corporate structure was found to have progressed through a similar evolution, differing slightly in that the timing of its shifts appear to have preceded that of the rest of the institutional field. In stage 1 (1960-1970), environmental management is treated as problem solving. Considered an ancillary aspect of conducting business, it is handled primarily as an operating line function. In stage 2 (1970-1978), environmental management is treated as externally directed technical compliance. Although elevated to a separate

corporate department, it remains an ancillary role with low organizational power and focused strictly legal requirements. In stage 3 (1978-1987), environmental management is treated as internally directed managerial compliance. Moving beyond merely technical responses, managerial structures are developed to achieve end-of-pipe emissions compliance while environmental responsibilities begin to diffuse throughout the organization. Finally, in stage 4 (1987-present), environmental management is treated as Pro-active Management.

Organizational boundaries blur, allowing direct influence by external constituents as the environmental department reaches new levels of organizational power. Environmental considerations began to be pushed back down into the line operations, integrating them into both processes and product decisions. In a deviation from the strategic evolution observed for the oil industry, Amoco appears to be following a path more closely aligned with the chemical industry model.

Chapter 9: The Dynamics of Institutional Negotiation Between Amoco and CERES. In this second hypothesis development chapter, the unit of analysis is changed allowing more in-depth analysis of the specific dynamics of the institutionalization process. Rather than studying an historical evolution of the individual variables as in the previous three chapters, this chapter focuses on the institutional dynamics of the fourth stage of the evolution they uncover. This exposes the complexities of the institutional negotiation that takes place and the evolution of all components of this process.

This stage is marked by the emergence of the new institutional constituent, investors, and in particular the emergence of the environmental investor group, CERES. Once a member of the field, the negotiation process by which they engaged industry and, in the context of this dissertation, the Amoco

Corporation reveals how the entire social system in which the firm exists is altered from this institutional restructuring and subsequent tendency towards convergence. In an example that provides a clean summary of the ideas of this dissertation, this chapter develops an analysis of the reciprocal interplay and evolution among the field, the firm and environmental constituents.

Chapter 10: Summary and Conclusions. I review the findings of this research and show that they point to an institutional explanation for the evolution of corporate environmental strategies. While corporate managers can still direct the strategy and structure of their corporate organizations, they do so within the confines and limits of the broader institutional field. Such a conclusion has important considerations not only for the organizational theorist, but also for the corporate manager, the policy analyst, and the environmentalist. This summary concludes with an overview of these implications and a discussion of the remaining avenues for future research.

Chapter Two: Deconstructing Corporate Environmentalism

2.1. Introduction

Over the past three decades, firms have been contending with the steadily increasing uncertainty created by environmentalism. It has been a force with a blend of characteristics that make it distinct from other issues to which the firm is familiar. On the one hand, it has many of the characteristics similar to other social issues such as gender equity, affirmative action or labor relations. Yet, on the other hand, it has technical and economic components like other strategic issues such as consumer demand, material processing or competitive strategy. Adding to the complexity of this dual blend of characteristics is the indeterminism of environmentalism. It has no clear stakeholders which represent its expectations and demands. This offers perhaps the greatest challenge to corporate decision-makers in formulating a decisive response.

2.2. Environmentalism as a Social Issue.

Environmentalism, the social movement. On its most fundamental level, environmentalism is a social movement. It has constituent groups that lobby for social change on all levels of society. However, it is far from monolithic or homogenous. In this respect the term "environmentalist" may serve as a misnomer, lumping many varied interests into one category⁵. In 1989, 5,817 organizations filed 501(c)(3) forms with the IRS calling themselves environmental groups. Of these, 1,578 (27 percent) filed tax returns with financial data showing an average of \$721,000 per organization and total expenses of \$1.1 billion (Hodgkinson et al, 1993). In 1993, 18 organizations (1 percent) commanded nearly 50 percent of this group's total expenses (Gale Research, 1993) — see table 2-1.

Olson (1965) argues that social discord is directly correlated with association density. Therefore, this large population of organizations suggests a lack of harmony within the overall environmental movement. This disharmony can be seen in the diversity of organizational methods and interests. Some are staffed with lawyers and scientists and work within existing institutions to bring about corporate and social change (i.e. the Natural Resources Defense Council and the Environmental Defense Fund). Others prefer to remain outside those

⁵ Neil Evernden writes, "The term 'environmentalist' was not chosen by the individuals so described. It was seized upon by members of the popular press as a means of labeling a newly prominent segment of society. . . In fact, the act of labeling a group may constitute an effective means of suppression, even if the label seems neutral or objective. For in giving this particular name, not only have the labelers forced an artificial association on a very diverse group of individuals, but they have also given a terse public statement of what 'those people' are presumed to want. Environmentalists want environment — obviously. But this may be entirely wrong, a possibility that few environmentalists have contemplated even though many have lamented the term itself. For in the very real sense there can only be environment in a society that holds certain assumptions, and there can only be an environmental crisis in a society that believes in environment." (Evernden, 1985: 125).

institutions, relying on less professionally oriented staffs and working in a more confrontational style (i.e. the Public Interest Research Groups and Greenpeace). Various environmental groups also define the issue on vastly different terms. For example, Earth-First, with its goal of promoting zero economic and population growth, differs dramatically from the Nature Conservancy, which seeks to protect the environment through an integration of environmental and economic concerns.

TABLE 2-1
1993 Membership and Budgets of the Largest Environmental Groups

| Organization | Membership | Budget (millions) |
|--|----------------------|-------------------|
| The Nature Conservancy | 588,000 | \$101 |
| National Wildlife Federation | 6,200,000 | \$71 |
| World Wildlife Fund | 800,000 | \$60 |
| Greenpeace, U.S.A. | 2,000,000 | \$50 |
| National Audubon Society | 600,000 | \$44 |
| Sierra Club | 650,000 | \$35 |
| Environmental Defense Fund | 200,000 | \$18 |
| Natural Resources Defense Council | 170,000 | \$16 |
| Wilderness Society | 310,000 | \$17 |
| Water Environment Federation | 38,000 | \$13 |
| Clean Water Action | <i>not available</i> | \$11 |
| National Parks & Conservation Foundation | 300,000 | \$9 |
| Air & Waste Management Ass. | 13,000 | \$8 |
| Defenders of Wildlife | 80,000 | \$6 |
| Friends of the Earth | 50,000 | \$4 |
| Izaak Walton League of America | 54,000 | \$2 |
| Citizens for a Better Environment | 30,000 | \$2 |
| Environmental Action | 20,000 | \$2 |
| TOTAL | 12,103,000 | \$469 |

(Source: Gale Research (1993))

In its constituency, unlike that of other ideologies such as the women's, civil rights and labor movements, the environmental movement is indeterminate. It is this indeterminism that presents the greatest challenge and the greatest uncertainty for the corporate manager. Other issues of corporate concern have a

clear constituency: in settling issues of labor relations, managers negotiate with workers and union officials; in settling issues of civil rights or gender equity, there are female and minority workers and national organizations set up to represent them. However, with the environment there are no natural constituency or bearers. Opposition to environmentalism on the grounds of threatened material interests or aversion to state intervention would be easier to explain than environmental advocacy (Buttel, 1992: 14). So the firm is left to decide who is a legitimate representative for environmental concerns. Unfortunately, that representation has been far from static.

It is this dynamism of the environmental constituency that may have prolonged the longevity of the issue. In its early years, Downs (1972) analyzed the environmental movement with respect to the "issue-attention" cycle and determined that the intensity of public interest was about to inexorably decline as it entered the fourth of the five stages of the model. That is, after (1) receiving initial concerned attention followed by (2) growing widespread enthusiasm, (3) the true costs of significant progress had become apparent and, in response, (4) public interest would decline. Eventually, the issue would reach the fifth and final stage of being replaced by another issue in the public eye.

However, the indeterminism of environmentalism has the implication of attracting a wide range of supporters cutting across social, economic and demographic lines. Those representing environmental interests to the firm or to society at large need not be restricted to environmental groups. Others such as employees groups, labor unions, upper and middle management, local communities, owners, investors, insurers, and consumers can (and have) become environmental advocates.

It is this constant introduction of new constituents that accounts for the continued support which the environmental movement has received, and the

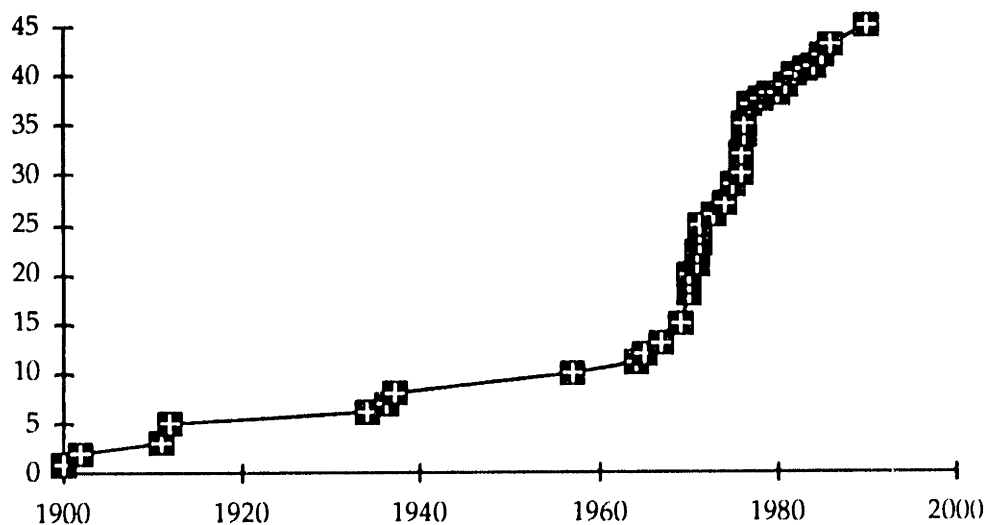
constant redefinition of the issue in terms of each new constituent. As a brief example: with the introduction of conservation groups in the early part of the century, the environmental issue revolved largely around managing our natural resources; with the introduction of environmentalists in the late 1960s, the issue became one of protecting natural ecosystems; with the introduction of employee groups and community groups in the mid 1970s, the issue became one of workplace safety and community right-to-know; with insurers in the mid 1980s came an integration of risk management; with the introduction of investor groups in the early 1990s comes a challenge to the core objectives of the firm; and, with the growing influence of customers comes a redefinition of product development. The introduction of each of these new social constituents will necessitate the creation of new organizational responses to deal with them. This can be seen in managerial perspectives on the environment that have evolved from plant level, to executive, to legal, to company-wide involvement.

Environmentalism, the political movement. With the first Earth Day in April 1970, environmentalism reached a critical mass that propelled it into the national agenda. Facilitated by the widespread social activism of the 1960s in response to the Vietnam War, politicians were now beginning to add an environmental agenda to their election platforms. President Nixon's formation of the Environmental Protection Agency (EPA) in December 1970 was more an effort to deflate the growing environmental strength of his political opponent, Senator Muskie, than it was his belief in the validity of the emerging social movement. In fact, Nixon associated the environmental movement with the anti-war movement which he saw as both reflecting weaknesses in the American character (US EPA, 1993). At the time, there was speculation that Nixon

supported the ecology teach-ins that lead to Earth Day in an effort to siphon energy away from the anti-war movement (Shultz, 1970).

Whatever Nixon's reasoning, beginning with the formation of the EPA, the number of environmental health and safety laws has grown at a dizzying rate — see figure 2-1. This numerical growth, however, has not been accompanied by a linear trajectory in corporate responsibilities. It has involved a continual redefinition of the responsibilities of the firm towards the environment. The EPA and environmental policy has grown along various dimensions as new information has emerged and competing interests interpret that information, driving regulatory expectations along sometimes divergent trajectories. This redefinition has evolved in its basic foundations from: conservation prior to the late 1960s, ecology through the mid 1970s, employee health through the mid 1980s, community relations and public disclosure through the late 1980s, and voluntary pollution minimization efforts in the 1990s.

FIGURE 2-1
Trends in the Number of U.S. Federal Environmental Health & Safety Laws

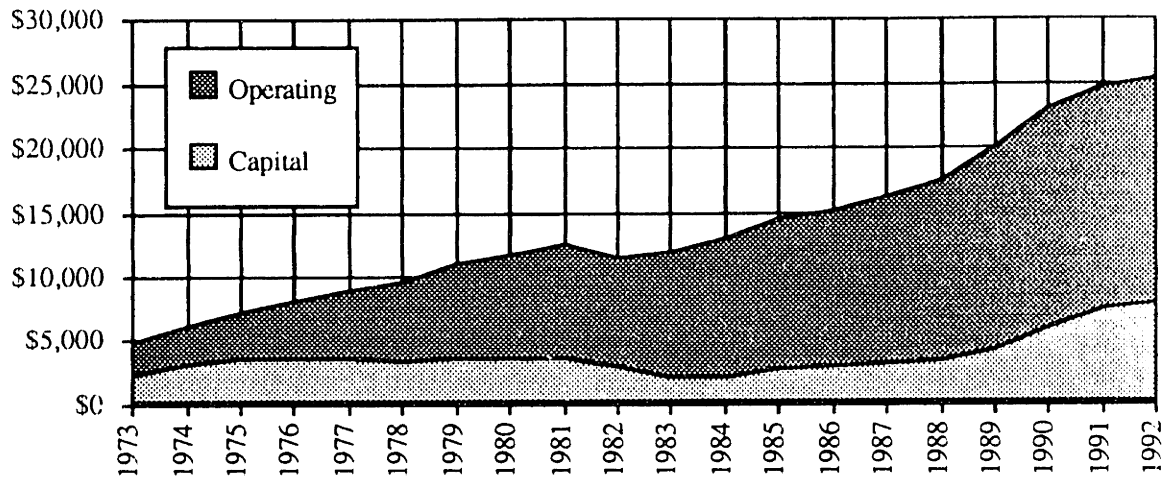


(Source: Ausubel & Sladovich (1989)).

2.3. Environmentalism as a Strategic Issue.

Thus far, the description of environmentalism has fallen along the lines of what Greening & Gray (1994) argue is a social issue, that having the potential to generate social or political response. The initial motivation for such corporate action originates with stakeholders outside the firm to which the firm may genuinely adopt internal change or it may fashion a superficial response based largely on rhetoric which seeks to placate or pacify its constituency. However, the economic costs of practices that are involved with the creation of pollution have risen to levels that make such a posture increasingly difficult. Through increased costs of disposal options, increased costs of regulatory compliance, feedstock taxes and waste product taxes (see figure 2-2), an alteration of the organizational objectives of the firm becomes necessary. This pushes environmentalism into the category of what Dutton & Duncan (1987) refer to as a strategic issue. Organizational action becomes an internally directed effort (although aimed at appeasing external stakeholders such as investors and customers) which affects internal operations and competitive positioning.

FIGURE 2-2
Industry Environmental Expenditures (\$ millions)



(Source: US Department of Commerce (1973-1992))

Environmentalism, the economic issue. Unlike other social issues which deal with equity and the fair distribution of opportunity and wealth, environmentalism is increasingly affecting basic business economics, effectively redefining the basic conceptions of production in industry. Issues such as gender equity or affirmative action will involve some loss to those who presently control the wealth and opportunity in the firm, however in the end the models of industrial output remain unchanged. Labor relations may, at times, affect process efficiency, but the grounds of such alterations are very often environmental in nature through issues of work-place safety. Yet, in these cases, it still becomes an issue of sharing what we've got. It becomes an issue of social equity. Schnaiberg (1980: 5) argues that environmental quality and social welfare issue are not socially or politically separable. "The question must always be asked, for whom and from whom is it being protected?"

This is a view with which I am not in total agreement. In cases of direct environmental harm (such as work-place safety), environmentalism is, in fact, a

social welfare issue. However, on broader terms, it purports to represent a value for nature on either absolute intrinsic or broad societal grounds. A high quality environment tends to be a public good, which when achieved cannot be denied to others, even to those who resist environmental reforms. For many environmental issues, those who act to protect the environment can expect to receive no personal material benefits (Buttel, 1990: 14). Although represented by social interests, it is less directly self-interested in its motives and its results.

In recent years, environmentalism has begun to interfere with fundamental economic models of consumption and production, resulting in a net change in efficiency. The results of this aspect can be seen in the changing legal and financial aspects of corporate environmentalism in society. The liability for environmental transgressions has risen to levels that have shaken the basic precepts of corporate risk management. As firms respond to these shifting pressures, not only has the structure and strategy of the firm been altered, but also the definition of how the firm measures the costs and benefits of environmental expenditures. Where firms originally only cited regulatory compliance as the measure of corporate environmental responsibility, today environmentalism has changed the parameters of economic success to include such intangibles as community relations, product stewardship, pollution prevention and environmental leadership as being consistent with the objectives of increasing shareholder equity.

Furthermore, strategic considerations of market and production variables are also redefined through environmentalism. For example, DuPont lost a significant market with the phase-out of CFCs. Yet, the company also found a potentially greater market with its manufacture of a CFC substitute. In another example, it remains to be seen, in the wake of the recent \$5 billion judgment

against Exxon for the Valdez spill, whether oil companies will reconsider the benefits of domestic over foreign crude based not on price but potential liability.

In essence, what has evolved is an alteration of the core objectives of the firm and the basic conceptions of production. Shareholder equity may remain the single most important criteria for corporate survival. Yet, social responsibilities are infiltrating the taken for granted beliefs that have previously guided that pursuit. Fundamental beliefs in private property, such as the unrestricted exploitation of natural resources and the availability of nature as a waste sink are coming under severe restriction. Some are going so far as to argue that the issue of environmentalism represents a challenge to the basic assumptions of capitalism such as competition, self-interest, and the need for constant economic growth (Schnaiberg, 1980; Gladwin, Freeman & Kennelly, 1994).

Environmentalism, the technical issue. Environmentalism affects firms and groups differentially. Where issues such as affirmative action and gender equity transcend industries, environmentalism aligns with strategic issues in that it has a distinct technical component. Over the past three decades, the requirements for compliance have shifted from removing only visible levels of contaminant effluent streams to now removing concentrations in the parts per billion range and, still further, altering processes and products. Today, firms are required to collect data and develop an understanding about their processes on levels that was previously not considered. New laws mandating the public disclosure of emission levels and the potential health effects of those emissions creates daunting technological challenges for the firm (Ehrenfeld & Hoffman, 1993). Yet, these effects are not universal. Some industries, such as oil and chemicals, face greater challenges in both the measurement and the control of

hazardous emissions. Furthermore, such industries face differential challenges in developing new products, processes or raw materials for facing future environmental demands. In much the way that population ecologists (Hannan & Freeman, 1977) view organizational evolution, it may be that the technical challenges of environmentalism could present a Darwinian situation for firms, deciding which will survive and which will perish based on their technological capabilities.

Whether these economic challenges to capitalism or technical challenges to firm survival have reached maturation or, are still in the process of materializing, what is fundamental to each of them is that, as with social issues, the external constituency to which the firm seeks its answers is again indeterminate. On issues of quality, corporate decision-makers formulate action based on customer desires. On issues of competitive strategy, corporate decision-makers base internal action based on competitor behavior. But with environmentalism, companies are making decisions regarding fundamental economic and technical issues based initially on government regulations and more recently on less defined external stakeholder interests. The motivation still originates outside the firm, but the constituency from whom it originates is not clear. Internal firm management decisions are being decided through the development of policy in federal and state legislatures and the political agendas of third party environmental interests. In such political dialogue, the balancing of competing interests as well as the analysis of scientific data has become open to social interpretation.

2.4. Environmentalism as a New Value

The Role of External Events. In making this model complete, one major driving force which makes environmentalism distinct from both social and strategic concerns is the prominence and power of environmental catastrophes. Such events add demands on our social, political, economic and technical structures which are unique from any other demands we face. Rather than originating within a particular social group and are therefore subject to negotiation and compromise, they originate from a source to which negotiation and compromise are not an option. All of history's environmental events — the realization of the effects of DDT in the food chain as examined by Rachel Carson (1962), the Santa Barbara oil spill, Love Canal, the Valley of the Drums, Bhopal, the Exxon Valdez, medical waste washing up on eastern beaches, acid rain, ozone depletion, global warming — have all had their impact on empowering the social agenda of environmentalism by highlighting inconsistencies between existing social, political, economic and technical norms and the physical reality of their breakdown. However, environmentalists do not pretend to fully understand the natural systems that have empowered them. They merely attempt to fashion a response that acknowledges the current understanding of the impact of our actions.

In this way, events create a sudden degree of urgency that forces a societal response. In some ways, this adds a degree of randomness that can appear as serendipity, creating social change by the convenient alignment of specific events. However, these events may be described as much as catalysts for change as they are initiators of change. They further our analysis of the environmental issue and therefore, our understanding of it. However, the question remains of whether an understanding of the complexity of our natural systems is within the

bounds of human possibilities. Our inability to measure or understand it lies in the complexity of its non-linear systems nature. Models such as Pollution Prevention, Total Quality Environmental Management and Industrial Ecology are attempts to bring the physical environment into our social environment. But this makes the assumption that there is a fit between the two. Some argue that there is not (Schnaiberg, 1980; Gladwin, Freeman & Kennelly, 1994), that these models do not fundamentally change the social rules that are causing the environmental problem and therefore will not effect their ultimate result.

Can the system be understood? Are we in control of the environment that surrounds and sustains us or will we forever be at its control? Leopold (1949: 200) boils an appreciation for the complexity of nature to an act of "intellectual humility". This process of analysis leads to a redefinition of fundamental values in society as well as industry. Other issues such as racial or gender equity or labor relations are offshoots of pre-existing societal values of freedom and equality. For example, in President Kennedy's 1962 televised civil rights address, he did not invoke new values but rather applied existing values in its defense: "We are faced with what I believe is a primarily a moral issue. It is as old as the scriptures and as clear as the constitution of the United States."

However, empowering the environment in our social structures by admitting our inability to understand or control it represents the creation of a completely new set of values (Evernden, 1992), a new viewpoint on how we value the environment and what our role is in interacting with it. "The [environmental] crisis is not simply something we can examine and resolve. We *are* the environmental crisis. The crisis is a visible manifestation of our very being, like territory revealing the self at its center. The environmental crisis is inherent in everything we believe and do; it is inherent in the context of our lives" (Evernden, 1985: 128). In coming to grips with this realization, we are in

the midst of the social construction of our fundamental values, effectively forcing an alteration of our basic social structure (Evernden, 1992). This is no different than, for example, the social construction of freedom in early western culture (Patterson, 1991) or the emergence of self-interest as a guiding value for human behavior (versus obligation to the general welfare), forming a necessary foundation of modern capitalism (Hirschman, 1977).

Just as these values have been socially constructed to become an accepted part of our society, so too is environmentalism emerging as such a process. Seeing implicit value in the environment, not as a boundless source for resources or a limitless sink for wastes, represents a new value on how we view our relationship with the eco-system in a less anthropocentric manner. In its multifaceted way, it challenges many of the existing societal values and norms presently in place. It challenges the preeminence of technological development (Piller, 1991) or science and economics (Capra, 1982). Buttel (1992) argues it be a broad social force, equivalent to for example, the Protestant ethic or the formation of an oppositional working class structure. In 1949, Aldo Leopold lamented that "no important change in ethics was ever accomplished without an internal change in our intellectual emphasis, loyalties, affections, and convictions. The proof that conservation has not yet touched these foundations of conduct lies in the fact that philosophy and religion have not yet heard of it" (Leopold, 1947: 210). Yet today, Leopold's statement would not hold true. In 1991, the Presbyterian Church decided to place environmental concerns into the church canon, thus making it a sin to "threaten death to the planet entrusted to our care." (Associated Press, 1991). And, the Catholic church has likewise added environmental concerns in its new catechism (Woodward & Nordland, 1992).

As these values take hold at such a deep level of societal values, firms will find it increasingly necessary to include those values in their corporate cultures

or risk creating dissonant value systems with those of their employees (Hoffman, 1993). However, for the firm, the new value of environmentalism has grown in directions completely tangential to traditional economic concepts of the purpose of the firm.

2.5. Conclusion

Given the full weight of the social transformation that this presentation implies, it becomes clear why the process would be a slow and difficult one. Such dramatic dissonance between the firm's original objectives and these new objectives set by them by society are expected to bring about resistance. Forced compliance is expected to result in resistance and avoidance strategies. Acceptance will come about as increasing numbers of associated constituents support the new value as valid (Festinger, 1962).

In what may sound circular, for the firm these mechanisms have been comparable to neither a social nor a strategic issue and yet they are comparable to both. In what may have begun as a primarily social issue in the early 1970s, environmentalism has taken on the trappings of both a social and an economic value shift. Today, it affects the economic, organizational and technical operations of the firm and yet, unlike other strategic issues, the source of this organizational action does not lie within the organizational boundaries but rather in the social structures just beyond them. Likewise, it is driven by social and political expectations and yet, unlike other social issues, it effectively redefines the fundamental conception of production by which the organization defines its purpose.

But herein lies the fundamental conundrum of corporate environmentalism. It is a strategic issue that affects core levels of corporate

action and purpose which is directed by stakeholders that lie external to the organization. However, as discussed earlier, the constituency representing environmentalism are indeterminate and unclear. Corporate decision-makers must look outside their organizational boundaries for answers to what society expects of them, and yet it is not clear to whom they are to look. The constituency, and therefore their demands are in steady flux. The answers have not been easy and they will only get more complex as the field of constituents continues to expand.

Part Two: Research Design

"As every past generation has had to disentrall itself from an inheritance of truisms and stereotypes, so in our own time we must move on from the reassuring repetition of stale phrases to a new, difficult, but essential confrontation with reality. For the great enemy of the truth is very often not the lie — deliberate, contrived, and dishonest — but the myth — persistent, persuasive, and unrealistic. Too often we hold fast to the clichés of our forebears. We subject all facts to a prefabricated set of interpretations. We enjoy the comfort of opinion without the discomfort of thought. Mythology distracts us everywhere — in government as in business, in politics as in economics, in foreign affairs as in domestic affairs."

John F. Kennedy (1962: 234)

Chapter Three: Theory and Propositions

3.1. Introduction

Institutional theory covers a broad body of literature whose proponents are not consistent in their perspective of what it means. As DiMaggio and Powell state, "it is often easier to gain agreement about what it is *not* than about what it *is*" (1991: 1). There are a great number of issues that remain divisive within the field and among related fields that apply institutional arguments (i.e. economics, political science, and history). What they have in common, however, is an underlying skepticism towards atomistic accounts of social processes, relying instead on a conviction that institutional arrangements and social processes matter in the formulation of individual and organizational action (DiMaggio & Powell, 1991).

As a baseline from which to understand the basic framework of institutional theory, the literature looks to the source of action as existing exogenous to the actor. More than merely suggesting that action is a reaction to the pressures of the external environment, institutional theory asks questions about how social choices are shaped, mediated and channeled by the external (institutional) environment. Organizational (and individual) action becomes a reflection of the perspectives defined by the group of members which comprise that institutional environment. Action is not a choice among unlimited possibilities but rather among a narrowly defined set of legitimate options. As an organization begins to be more profoundly aware of its dependence on this external environment, its very conception of itself may change, with consequences on many levels. As this happens, Selznick states, "institutionalization has set in" (1957: 7).

Such a conception of organizational behavior presents a direct challenge to both functionalism and individualism. It considers how meaning is socially constructed and how symbolic action transforms notions of agency (DiMaggio & Powell, 1991). Anecdotal examples of such behavior abound within the practical and theoretical literature. "Administrators and politicians champion programs that are established but not implemented; managers gather information assiduously, but fail to analyze it; experts are hired not for advice but to signal legitimacy" (DiMaggio & Powell, 1991: 3). Such actions concur with the notion that individual and organizational action can reflect external pressures for legitimacy rather than internal demands for efficiency.

From here it becomes necessary to make a distinction about which institutional theory I am using. There are many takes on the theory of which I am carefully selecting portions to build my own conception of the institutional world. Further still, I go beyond the traditional literature to borrow ideas and

concepts from non-institutionalists in order to expand upon the theory and present what I consider to be a comprehensive descriptive account of corporate environmental behavior. The analysis that follows employs aspects of both traditional (i.e. Selznick, 1957) and neo-institutionalist thinking (i.e. Powell & DiMaggio, 1991), while also integrating the "political-cultural" work of Fligstein (1990). This composite type of theory building yields a diverse foundation from which to build my ideas.

For example, rather than focusing strictly on isomorphism as the central institutional phenomena as is increasingly the case with neo-institutionalism, my explanation of institutionalized corporate environmental action deals more with institutional change as a source of organizational action. Rather than trying to ask why are organizations alike, I align more with traditional theorists in that I do not see organizational homogeneity as a critical requirement for the presence of institutional phenomena. I believe that this constant focus on institutional isomorphism often results in the concept becoming a tautology. We define an institutional field when we have observed there to be isomorphism. Then, we argue that the isomorphism was caused by the institutional field.

Continuing in my theoretical construction, rather than focusing exclusively on the individual organization as does traditional theory, I direct my line of inquiry along the neo-institutionalist focus of the broader institutional field. But, in blending both viewpoints on institutional theory, I argue the key forms of cognition to lie in both values, norms and attitudes (traditional) as well as schema and routines (neo-institutionalist). Such a presentation aligns this construction of institutionalist theory with that of culture theory. Edgar Schein (1990: 111) defines culture as "a pattern of shared, basic assumptions that have been learned by a given group as it has solved its problems of external adaptation and internal integration, that has worked well enough to be

considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel about problems." Just as institutions are argued to guide organizational perspectives, so too does culture guide our interpretations and actions with respect to organizational behavior (Morgan, 1986). Schein defines three levels of culture. The most easily observed level is that of *artifacts*; the observable organizational structures and processes such as products, procedures and company records. The second level of culture is that of *espoused values*; the professed strategies, goals and philosophies of the corporation. And the deepest level of culture is that of *underlying assumptions*; the unconscious, taken for granted beliefs, perceptions, thoughts and values that motivate behavior. In essence, he describes a spectrum of beliefs spanning from norms to schema and routines. So clear is the overlap between institutions and culture that Thomas, Meyer, Ramirez & Boli begin their book on institutional theory with the comment "we have come to label the present perspective, for better or worse, as an institutionalist model, although we hope that 'culture' eventually can be reclaimed by macro-sociology" (Thomas, Meyer, Ramirez & Boli, 1987: 7).

I attempt to show how organizations are influenced by the institutional field by drawing a link between the two. To accomplish this, I use power and identity as two central constructs. These are typically considered to be limitations of institutional theory, although some (i.e. Oliver, 1991) are attempting to break down this barrier. In my contribution to this effort (in what some may consider to be a further divergence from standard institutionalist text) I draw theoretical support from two sociologists, White (1992) and Bourdieu (1990). I see a parallel between White's notion of "control" and Fligstein's notion of the "conception of control", and between Bourdieu's notions of "identity" and "habitus" and the concept of enduring institutionalized beliefs. While this clearly presents a divergence from what may be considered the mainstream of

institutional theory, I draw support for such divergence by the arguments of institutional theorists themselves — the sources of change and innovation generally come from the periphery, away from isomorphic forces (Powell, 1991).

White (1992) defines the two central constructs to action as identity and control. Firms are driven to action in an effort to seek control of uncertainties in the physical and social world (White, 1992). This action is guided by the *identity* which is context and history specific. Similarly, Bourdieu describes the source of action as residing within two stages of the social reality, between history incarnate in bodies, in the form of the system of enduring dispositions, which he calls *habitus*, and history objectified in things, in the form of institutions (Bourdieu, 1990a). It is the combination of our dispositions and our institutional environment which produces individual and collective practices in accordance with the schemes generated by past history. This ensures the active presence of past experiences, "which retained in the form of schemes and perception, thought and action, tend to guarantee the 'correctness' of practices and their constancy over time" (Bourdieu, 1990a: 54).

Simultaneous with the actions of each individual to seek control, other identities, both within the organization and in other organizations are doing the same under the constraints and opportunities of their respective social and physical settings. As a result, it is the outcomes of "contentions among identities which is what culminates into social organization" (White, 1992: 16). Firms are guided by their dispositions but within the context of the actions of the other members of the institutional field. These are most influential in the framing of their own actions (Fligstein, 1992).

3.2. Institutional Theory.

Institutional theory calls attention to the source and motivations for organizational change as lying in the broader group of organizations within which the firm resides. Two assumptions are central to institutional theory: first, that humans have a preference for certainty and predictability in organizational life; and second, that the interest of organizations in survival leads them to accede to the demands of other actors on whom they depend for survival (DiMaggio, 1988). While firms can direct their organizational change based on internal objectives and motivations, they are influenced and bound by the norms, values and expectations of those with which they interact. In other words, while the technical environment is one aspect of the nature of the corporate organization, firms also exist within institutional environments—the socially constructed normative worlds in which organizations focus on organizational conformity with social rules and rituals rather than with the technically efficient processing of inputs and outputs. It is a perspective concerned more with legitimacy than efficiency (Orru, Biggart & Hamilton, 1991). An accurate explanation of corporate environmental action must consider both internal/technical and external/institutional forces for organizational change.

In explaining the emergence of corporate environmental management strategies, I propose that what we have been witnessing over the past three decades has been the co-evolution of institutions outside the firm and the structures and strategies inside the firm. Internal structures and strategies become a reflection of the perspectives and underlying assumptions (Schein, 1990) of the institutional field. Simultaneously, those structures and strategies affect how those institutional perspectives have evolved. In an interactive

relationship, both have been continually evolving as new events or crises call attention to the need for new solutions and increasing controls.

What society (i.e. government, industry, environmentalists, stockholders etc.) considers to be legitimate corporate environmental practice has been subject to constant redefinition and shifts in technical, economic, social and political complexity. These shifts have created uncertainty which has left industry decision-makers without clear indicators of what is expected of them. Therefore, they are forced to look to others for examples of what is considered legitimate corporate behavior. This leads to my central thesis: the status of corporate environmental management is the historical product of this external examination, the result of what might be described as a negotiation among the internal members of the firm and external members of the firm's *institutional field*: primarily the government, other firms sharing similar technological and political burdens, and external environmental interests.

Organizations do not act within an isolated context, but take the actions of these other members into account in the framing of their own actions. Corporate environmental action cannot be viewed purely as the product of profit maximizing actors seeking efficient operations, but also a reflection of the common conception of behavior shared by groups of organizations with common interdependencies. Boundaries among organizations become blurred as the actions of one influence the environment of another. Each is influenced by the next as a broad social order or pattern emerges (Scott & Meyer, 1992). Cultural rules, or *institutions*, evolve that give collective meaning and value to particular entities and activities, integrating them into larger schemes (Meyer, Boli & Thomas, 1987). Organizational action then becomes an attempt to establish legitimacy by incorporating those practices and principles that are consistent with the cultural rules in place (Orru, Biggart & Hamilton, 1991).

Clearly it would be naive to argue that increasing costs do not influence corporate decision-makers. But, rather than viewing costs as the dominant variable, I present it as one mechanism in many by which the institutional field applies pressure on the firm. Other *coercive* mechanisms (DiMaggio & Powell, 1983), of which costs may be one, include protests, lawsuits, political lobbying and direct negotiation. Furthermore, *normative* mechanisms (DiMaggio & Powell, 1983) can include the establishment of occupational standards and the movement of personnel between organizations which, in the environmental management field, has been extremely fluid not only among industries, but also among industry, government and consulting firms. And finally, *mimetic* forces (DiMaggio & Powell, 1983) have also become evident as organizations attempt to model themselves after others which they perceive to be successful. This phenomena has become as blatant as leading companies, such as DuPont, establishing environmental consulting firms to show other companies how they manage environmental affairs, or as ubiquitous as the voluntary 33-50 program.

Therefore, to understand how firms have evolved, one must also understand how the institutional field has evolved. And likewise, to understand what options are open to the organization for future action, one must understand the dynamics within the existing institutional field. The analysis in both cases requires a strong historical component. Over the past three decades, the institutional field has evolved in its makeup, power relationships and institutional perspectives. Most notably, the constituency pressing for increasing corporate environmental responsibility has evolved to include an increasingly diverse set of interests and interested parties: conservation/environmental groups, employees, the community, insurers, owners/investors and customers. In addition, industry membership have evolved to include both new types of firms (i.e. environmental service firms) as well as a more pronounced role for

trade associations. Furthermore, the balance of power among the institutional actors has evolved as to their relative influence within the institutional field, to affect both the direction of the field and the actions of its members. As this evolution occurs, corporate structure and strategy evolve as well. Therefore, if institutional fields are the primary driver in the development of corporate environmental strategies, the shifts in such strategy should occur, not necessarily with shifts in costs, but with shifts in the makeup or power balances of the institutional field.

As the institutional field establishes new codes of conduct, corporate environmental responses will reflect these evolving perceptions, both as a source of empowerment (defining what they ought to do) and as a source of control (limiting options for consideration) (Jepperson, 1991; Fligstein, 1992). Technical environments themselves become highly institutionalized. Institutional fields limit the opportunities for agency by influencing the interests and objectives of the actor.

But conversely, agents can also affect the formation of institutional fields by expanding those interests in search of new avenues of action. Thus, contrary to traditional institutional accounts, corporate action is not to be viewed as entirely subservient to the demands of the institutional environment (Oliver, 1991; Powell, 1991). As integral members of the field, corporate decision-makers have the power both to resist or to rapidly respond to shifts in institutional pressure. Such strategic action may be observed as a lag (in the former case) and a lead (in the latter case) between institutional change and organizational action. Going further in this integration of power/agency and institutional theory, corporate decision-makers also have the power to initiate institutional change. Again, as integral members of the field, the final makeup, characteristics and power relationships within the institutional field are within the bounds of

influence of its individual members. This power is not universal and firms vary individually and as a group in their ability to either resist or alter institutional pressures (Fligstein, 1990). However, it is expected that shifts in corporate strategy will, in turn, affect the makeup and power balances of the institutional field.

With the continued interaction of the institutional field comes a convergence in the strategies and perspectives among the various institutional actors as institutional pressures drives toward isomorphism. At times, this process of isomorphism can progress through explicit mechanisms of normative, coercive and mimetic pressures (DiMaggio & Powell, 1983). Oftentimes, however, this convergence is more implicit than the agents know or wish to acknowledge. "Following only (their) own laws", each "nonetheless agrees with the other" (Leibniz, 1866: 548). The process of convergence is interrupted and the field again becomes altered in its makeup and power balances with the emergence of an environmental jolt or crisis which forces new solutions beyond the realm of standard institutional routines (Meyer, 1982). Following these events, the field's makeup is altered and the tendency towards convergence of purpose, methods and objectives among the various members begins again.

These jolts can empower new members to enter the field or shift the power balances of the existing field. As new members enter the institutional field or if the power shift is sufficiently large, new internal structures become necessary with new forms of information channels and new forms of boundary spanning functions. It can be expected that new external stakeholders will also be the product of the structures legitimated by the institutional field. Only when internal structures (however circuitous) allow the interaction among institutional constituents can they be considered to occupy a common field.

3.3. Defining the Institutional Field.

The most fundamental construct of the entire preceding discussion has been that of the institutional field. But, what is it? How is it to be defined? Breaking down the construct for its analysis can be problematic. There is a great variety and ambiguity in the terms used throughout the literature. Firms are described as existing in an organizational field (Scott, 1991), institutional sphere (Fligstein, 1990), institutional field (Meyer and Rowan, 1977; DiMaggio, 1991), societal sector (Scott and Meyer, 1992), and institutional environment (Orru, Biggart and Hamilton, 1991; Powell, 1991).

White suggests we "think of the institutional field, not as some tidy atom or embracing world, but rather as complex striations, long strings rotating as in a polymer goo, or in a mineral before it hardens" (1992: 127). This is hardly a useful construct for measurement, but it highlights the complexity and amorphous nature of the concept of the institutional field. Institutions are robust articulations of network populations (Baker, 1990; Burt, 1992; Granovetter, 1985), articulations which invoke story sets across disparate institutional members. Network populations interpenetrate through migration and conquest and other processes, from which control struggles emerge on a new scale. Then as populations overlap and interpenetrate, complexity increases still further (White, 1992).

Despite this seeming incomprehensibility, a workable construct for the field becomes necessary for understanding the true complexity of institutional phenomena. A reduction in this complexity requires an uncoupling of the field's network populations and ties. This manifests itself first of all as a reduction in the extent to which the same agents are linked to each other in a variety of fields - say kinship, religion and economic production - in other words, a reduction in

the "multiplexity" of relationships (Calhoun, 1993: 77). But the uncoupling also manifests itself in a growing heterogeneity among fields, a reduction in the extent to which each is homologous with the others (Calhoun, 1993). It is impossible to pick out large and complicated patterns which seem to transpose across diverse settings, but to support the institutional field as a general construct illustrated by such a pattern, analyses which are more general and systematic are needed. Inhomogeneity of networks remains a challenge to measurement and perception despite attempts to sidestep it, but it may be a necessary aspect of institutions. Boundaries of institutions must accommodate inhomogeneity of networks (White, 1992).

According to DiMaggio (1983), the process of institutional development or 'structuration', consists of four parts: an increase in the extent of interaction among organizations in the field; the emergence of domination and patterns of coalition; an increase in the information load with which organizations in a field must contend; and the development of a mutual awareness among participants in a set of organizations that are involved in a common enterprise (DiMaggio, 1983). Similarly, Scott & Meyer (1991: 117) define the concept of the societal sector as both "a collection of organizations operating in the same domain, and organizations that critically influence the performance of the focal organization". In coming to grips with a construct of the field, White (1992) suggests that a first step is to fix on both the focal point and the locales for actors both with each other and in regular space. Likewise, Evans (1965) directs his analysis of the "organization-set" towards the "focal organization" as either an organization, or a class of organizations, and then traces its interactions with the network of organizations in its environment.

The two characteristics which stand out as critical in each of these depiction's of the institutional field are (1) the importance of defining a "focal"

point (or set) around which to define the field and (2) some sort of structural link or "connectedness" (DiMaggio & Powell, 1983: 149) between the field's membership and that focal unit. These two characteristics, however, are not mutually independent. An understanding of connectedness is necessary to define the focal point and the choice of the focal point will affect the resulting construction of connectedness.

To elaborate, the choice of a focal point may be as narrow as that of a single organization (i.e. Selznick, 1949), or as broad as that of industry (i.e. Fligstein, 1990), or even as broad as that of society (Ramirez & Boli, 1987). When the focal point is expanded beyond that of having a unitary member to becoming a set of members, the connectedness of that focal set must be explained. How that connectedness is determined is related to how connectedness is determined between the focal set and the rest of the institutional field. The former might be termed *first order* institutional connectedness, while the latter might be termed *second order* institutional connectedness. To elaborate further, how narrowly or how broadly that focal point is defined will, in turn, determine how narrowly or broadly the set of interconnected institutional members will be observed. A broad set of focal actors will have many more structural links than will a smaller or unitary set of actors. As a result, connectedness becomes the central institutional characteristic.

Many theorists begin to define connectedness on a technical basis. For example, Scott & Meyer (1991) identify the set of focal organizations as a collection of organizations operating in the same domain, as identified by the similarity of their services, products and functions. In defining the organization-set, Evans (1965) identifies technical links such as the flow of products, services, information and personnel. However, the concepts of both the focal point (and the institutional field that subsumes it) go beyond characteristics of resource

dependence (Pfeffer, 1982). There are common perspectives, identities or language that are shared among its members. The field's links or connectedness are based as much on social ties as they are on technical ties. These ties "are not simply investigator's aggregate constructs, but are meaningful to participants" (DiMaggio, 1991: 268). They include sources of normative and cognitive influence (Scott, 1991) around which generalized belief systems (Scott & Meyer, 1991) will be developed.

However, just as organizations are not to be viewed as monolithic, so too must the field not be viewed as unitary. Firms exist within multiple institutional fields and their respective bounds must be defined along both technical and social dimensions. For example, the institutional field surrounding the issue of corporate governance is much different than the institutional field surrounding the issue of environmental protection. A firm can exist in both, but there are distinct differences in their focal point and connectedness.

In coming to grips with a definition that is readily applicable under such diverse conditions, we can begin by describing the connectedness within each field as *topic specific*. Topics may differ from one another along both social and technical dimensions with the composite of characteristics creating a common identity, language or "story set" (White, 1992) both on the first order (in the focal set) and on the second order (in the institutional field). The topic of corporate governance has a social component that affects particular functions within the organization of the focal set (i.e. executive management). The topic of environmental protection does not, but rather increasingly cuts across all functions of the firm. Conversely, the topic of environmental protection has a technical component that segregates industries based on their products or processes. The topic of corporate governance does not and cuts across all industries.

However, more than a strict technologically determined segregation, technological practices are subject to social interpretation. Technology is not absolute but defined along the dimensions created by those inside the focal set and inside the institutional field. The common identity that results is derived both endogenously and exogenously to the focal set. For example, chemical company "A" may produce an organic plastic such as poly-vinyl chloride. An equally sized chemical company "B" may produce an organic solvent such as trichloroethylene. In terms of the institutional field encompassing the topic of market competition, these two firms are technologically differentiated and therefore segregated. However, in terms of the institutional field encompassing environmental protection, these two companies may be technologically linked. Regulations or activist pressure may similarly categorize them for institutional pressure, thereby creating the link exogenously. Or, they may perceive commonly shared technical or political solutions to environmental problems and form the link endogenously. In the end, the focal set and the institutional field that surrounds it forms as a result of the connectedness defined by both the focal set of organizations and the institutional set of actors. What results is a common baseline of identity, language, stories, interaction and/or contact that surrounds a single topic.

Capturing the complexity of these social dimensions of connectedness requires an in-depth assessment of the social interaction that takes place (i.e. Selznick, 1949, 1957). However, given analytical constraints, we must instead rely on more generally identifiable examples of organizational connectedness. "While institutional boundaries are contested and hence fluid, they should in principle be observable in patterns of material and symbolic practice" (Friedland & Alford, 1991: 262 n. 20). What must be acknowledged is that every attempt to define the field will result in some sort of simplification. Each simplification

allows measurement to be more possible, while at the same time, results in an exclusion of some influential components of the field. Given this tradeoff, our attempts to develop a usable construct must accept a certain degree of lost accuracy. In essence, the more comprehensive the definition, the more complex and empirically impractical it becomes.

Scott (1991) offers a list of possible actors that could make up the institutional field, such as critical exchange partners, sources of funding, regulatory groups, professional and trade associations, special interest groups, the general public, and other sources of normative or cognitive influence which effect individual or organizational action. In analyzing the shifting "conceptions of control" within American Corporations, Fligstein (1990) identified the field as key actors within firms and the government. The cause for any long run decline in the American economy, he argued, would be located in the interaction between members of these two groups, thereby assuming little significant influence from other institutional members which are present. Such simplifications become necessary, but must be acknowledged as a potential source of error.

In analyzing the greening of American Corporations, the focal point must be narrowed and the field must be broadened for accuracy. Environmentalism affects groups of firms differentially along technical and social dimensions. Industry fields must be analyzed in subsets, each sharing common technical and socio-political pressures to adopt environmental management practices. An analytically convenient subset in which to capture a reasonable approximation for a focal set is that of industry (i.e. SIC Code). With the focal point of the field defined as a single industry, the field can then be constructed. The two actors Fligstein identifies are clearly present: the government, in the form of the Environmental Protection Agency following its creation in 1970 (and the

Departments of Agriculture, Interior and Health, Education and Welfare prior to 1970) and the field of regulated firms. In a divergence from Fligstein's conception of the field, environmental management has an additional set of "actors" which have been influential: third party environmental interests.

Now, with the focal point and the three primary actors of the field identified, the resulting form and function of the field and its individual members can then be analyzed as a negotiation. The structure of the field is a state of forces among agents and institutions engaged in "a war or, if one prefers, a distribution of the specific capital which, accumulated in the course of previous wars, orients future strategies" (Calhoun, 1993: 86). This stresses the importance of viewing the institutional field, and therefore the institutionalization process, as existing in a state of flux rather than in static steady state. It is continually evolving in its makeup and its power relationships.

In the case of corporate environmentalism, the institutional field's makeup has evolved over the past three decades, to include most notably, a growing list of external stakeholders pressing for increased corporate environmental responsibility. This list has evolved to include an increasingly diverse set of interests and interested parties: conservation/environmental groups, employees, the community, insurers, owners/investors and customers. In addition, the group comprising the focal industry has evolved to include both new types of firms (i.e. environmental service firms) as well as a more pronounced role for trade associations (i.e. the CMA). The balance of power among the institutional interests has also evolved as to their relative influence within the institutional field, both to affect the direction of the field and the actions of its members. This is an important consideration for considering the role of the state.

The Role of the State. No discussion of corporate environmental practice can ignore the influential role of the state. The state, in the form of the Environmental Protection Agency (EPA), has altered institutional practices in both coercive and cooperative ways. In the most directly intrusive example, its role as defined by the Superfund program, necessitates that it act as a contractor of services, effectively assuming some level of financial control over the organization whose waste site it is managing. In the less intrusive area of establishing environmental standards, its role requires that it rely on outside agents for information and interpretation, both from industry in determining what is technically possible, and from influential stakeholders in determining what is socially desirable.

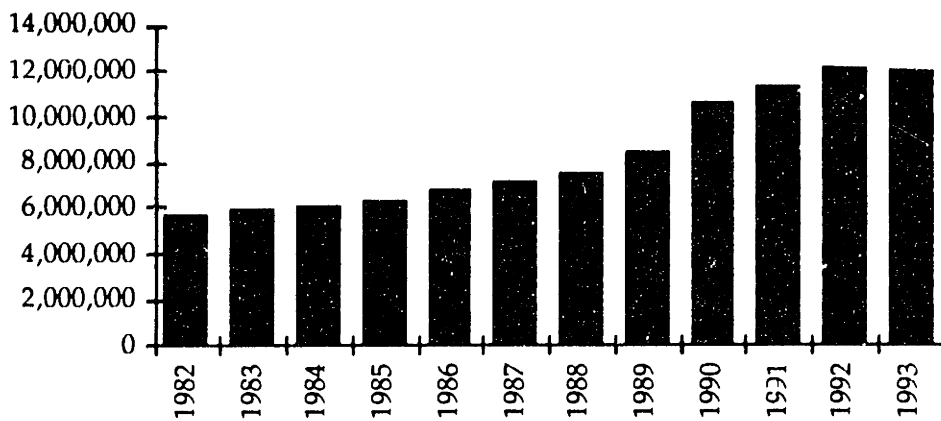
The role of government in the formation of regulations has predominantly been that of negotiating among competing interests (Olson, 1965). The idea of a national interest is fictional. All group interests pertain to groups comprising only a part of the nation or society (Bentley, 1949). For example, the first major regulatory agency, the Interstate Commerce Commission (ICC), created in 1887, was formed as a negotiated compromise between railroad and non-railroad interests, most notably shorthaul shippers (Gilligan, Marshall & Weingast, 1989).

Galbraith (1952) defines the primary role of government as the support of "countervailing power". A group that seeks countervailing power is, initially, a numerous and disadvantaged group which seeks organization because it faces, in its market, a much smaller and much more advantaged group. Unorganized workers sought and received it in the form of minimum wage legislation, bituminous-coal mines sought and received it in the Bituminous Coal Conservation Act of 1935 and the National Bituminous Coal Act of 1937. In a considerably more tenuous sense, investors received it, via the Securities and Exchange Commission. Steps to strengthen countervailing power are not, in

principle, different from steps to strengthen competition. "Given the existence of private market power in the economy, the growth of countervailing power strengthens the capacity of the economy for autonomous self-regulation and thereby lessens the amount of over-all government control or planning that is required or sought" (Galbraith, 1952: 142).

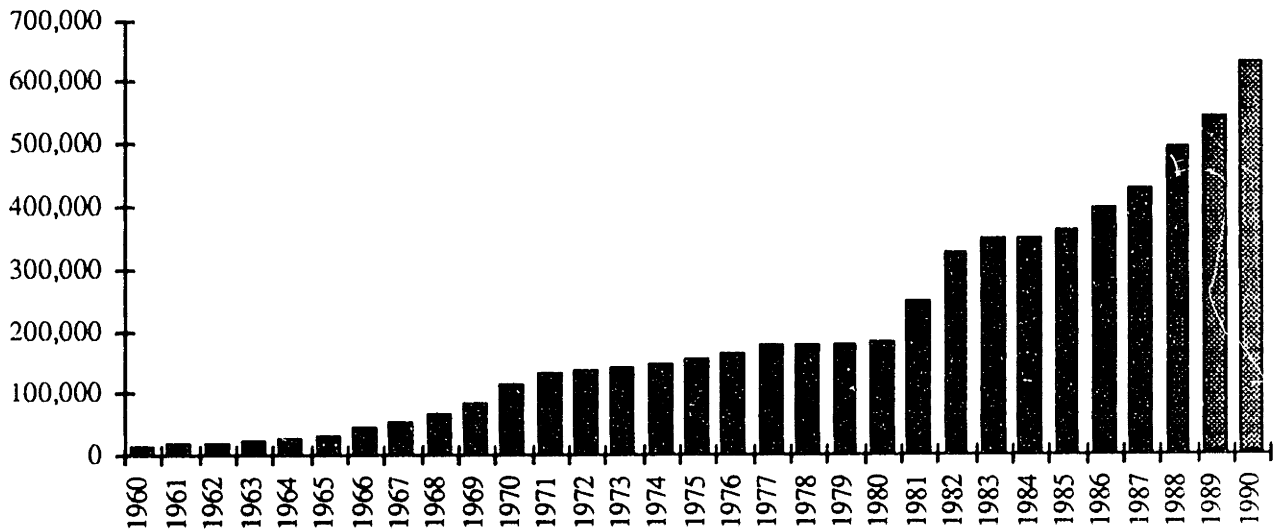
The Role of Environmental Interests. What differentiates the formation of the Environmental Protection Agency (EPA) from these examples is that it exemplifies the support of countervailing power among both social and economic interests. By the late 1960s, public support for the environmental movement had grown to enormous proportions (Dunlap, 1991). The creation of the EPA balanced the numerically strong but politically weak environmental interests with the inversely empowered corporate interests. Given this apparent bias, it becomes a consideration of whether the state has become "captured" by environmentalists, assuming their interests in enforcing regulations on industry. Over time, their power and numbers have grown in spurts both on the broad group level — see figure 3-1 — and on an individual basis — see figure 3-2.

FIGURE 3-1
Membership of the Largest 16 Environmental Groups (1982-1993)



(Source: Gale Research (1993))

FIGURE 3-2
Sierra Club Membership (1960-1990)



(Source: Internal Sierra Club Records)

The first graph shows the timing of a major growth spurt for the broad set of organizations to be around 1989. The second graph shows this to be one of three major growth spurts, in the late 1960s, early 1980s and late 1980s. Each of these growth spurts represents shifts in political power that can be used to influence industry and government in the establishment and transformation of institutional fields. It could be argued that public support represents a balancing of countervailing power. Support increases when it is perceived that environmental issues are inadequately supported within economic and political arenas. Support grew steadily through the 1960s and leveled off in 1970 with the formation of the EPA. As the EPA's first administrator William Ruckelshaus explains, the quickest way to deflate a growing social movement is to give it everything it wants (US EPA, 1993). Support grew again in the early 1980s at the time of President Reagan's efforts to cut back the influence of government on industry and, in particular, that of the EPA. With Ann Burford (EPA administrator), Rita Lavelle (Superfund) and James Watt (DOI) removed from

office in 1983 and William Ruckelshaus reinstated, that support again leveled off. Support grew again steadily through the late 1980s with the emergence of a variety of environmental threats that were in need of attention: Bhopal, acid rain, global warming and the Exxon Valdez. This depiction presents environmental groups waging a war of sorts, attempting to balance their interests against those of industry, the government and the general society.

3.4. Conceptualizing Institutional Change.

How are we to conceptualize the introduction of new institutional members or entire groups of institutional members? As new groups of institutional actors enter the field, are we observing the creation of a new field, the coalescence of an existing but fragmented field or the merging of two separate fields? Surely, institutional actors existed in some sort of social environment before they have become "connected" to the focal firms of the field being studied. How is that environment to be treated in the context of the resultant social network observed through our lens of the focal organization?

Jepperson (1991) identifies four major types of institutional change: institutional reformation, institutional development, de-institutionalization and re-institutionalization. *Institutional formation* "is an exit from social entropy" (Jepperson, 1991: 152) or what may be described as the coalescence of a fragmented institutional field. This may literally be the creation of an institutional field from what before was nothing. *Institutional development* represents institutional continuation or a change within the institutional form. *De-institutionalization* represents an exit from institutionalization, perhaps the opposite of formation. And finally, *re-institutionalization* represents exit from one

institutionalization and entry into another institutional form, organized around different principles or rules.

In the development of the environmental institutional field as defined by industry as the focal unit, the evolutionary phenomena would appear to be that of institutional development. As new actors enter the field, that field is developed into something new, a new structure incorporating new rules and perspectives. But, how do we describe the change that occurred to the fields from which these new organizations emerged. Environmentalists existed long before industry recognized their presence. The institutional field from which environmentalists emerged did not disappear. It still exists although changed through the introduction of a new member, industry. The difference is merely a matter of theoretical perspective, who is your focal unit. This institutional field may be described as having gone through a similar development.

Rather than choosing to focus on one field at the expense of the other, I propose that this institutional development is accomplished through the merging of two fields. Each is then developed as they unite and overlap. The perspectives of one begin to infuse into the other and visa versa. This follows with the concepts of institutional isomorphism where boundaries of the organizations through constant interaction begin to blur. It may also be more accurate to describe this as re-institutionalization. Both institutional fields are now changed and reformed as one. In the separate context of each, they have developed individually. However, in the context of both, member organizations have exited from one institutionalization and entered into another institutional form organized around different principles or rules. The old form, in both cases, is left behind and the new form emerges a composite of the two.

There is an important consideration that must be addressed in this discussion. Corporations are not to be viewed as monolithic. They are extremely

heterogeneous and the changes brought about by environmentalism are as varied as the individual parts. Some parts are affected to a great extent while others may remain untouched. Changing environmental attitudes and practices must be observed in the context of the various departments of R&D, operations, environmental affairs and corporate management. Each of these departments can be argued to exist within its own institutional field. The idea that one institutional field pervades the entire firm is an inaccuracy.

This creates some important considerations with respect to the integration of environmentalism into the core functions of the organization. As I view the situation, firms exist within multiple fields. The focal firm interacts with these multiple fields with differentiated attention. But, for example, as environmentalism gets infused into more mainstream operating decisions, the question arises of whether firm members live in two separate fields or whether the two fields merge as one. For example, after the Valdez spill, companies may decide to buy their crude from OPEC thereby minimizing environmental risks by having spills in the open Atlantic rather than in US waters. Does it make sense to conceptualize these fields as remaining differentiated, being treated separately? Given the conception of merging institutional fields, it would be more consistent to argue that environmental considerations become subsumed within the existing fields driving material sourcing decisions. Both are changed by the merging process.

3.5. Five Research Propositions.

With the preceding discussion of the fundamental constructs of the institutional field and institutional change defined, what follows is a theoretical development of five propositions. However, rather than acting as testable hypotheses, these are presented more in the format of guiding principles by which to focus the research inquiry. They support an interpretive account of corporate environmental evolution rather than a discrete experiment. As a central focus, they direct attention on the linkages among the central variables: the institutional field, organizational strategy, organizational structure and external events. They are tied together in the following five sections:

- 1.) Linking the institutional field to organizational strategy;
- 2.) Linking organizational strategy to the institutional field;
- 3.) Linking the institutional field to internal organizational structure;
- 4.) Linking the institutional field to the convergence of its members;
- 5.) Linking events to the institutional field.

1.) **Linking the Institutional Field to Organizational Strategy.**

One common thread to all institutional theory is the establishment of dominant conceptions of behavior within the institutional field. Fligstein (1990) terms the set of institutionalized rules and understandings the "conception of control". These perspectives, he argues, can have two sources: they can be borrowed from other organizations or organizational fields, or they can be embedded in how the different subunits of an organization conceptualize its problems and solutions. As such, they imply a filter that actors use in viewing their internal and external problems and in defining their actions to solve those problems (Fligstein, 1992). In concept, institutions form descriptions of reality for

the embodied organization, explanations of what is and what is not, what can be said and what cannot. They are accounts of how the social world works, and they make it possible to find order in a world that is disorderly (Meyer, Boli and Thomas, 1987). In terms of organizational problem solving, the conceptions that dominate the institutional field can be argued to focus organizational vision towards a specific viewpoint of possible options.

Historians have examined how a combination of individuals and events lead to the creation of alternative technological paths (Rosenberg, 1982; David, 1985; Arthur, 1988). Other scholars have examined how individuals create the institutional environment that shapes a technology's emergence (Barley, 1986; Weick, 1990). In a similar way, assessing the evolution of an organization's technological solutions to environmentalism fits a socio-cognitive model (Garud and Rappa, 1992) where the integration of beliefs, artifacts and evaluation routines, as influenced by the institutional field, guide possible actions. It can be expected that the existing social interpretation of the defining factors of environmentalism will influence the resulting greening process that will be employed to reach that goal. If regulatory compliance at the end-of-the-pipe is the guiding objective and interest of the firm as influenced by the dominant institution, it is not likely that efforts to go beyond or tangentially to government regulations will be explored. Only when environmentalism is institutionally defined as proactive management through product or process alteration will it be likely that these kinds of solutions will be sought.

A case in point, Balzers Corporation of Hudson, New Hampshire was able to cut costs for cleaning optical components, semiconductors and compact discs by as much as \$100,000 per year by switching technologies from a freon-based to a water-based system. However, this innovation was not implemented as a self-directed effort. It was found only after the Environmental Protection Agency

forced the firm to view its pollution problem in a different way by invoking a regulatory fine that could either be paid directly to the government or used towards capital improvements that reduced pollution (McSorley, 1993). The commonly held institutional beliefs did not include the possibility of increasing profits by minimizing pollution. Therefore, the solution was not visible to the firm.

Once established, rules and ideas operate both as a set of structures limiting possibilities for action (i.e. what others are doing, thereby structuring what reactions are possible) and as a cultural template for structuring new actions (i.e. what actions make sense) (Fligstein, 1992). Institutional fields help to form a sense of organizational "identity" (White, 1992). They both control and empower organizational action (Jepperson, 1991). They control by influencing, not necessarily the actions, but the interests and objectives of the organization. Agents do not generally see action as a choice among all objective possibilities, they rather see only one or a few possibilities. The source of action then becomes a choice among a series of moves which are objectively organized as strategies without being the product of a genuine strategic intention. This would presuppose at least that they are perceived as one strategy among other possible strategies (Bourdieu, 1977: 73).

This concept of influential power between the institutional field and organizational strategy leads to the first guiding proposition for inquiry. If institutional fields are the primary driver in the development of corporate environmental strategies, then shifts in such strategy should occur, not necessarily as the result of shifts in costs, but with shifts in the makeup or power balances of the institutional field. It is important to acknowledge that coincidental timing is not a necessary component of this interaction. Firms may respond quickly to perceived changes in the field and therefore "lead" the rest of

the field in its strategic shift, or respond slowly, in which case a "lag" will be observed.

PROPOSITION 1 — Linking the Institutional Field to Organizational Strategy: Changes in the makeup and power balances in the institutional environment will create pressure for changes in industry strategy.

2.) Linking Organizational Strategy to the Institutional Field.

Linked to the first, a second proposition in the relationship between the institutional field and organizational strategy deals with the power of the firm in either resisting or altering the institutional field. Going beyond traditional institutional arguments, I argue a role for agency in a world where cultural and sociological factors shape how organizations address environmental problems. Who an organization or individual perceives itself to be is bound up in the control applied by the social surroundings as well as the grounding in material production and the constraints from physical space. This acknowledges the control imposed by both the social and the physical worlds. However, given the complexity of institutional demands, the diversity in physical restraints and the variety in organizational forms within institutional fields, firms can react differently, creating heterogeneity in the organizational responses (Powell, 1991).

It is identity seeking control which gives energy to practical activity in the social context (White, 1992). Each organization continues discovering and reshaping itself in action. Social processes and structure are traces from successions of control efforts (White, 1992). The menu of actions thus reflects conforming to fashion among peers, but seeking control implies responses which can be original, at the very least, in their timing (White, 1992).

Although traditional institutional approaches do not acknowledge the role of agency and power (for which it has often been criticized), these considerations are receiving increasing attention in the literature. The neo-institutionalist approach has begun to depict organizations as able to exercise strategic choice (Child, 1972) in relating to their institutional environment (Scott, 1991). Oliver (1991), in an attempt to introduce agency into the institutionalist perspective, has developed a typology of strategic responses to institutional pressures that vary according to the degree of active agency and resistance exerted by the organization. She provides theoretical predictors to strategic responses based upon the willingness and ability of organizations to conform to the institutional environments as well as the characteristics of the institutional forces being applied. Specifically, the type of organizational response depends on five factors: why these pressures are being exerted (cause), who is exerting them (constituents), what these pressures are (content), how or by what means they are exerted (control), and where they occur (context).

Exxon's response to the Valdez disaster is a case in point. In the critical hours immediately following the shipwreck, Exxon was reluctant to acknowledge responsibility or take action to rectify the situation. The power of the firm to resist institutional pressures is exemplified by the ease with which it resisted external pressure, endured public condemnation and paid the resulting penalties (which are now approaching \$7 billion). Executives of rival oil companies admit that such an amount could have bankrupted their organizations.

While useful in providing a rubric for predicting individual organizational behavior, in such a presentation Oliver describes a sharp distinction between the firm and its field. While there is an empirical necessity to separate the two constructs, such a mechanistic description of organizational/institutional field

interaction creates some of the same pitfalls as rational choice theory. Instead, organizational action should be viewed as both the result of and the source of institutional action. As an integral part of the institutional field, an organization's strategic response will likely yield a reformation of the field's institutions while, through feedback loops, the firm will again be influenced by the resultant field.

In the Exxon case, their resistance empowered interest groups and the government to push through the Oil Pollution Prevention Act of 1990 further increasing the regulatory restrictions on all crude oil shipping and, empowered a jury to inflict a record \$5 billion judgment against the company. These outcomes have increased institutional pressure towards homogeneity by (a) coercing Exxon individually to improve its environmental practices, and (b) expanding the standard by which all firms should behave. The process of institutional interaction becomes recursive as social structure becomes both the "medium and outcome of the reproduction of practices. Structure enters simultaneously into the constitution of social practices, and 'exists' in the generating moments of this constitution" (Giddens, 1979).

In a still further break from traditional institutional theory, I argue that not only can firms individually diverge from institutional pressures, but, as integral members of the institutional field, they can also influence their initial formation, and as a result, affect change within the other institutional members. The relative size and legitimacy of one organization gives its actors differential power to dictate the actions of others (Fligstein, 1991) and shape social fields. But power need not be deliberately applied. It is always present, if sometimes unconsciously, it is simply and impersonally systematic (Calhoun, 1993: 94).

Not always the result of force, cooperation within the overall field would also be expected based on the degree to which all members benefit from the

formation of stable rules governing legitimate actions in the field (Fligstein, 1991). In the greening process, such mutual benefit has recently become visible. Distinct groups of firms are beginning to realize that they have common goals and a mutual dependence in achieving those goals. In essence, individual firms are realizing that they cannot stand out as clean in an industry that is perceived as dirty. As a vivid example, Dow recently conducted a public survey around their plants to find out at what distance their reputation did not exceed but mirrored that of the rest of the industry. The answer was only three kilometers.

Firms are caught in what may be described as an *n*-player prisoner's dilemma. If one firm unilaterally adopts pro-active environmental practices, it would suffer a negative payback. The actions of a recalcitrant industry would precipitate increasing regulation regardless of the individual firm's advances. If, on the other hand, all firms adopt environmentalism in unison with a concerted effort by society to reward such practices, then the payback will be positive for all. The success of each firm's environmental efforts, therefore, rests strongly on the actions of others and less on any individual standard of behavior. Under such circumstances, firms follow one unifying body for a pronouncement of industry goals and standards. This was originally the EPA in the early 1970s and has grown to include groups such as the CMA, API or CERES in the 1990s as well as individual firms perceived as successful.

The development of common industry programs to adopt environmental practices is an interesting cross between what DiMaggio and Powell (1983) refer to as coercive and mimetic isomorphism. Firms are interested in establishing a common front by adopting practices found to be successful by other firms, hence mimetic. Yet, programs like the CMA's Responsible Care program, require adoption of environmental principles as a condition of membership. This forces laggard firms to advance to a commonly defined standard beyond that which is

required by law, hence coercive. The establishment of such a program acknowledges the role of agency in the formation of institutional fields. Yet, backing up one more step yields evidence of even further agency effects.

The Responsible Care Program effectively originated within one firm, Dow Chemical, and was instituted industry wide through the CMA as a way to improve the image of the whole industry. This phenomena presents an example of the origins of coercive and mimetic isomorphism as a strategic activity. A leading firm may initiate such institutional forces to gain legitimation and strategic benefits for actions undertaken that yield negative benefits if undertaken alone but yield positive benefits if undertaken in unison with the rest of the population. Since institutional theory has largely been applied to non-profit organizations such as schools (Brint and Karabel, 1991) and municipalities (Tolbert and Zucker, 1983) in their attempts to gain greater efficiency, this type of result would not likely be observed since there exists little incentive for these types of firms to force others to follow. However, in the case of corporate greening, where firms may be seeking burden reduction in response to exogenous shocks rather than efficiency maximization in response to market opportunities, institutional forces may be created as a strategic activity to gain legitimation for reactive responses. As a result, firms have tremendous incentive to coerce others to follow.

Summing up, corporate action is not subservient to the demands of the institutional environment. As integral members of the field, corporate decision-makers also have the power both to resist institutional pressures and to initiate institutional change. This power is not universal and firms vary individually and as a group in this ability. But, the final makeup, characteristics and power relationships within the institutional field are within the bounds of influence of its individual members. Therefore, it can be expected that shifts in corporate

strategy will, in turn, affect the makeup and power balances of the institutional field.

PROPOSITION 2 — Linking Organizational Strategy to the Institutional Field: Changes in industry strategy will influence changes in the makeup and power balances of the institutional environment.

3.) Linking the Institutional Field to Organizational Structure.

The relation of an organization to the external environment is, however, only one level of institutional action. There is also the internal organizational world to be considered. The institutionalization process reflects the organization's own distinctive history, the people who have been in it, the group it embodies, the vested interests they have created, and the way it has adapted to its environment (Selznick, 1957). Firms often find themselves negotiating internally among various institutional pressures, each with their own internal and external interests. Multiple institutional fields can be viewed as being overlain on the focal organization or industry, each having its own cultural rules, oftentimes at odds with each other or with the firm's existing culture. The strength and diversity of impact of these institutional fields will offer options on which behaviors should be adopted by the firm while at the same time empowering different groups within the firm to affect those changes.

However, internal power bases may be threatened by the introduction of new institutional demands. This can have tremendous implications for organizational and technological change (Thomas, 1991). Organizations must allocate scarce resources, and it is not always apparent as to what might be the optimal mechanism for such allocation. Hence, political power enters into all important organizational decisions and must rest on some structural claim over

resources (Pfeffer, 1981). Perrow (1970) argued that in the 1970s, sales and marketing personnel were regarded as dominant in the firm since, as manufacturing became routinized, the sales position occupied a strategic position with respect to the external environment. Fligstein (1990) took this one step further by observing that the changing power-base within the American firm had shifted to what it is today, finance, due to power shifts created by government regulation.

So, in similar fashion, political power affects the adoption of environmentalism within the firm. An important aspect of this political process is the historical context in the formulation of organizational strategy (Thomas, 1994). How a firm traditionally dealt with environmental protection will have a significant effect on how it deals with both the issue and how it views its purpose in the future. Firms traditionally see the process of technological development and process management as either the creation of new products or the minimization of labor in the process (Thomas, 1994). The motivation of toxicity, pollution or resource-use reduction may simply not be in the organizational schema (Weick, 1979) or cognitive structures (March and Olsen, 1976) and will require organizational learning to fill the gap. To bring about significant change within the organization will require strong support from within the power base of the corporation in what DiMaggio (1988) refers to as the structural politics of institutionalization.

The balancing of this power within the organization comes from both internal interests and external institutional demands. Therefore, power is to be seen, not in equilibrium, but in a state of flux (Ocasio, 1994). For example, the emergence of a strong environmental law or an influential investor movement may empower environmental management departments to counter traditional power bases within the firm. They may also involve departments of the

organization not typically involved in environmental affairs, thus creating pressures from non-traditional sources within the organization. Jackall (1988) describes an environmental manager who, when faced with non-supportive supervisors, privately calls in an EPA inspector who provides the needed power to pursue compliance.

This concept of institutionally induced internal power shifts is captured by the theory of "circulation of elites" (Pareto, 1968; Michels, 1962). Internal political dynamics lead to a periodic process of replacement of one elite group by another. As organizations face changes in the environment, executive capabilities and programs will be called into question, rivals and enemies will emerge, and those in positions of power will eventually lose their power. The obsolescence and contestation of executive power is accompanied by the rise and fall of alternative conceptions of control to and from positions of dominance within the corporation. Elite circulation entails both changes in the political structure and changes in the dominant ideology of control (Ocasio and Kim, 1994: 5).

The shifting of the internal power structures will be accompanied by a shift in the organizational structure. Environmentalism to the firm will represent a reassignment of responsibilities and functions. New job tasks are created while old job tasks are altered to incorporate new perspectives and responsibilities that reflect broader societal demands. In essence, what evolves is a new firm, but, the form that evolution will take is determined both by the internal interests of the firm and institutional interests pressuring for action. In assessing the possible categories of organizational response, four key organizational changes are identified (Hoffman, 1994b): changing the environmental management function, expanding the boundaries of the firm, altering the overall structure of the organization, and altering the corporate culture.

Changing the Environmental Management Function. Environmental management departments were originally created to mediate between the firm and environmental regulators. In this way they acted as "buffers" for the organizational core who continue to work in isolation from the distractions of government compliance (Thompson, 1967). The Conference Board (Lund, 1974) noted that in "96% of companies surveyed handled environmental policy decisions in company headquarters while only 3% made such decisions at individual plants". As these subunits face increasingly uncertain and changing environments, they must adopt more organic structures (Lawrence and Lorsch, 1967). As a result, it became critical that environmental management engage in "boundary-mediating" functions in order to filter and screen information that may be of use to the technical core in minimizing the environmentally harmful effects of its practices (King, 1993).

Altering the Overall Structure of the Organization. Organizational responses for dealing with environmentalism diffuse from the periphery to the core of the organization. Through this process, it transforms the work roles and functions of the various subsystems within the organization to create more of an unsegmented structure (March and Olsen, 1976). This may be viewed as moving from a high degree of organizational differentiation towards more integrated structures (Lawrence and Lorsch, 1967). Or, as Henderson and Clark (1990) point out, it may involve, not necessarily the creation of new functions but the reconfiguration of existing competencies in what they describe as architectural innovation.

Expanding the Boundaries of the Firm. Just as the environmental boundary expands inward, it may also expand outward. The boundaries of the firm may become increasingly blurred. Uncommon alliances among industry, government and non-government organizations (NGOs) are emerging. Two notable examples: EPA recently entered into a partnership with Amoco to study pollution reduction possibilities at its Yorktown refinery and, General Motors recently entered into a partnership with the Environmental Defense Fund to study a wide range of air pollution problems. Other companies acknowledge the importance of radically open community relations programs as being critical to environmental success. The use of such alliances is important in finding new and innovative approaches to environmental problems.

Altering the Corporate Culture. The issue of environmentalism may be transformed within the organizational "mindset" from being perceived as a negative exogenous threat that inhibits the firm from achieving its objectives, to that of a positive strategic opportunity of how the firm can gain competitive advantage (Mylonadis, 1993).

These changes can be viewed in the context of the culture of the organization. Just as Giddens (1979) states a circularity between values and norms within society, such circularity may also be expected to occur between the artifacts and underlying values of the firm. Schein (1990) defines culture as "a pattern of shared, basic assumptions that have been learned by a given group as it has solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and, therefore, to be taught to new members as the correct way to perceive, think, and feel about problems." Culture guides our interpretations and actions with respect to organizational behavior (Morgan, 1986).

Each of these changes can be expected to occur with shifts in the organizational strategy as dictated by external influences from the institutional field. Who applies that pressure will have direct implications for the internal structure of the firm as they may trigger different information channels or necessitate the creation of new organizational structures. Through which part of the organization an external stimuli enters, is processed, and exits will determine largely what the form of that output will be (Allison, 1971). Therefore, any shifts in the makeup or power relationships within the field should result in pressure for changes in organizational structure.

PROPOSITION 3 — Linking the Institutional Field to Organizational Structure: Changes in the makeup and power balances in the institutional environment will create pressures for changes in corporate structure.

4.) Linking the Institutional Field to the Convergence of its Members.

As the institutionalization process proceeds and institutional members continue to interact, the interface between the environment and the actor becomes highly fluid, the boundaries becoming increasingly blurred as commonly held rules become more universally accepted. Every organization is continually becoming more and more interpenetrated with other organizations (Meyer, 1992). This consideration stresses the importance of viewing institutionalization as a process in flux rather than a static state-of-affairs. As institutional fields mature, organizations converge in strategies, structures, and guiding perspectives. This convergence process relieves dissonance among institutional actors and drives the field towards equilibrium.

DiMaggio and Powell (1983) argue that institutionalization is a constraining process that forces units in a population to resemble other units that

face the same constraints. They specify three mechanisms — coercive, normative and mimetic — by which isomorphism can be increased, all of which can be identified in the spread of corporate environmental practices. However, isomorphism can also occur with more subtlety through the development of common language, an appreciation for mutual interests and the simple establishment of credibility among members of the institutional field.

For example, within the environmental management field, interest group pressure and government regulations have often singled out industries for common pressures. Oftentimes, these groups of industries are faced with similar technological challenges to which they respond using similar logics and technical perspectives. As a result, each firm's response resembles that of the other commonly influenced firms. The practices of the members of a group become more harmonized than the agents know or wish to acknowledge. "Following only (their) own laws", each "nonetheless agrees with the other" (Liebniz, 1866: 548).

Neither environmental interest groups, the government nor industry are isolated from the isomorphic effects of the institutional field. They are each influenced by the field and, ultimately by each other. Although they all have different origins and cultural bases, and different interests and objectives, through constant interaction and negotiation, they have become increasingly similar in makeup and tactics. As time goes on, they continue to merge in common ownership of the problem and common needs for legitimacy.

Michels (1959) describes this process in his "iron law of oligarchy" where the leaders of a social movement gradually become detached from the masses and cause which they are supposed to represent. Due to steady interaction, they begin to align themselves more with elite with whom they are trying to influence rather than the constituency with which they become detached. They become

driven by the desire to maintain their positions more than their desire to effect social change. This process is facilitated by the bureaucratization process that comes with growth in size.

Rather than dealing with this process as one simply of the consequence of social familiarity, Michel's iron law must be augmented with the political aspects of this change process. In the relationship so described, the environmentalist is trying to coerce the industrialist to change. Conversely, the industrialist does not want to change the environmentalist as much as he/she wants to minimize the form and level of the environmentalist's pressure. The industrialist has an interest in co-opting the environmentalist to weaken his/her institutional power. The externally visible result may be indistinguishable between either case. It is the underlying motivations that are different.

This phenomena appears to be facing environmental groups today. By the late 1980s, the mainstream environmental groups had become extremely professionalized (Gottlieb, 1993), developing established bureaucracies and maintaining huge budgets. This fact, coupled with a growing acceptance of their legitimacy by industry, has allowed them a stronger voice in industry affairs. For example, General Motors recently entered into a partnership with the Environmental Defense Fund to study a wide range of air pollution problems within its manufacturing operations. Although GM is expressly forbidden to use EDF's name in any advertisements, the success of such an alliance can be tremendously positive in legitimating GM's efforts in protecting the environment. Since EDF has often been a harsh critic of corporate polluters, their assistance in managing environmental affairs could help to avoid any such future criticisms.

Beyond environmentalists and industry, government is also influenced by the institutional field. Recently, the Amoco Corporation formed a partnership

with the EPA to study pollution reduction possibilities at its Yorktown refinery. To add credibility to the effort, the environmental research group, Resources for the Future, was commissioned for external peer review. The idea that an oil company would allow both a regulating agency and an environmental group access to one of its major refineries was a bold step. Many inside the firm (and inside the industry) speculated that this would open Amoco to increased enforcement and activist scrutiny. However, this represents a level of trust that comes with sharing a common conception of the problem and a common goal of finding a solution. Over time, the institutionalized credibility among business, government and industry has led them to begin to search among themselves for answers of what the role of business should be.

This merging of legitimacy and interests can be useful in bringing about increased change, but can be counterproductive for environmental groups in maintaining membership and budgets. As environmentalists and business interests converge, environmentalists find their identity diminishing. No interest group has meaning except with reference to other interest groups (Olson, 1965). Their identity is defined by the clarity of their ideological and structural opposition to a particular practice or organization. The original environmental group identity was defined in terms of their rejection of the institutional practices of the modern state and economy (Buttel, 1992) through the mismanagement of resources by industry. However, if it is perceived that the differences between environmentalists and business have diminished, constituents see less of a need for their continued support. In a way, achievement of its goals will facilitate its demise as it may experience apathy among its supporters. New goals must then be established or it will go out of existence (Zald & McCarthy, 1987).

Such convergence theories can also be applied to government. Life-cycle or evolutionary theories (Averch, 1990) argue that agencies begin with a vigorous

public interest perspective and age progressively. In old age they come to favor the regulated industry. At some point, the inefficiencies induced by regulations become sufficiently noticeable to the public that calls for reform or deregulation arise, and a new cycle begins.

Summing up, whether it is industry, government or environmental interests, all members of the institutional field are affected by the convergent pressures it creates. Over time, the boundaries among organizations become blurred as they become more alike in their understanding of the issues and where they perceive the solutions to be found. Therefore, over time we can expect to find increasing commonality among co-existing institutional members.

PROPOSITION 4 — Linking the Institutional Field to the Convergence of its Members: Once the field is established, its members will tend towards a convergence of strategies and structures as the field drives towards equilibrium.

5.) **Linking External Events to the Institutional Field.**

This process of convergence will be interrupted with the emergence of an environmental jolt or crisis which can empower new members to enter the field or shift the balance of power among existing constituents within the field. These events can expose institutions that are found to be inadequate for defining the physical world (in the form of breakdowns) or institutions that develop contradictions with other institutions. In both cases, these contradictions are socially interpreted as failures (White, 1992).

White (1992) goes so far as to argue that events, in and of themselves, become actors in the formation of organizational action and institutional thinking. However, backing off from such an extreme, I argue that events, by

themselves, do not negotiate in the formation of institutional fields. They, in practice, empower social actors to negotiate while directing the form and the focus of their strategy. Given the need for social surrogates, they become susceptible to social interpretation. Whether scientific data, a sudden disaster or a political maneuver, social actors are responsible for both the initial acknowledgement and the subsequent interpretation of an event and then using that interpretation for negotiating change within the institutional field. Given this component of social interpretation, events can become either reflections of the political balance existing within the institutional field or affect an alteration of that political balance.

In the first case, they can act as "catalysts" in the formation or alteration of the institutional field to align with the interpretation of whomever enjoys the greatest institutional power. A catalyst in the chemical/thermodynamic sense of the word is a compound which, through its mere presence, serves to facilitate a more rapid chemical reaction. It does not, however, force a reaction to occur that would not otherwise have occurred on its own. In the same way, environmental events serve to hasten the development of the environmental issue of the moment. For example, a toxic chemical cloud of dioxin was accidentally released from a chemical plant in Seveso, Italy in 1976. At that time, the banning of carcinogenic substances such as DDT was the topical focus of environmental regulation in this country. As a result, Seveso served as a catalyst for the banning of dioxin. Ten years later, a cloud of methyl-isocyanate was accidentally released from a Union Carbide plant in Bhopal India. At that time, the topical policy focus was corporate disclosure of chemical contaminant information to employees and the local communities. Therefore, the result of this incident was the development of several Community Right to Know Laws, including the

Toxics Release Inventory requiring that firms report all releases of contaminants from their plants to the public.

As a second implication of the institutional politics of event interpretation, events can be used to highlight social breakdowns in the validity of existing institutions in the field. They can be used to identify new areas of concern to which existing regulatory policies or institutional norms do not address proper action. For example, the Love Canal disaster was not the first abandoned hazardous waste site that had been discovered in this country. Yet, environmental interest groups chose this particular disaster as an opportunity to wage institutional "war" given its conveniently sensational participants — "Love Canal", Hooker Chemical, and Niagara Falls, the honeymoon capital of the world (Keating & Russell, 1992). As a direct result of the ensuing negotiation among environmental groups, business and the government, the Comprehensive Environmental Response Compensation and Liability Act, or Superfund, was signed into law in 1980 (Downer, 1982). Love Canal and CERCLA profoundly changed the greening process on many levels. For environmental groups, it empowered their platform by intensifying the portrayal of industry as villains and ordinary citizens as their victims. For the public, environmental incidents were now, no longer foreseeable and slow to develop. They could emerge as a sudden and unpredictable disaster. For industry, this altered the norms by which firms measured their responsibility towards environmental protection. No longer was industry only expected to control its present emissions, they would now be held responsible for actions taken long ago, that were legal when taken. And, for government, this changed the role of EPA from the regulator of environmental laws, to also become the technical executor of environmental laws through the direction of remedial cleanups. However, had Love Canal not been

discovered at this time, it is likely that another external event would have been used to expose this institutional perspective that had been developing.

Physical events can also build upon each other until a critical mass initiates individuals or organizations to action. An example of this phenomena is the accumulation of evidence and inferences about global warming during the 1980s, culminating in recent attempts to forge international global warming accords. Although the deteriorating ozone hole had been studied since the early 1980s, aggressive action was not taken until the late 1980s on the basis of a series of clustered climatic events: a hot dry US summer in 1988, a comparable UK summer in 1989 and severe storms in the UK during 1987 and 1990 (Buttel, Hawkins & Power, 1990). Global warming coupled with other events of the late 1980s — the Bhopal and Valdez accidents, medical wastes washing up on east coast shores, and acid rain destroying forests and lakes in the northeast — raised public opinion and environmental group membership dramatically in late 1980s (Buttel, Hawkins & Power, 1990) — see figure 3-1.

Events need not be physical to influence institutional fields. Political maneuvers which pit the constituents of one institutional perspective against another can reveal the comparative strength and institutional legitimacy of a social issue. Action taken by President Reagan in 1983 may have done more than any physical incident to institutionalize the presence environmentalism in society and the corporation. Upon taking office, he vowed to reduce the burden of government regulation on business and appointed the "infamous gang of three": James Watt at the Interior Department, Anne Gorsuch at the EPA and Rita Lavelle in charge of Superfund. Gorsuch (later Burford by marriage) immediately announced that EPA wanted cooperation rather than confrontation with regulated businesses. This was at first a welcome sign to business. However, closed meetings created an air of favoritism and secret deals and,

Gorsuch's slashing of the EPA budget and staff created a tremendous backlash. In 1984, voters elected a Democratic Congress that stopped anti-environment initiatives. And, the gang of three were hastily removed from office. The response exposed the strength of environmentalism as an institutionalized value in political and social realms.

In terms of institutional change, sudden events or crises permit a sharp ending to what seemed locked-in by institutional pressure (White, 1992). Whereas hard-won organizational success breeds resistance to change and make administrative experiments risky, sudden jolts plunge the organization into unfamiliar circumstances, legitimating unorthodox experiments that revitalize them and teach lessons that re-acquaint them with their environment (Meyer, 1982). In the case of environmental groups, jolts can initiate new objectives after old ones have been met. In the case of government, jolts can initiate reform if alignment between regulator and regulated objectives becomes too close. And in the case of industry, jolts can force organizational restructuring in order to develop new environmental practices.

For example, Dow Chemical, after being hit with a devastating public relations crisis over their production of Agent Orange (and the subsequent lawsuits from Vietnam veterans), adopted a new posture towards environmentalism, and then pressed for a new initiative within the Chemical Manufacturer's Association that requires all members to adopt similar tactics. Likewise, Amoco initiated the formation of the PERI program after a shareholder proposal initiated by the Coalition of Environmentally Responsible Economies (CERES) known as the Valdez Principles pressured the Amoco Board to consider the adoption of new programs. Although several conditions of the principles were unacceptable to the Amoco Board (third party audits and the appointment of an environmentalist board member), they felt that corporate reporting of

environmental initiatives was a growing movement within social, political and industry circles and decided to undertake the effort voluntarily.

In both cases, the initiating firm saw value in the program only after they were impacted by an external shock. And, in both cases, their objective was to gain "buy-in" from other firms, thereby continuing the process of institutionalizing the initiative. Interestingly, both programs resulted in mimetic offshoots. The API's STEP program is largely a direct imitation of the CMA program and the PERI program has been introduced by British Petroleum in Europe.

This description of institutional change resembles that of Kuhn's (1970) description of the progression of science, as being a series of transitions from *normal science* to *revolutionary science*. A phase of normal science begins when a new theory emerges as dominant to the other existing theories and becomes the "paradigm". It is the role of normal science to undertake the "mopping-up", as Kuhn calls it, of the existing facts to match the paradigmatic theory. Paradigmatic theories are overturned when anomalies emerge and revolutionary science commences as scientists try to discover more about this anomaly. This paradigmatic shift is marked by scientific uncertainty and ends when one theory emerges as dominant and becomes the new paradigm.

Scholars have since built on Kuhn's work to develop similar theories about technological and organizational evolution. Abernathy and Utterback (1982) describe technological change as being either radical or evolutionary innovation. Tushman and Anderson (1986) describe technological innovation as evolving through periods of incremental change punctuated by technological breakthroughs. Miller and Friesen (1984) model organizational adaptation as periods of momentum and revolution. And, Gersick (1991) conceptualizes

organizational change as a punctuated equilibrium: an alteration of long periods of incremental adaptations with brief periods of revolutionary upheaval.

However, these presentations suggest a sudden and complete reformation of existing institutions. Institutional shifts, in reality, may not be so clear cut. A more plausible description is presented by Fligstein, who argues that new institutions are likely to be built from pieces already in place. Existing institutions do not just collapse (as in the paradigm shift) but instead provide building blocks from which institutional entrepreneurs can create new rules. The crisis of old institutions means that groups in contention will be open to new ways of operating (Fligstein, 1993). In turn, future institutions will be built upon remnants of those existing today just as existing institutions are as much the products of their historical past as complete redefinition's for the future. Social organization is perpetually a product of history.

It is important to consider that a firm does not have to be directly impacted by an environmental jolt to be affected. Organizations can react to changes in the environment that affect both themselves and others. As such, they learn from the lessons of history both independently and as part of the "ecology structure" of the organizational environment in which they interact (Levitt and March, 1988). For example, the Love Canal disaster in 1978 and the Bhopal, India disaster in 1984 affected not only Occidental and Union Carbide respectively, but the entire chemical industry.

Summing up the fifth and final proposition, it will be expected that external events of a significant scope and scale will facilitate a shift in the institutional field and therefore in the strategy and structure of the member organizations.

PROPOSITION 5 — Linking External Events to the Institutional Field:

The emergence of external events or crises will facilitate changes in the makeup or power balances of the institutional environment and the structure and strategy of its member organizations.

Chapter Four:

Setting the Stage: An Overview of the Environmental Protection Agency and the Chemical and Petroleum Industries

4.1. Introduction

Two predominate actors in this analysis are the government, in the form of the Environmental Protection Agency, and the chemical and petroleum industries. This chapter is meant to acquaint the reader with some general characteristics of each actor, highlighting (1) how the EPA has evolved in its strategy and focus since its inception in 1970, and (2) how to understand the characteristics of the chemical and petroleum industries. Each industry has similarities to the other that make them compatible partners for a research study, yet each also has distinctions from each other that should result in differences in

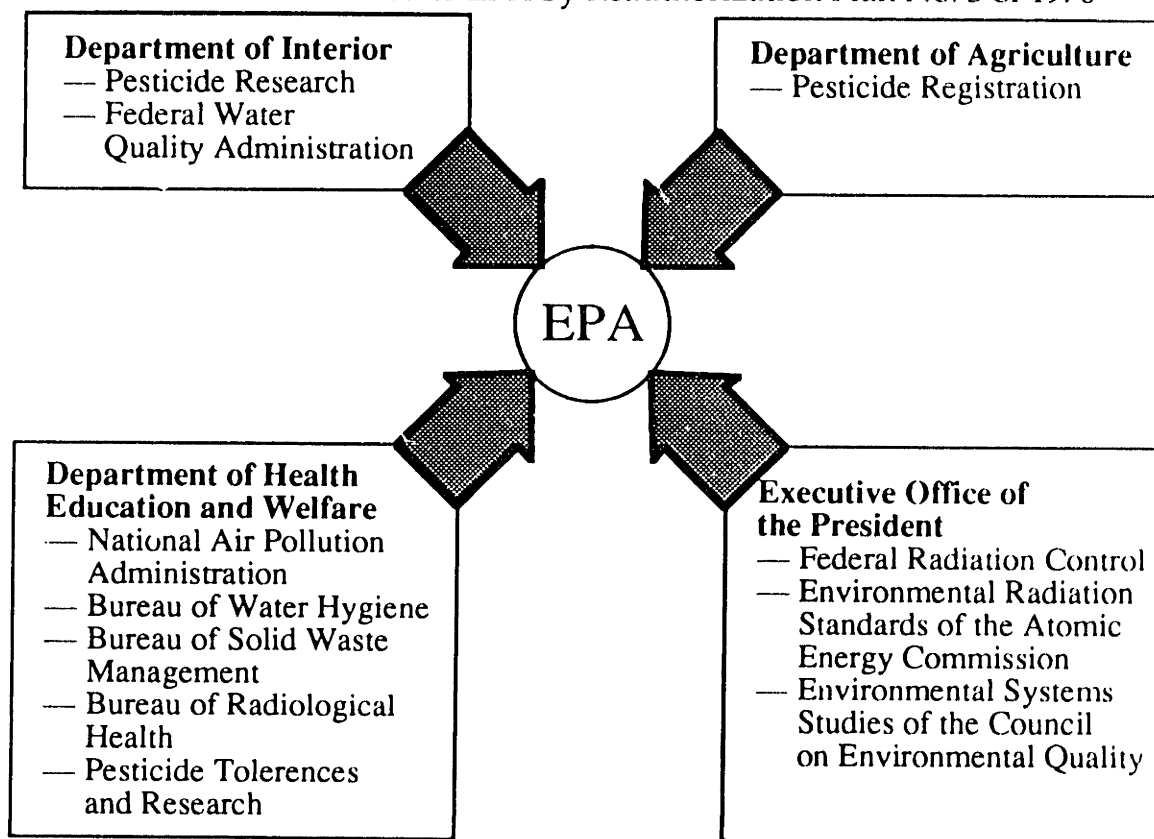
observed behavior. An overview of the third major actor in the analysis, environmental groups, has been covered in section 3.3.

4.2. The Environmental Protection Agency

It is important to consider the evolution of the EPA when considering any analysis of the evolution of corporate strategy towards the environment. Much of the present state of corporate environmentalism can be traced back to three aspects of the initial formation of the Environmental Protection Agency EPA on December 4, 1970. First, although many at the time, recommended a holistic "intermedium" approach to protecting the environment, political realities forced the creation of the new department through the consolidation of the existing compartmentalized programs scattered among various departments in Washington — see Figure 4-1. The new organization plan integrated nearly 6,000 employees into media specific offices for air, water, pesticides, radiation and solid waste. Although this rapid integration was politically necessary to respond to mounting public pressure, it would perpetuate and set the tone for future environmental management practices not only within government, but also within the mindsets of other influential stakeholders.

FIGURE 4-1

Functions Transferred to EPA by Reauthorization Plan No. 3 of 1970



(Source: US EPA (1993))

A second aspect of the original EPA that would establish future practices was the command-and-control format created by the agency's first administrator, William Ruckelshaus, a rising political star whose appointment added political clout to the new agency. However, his strong enforcement background learned in his previous position as Assistant Attorney General for the Department of Justice would carry over as the agency's primary focus. Ruckelshaus felt that once government set standards and began to enforce them, people would fall in line and the problem would essentially disappear (USEPA, 1993). During the first 60 days, EPA brought five times as many enforcement actions as the agencies it inherited had brought during any similar period (Landy, Roberts & Thomas, 1990). This focus on punishing polluters was justified on political

grounds to establish credibility, but it also set the adversarial "command-and-control" type of industry/government relationship that carries over to today.

Third, this rudimentary understanding of the issue led to the prescribed, technology focused approach established in the 1970s. With air and water pollution the primary focus, the Clean Water Act and Clean Air Act mandated the installation of pollution abatement equipment that was deemed to be the "Best Available Technology" (BAT). These technologies were fairly well known and required merely a financial investment for regulatory compliance. This revealed an optimistic "technological-fix" conception of the solution to the environmental problem. The catch word for the early 1970s was "technology-forcing", where new federal rules would force industry to use new pollution free technology and, as new plants replaced old, eventually the problem of pollution was expected to disappear (Novick, 1986). This media segmented, command-and-control, technology based approach to environmental regulation had a direct effect on the corporate response.

Given this backdrop, EPA progressed through the 1970s developing new regulations with this technology based, command and control focus. Originally, the laws and statutes were geared towards visible sources and manifestations of pollution. Actions to control them were viewed as protection of the ecosystem. Public health, although acknowledged in crude sense of aesthetics was not a predominate concern. In 1976, the Toxic Substances Control Act (TSCA), the Safe Water Drinking Act (SWDA) and the Resource Conservation and Recovery Act (RCRA) were passed into law. In 1978, the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) became law. These laws transformed the regulatory focus from one of ecological protection to one of human health. Such an expansion established a responsibility for firms, not only to the government, but also to their employees and community. This sequential addition of regulations

also increased the burden on industry to implement greater levels of environmental controls at steadily increasing costs. Although the requirements of such standards expanded to performance standards, these were still often based on "best available technologies" and therefore implied a technology focus.

These regulations were also demanding an increasing enforcement presence from the EPA. By the end of the 1970s, EPA Administrator Doug Costle was quoted as saying "The laws were written so that we would need a policeman at every corner" (Myers, 1990: 58). EPA was beginning to feeling the weight of unrealistic objectives. No one realized how complex the job of protecting the environment would be. Most thought that the big problems would be taken care of easily and that the remainder of the effort would be a matter of maintenance. That was not the case. Court suits, with environmentalists on the one side and industry on the other became a fact of agency life (Myers, 1990).

Meanwhile, the issue of the environment continued to be redefined through the emergence of new events. Of most importance was the disaster at Love Canal. The discovery of 21,000 tons of toxic chemical waste beneath a residential neighborhood in Niagara Falls New York changed the face of environmentalism from an issue that was slow to develop to one that could suddenly emerge from such seemingly benign sources as beneath your home. In response to a wide-spread panic, in 1980 President Carter signed into law the Comprehensive Compensation and Liability Act (CERCLA). This changed the dimensions by which corporate environmentalism would be defined, now holding corporations liable for past actions that were legal when undertaken and simultaneously restructuring corporate management of risk management. It also changed the role by which EPA now conducted its responsibilities. Going beyond the establishment of rules by which industry must conduct its affairs, the agency was now becoming a contractor of services, establishing itself as project

manager in the cleanup of these abandoned hazardous waste sites and directing the flow of corporate expenditures.

In 1981, the Reagan agenda of de-federalization, severe budget cuts and regulatory reform had its impact on the EPA. In the words of Anne Gorsuch, EPA's new administrator "There is no riper pasture for regulatory reform than EPA" (US EPA, 1990: 59). Gorsuch was part of the "infamous gang of three" appointed by Reagan: James Watt at the Interior Department, Anne Gorsuch at the EPA and Rita Lavelle in charge of Superfund. Gorsuch immediately announced that EPA wanted cooperation rather than confrontation with regulated businesses. This was at first a welcome sign to business. However, closed meetings created an air of favoritism and secret deals and, Gorsuch's slashing of the EPA budget and staff created a tremendous backlash. In 1984, voters elected a Democratic Congress that stopped anti-environment initiatives. And, the gang of three were hastily removed from office.

Although Gorsuch's term was viewed as an attempt to decimate the agency, it recognized the growing complexity of the regulations then being developed and called attention to a need to revamp the system. In 1983, newly re-appointed administrator Ruckelshaus focused on ways to integrate the existing segmented regulatory structure so as to make it less onerous on industry. And, later in the 1980s administrator Lee Thomas began to focus on prioritizing regulatory priorities so that attention could be redirected where it was most needed (for example, away from abandoned hazardous waste sites and towards acid rain). These kinds of efforts represented a significant shift in environmental regulation in the 1980s, moving away from the incremental media approach adopted at the formation of the EPA in 1970. This approach of increasing flexibility would take another step at the turn of the decade with efforts by administrator Bill Reilly and later Carol Browner to establish more

cooperative programs between the agency and the regulated community. Such efforts were a significant shift away from the strict command-and-control, enforcement mindset also established with the agency in 1970. Efforts such as the 33/50, Green Lights and Environmental Leadership programs all represented efforts by the EPA to move beyond strict command and control efforts to seek cooperative efforts by industry to protect the environment. This leaves the agency today with a slightly schizophrenic posture, dictating command and control enforcement on the one hand and seeking cooperative partnerships on the other.

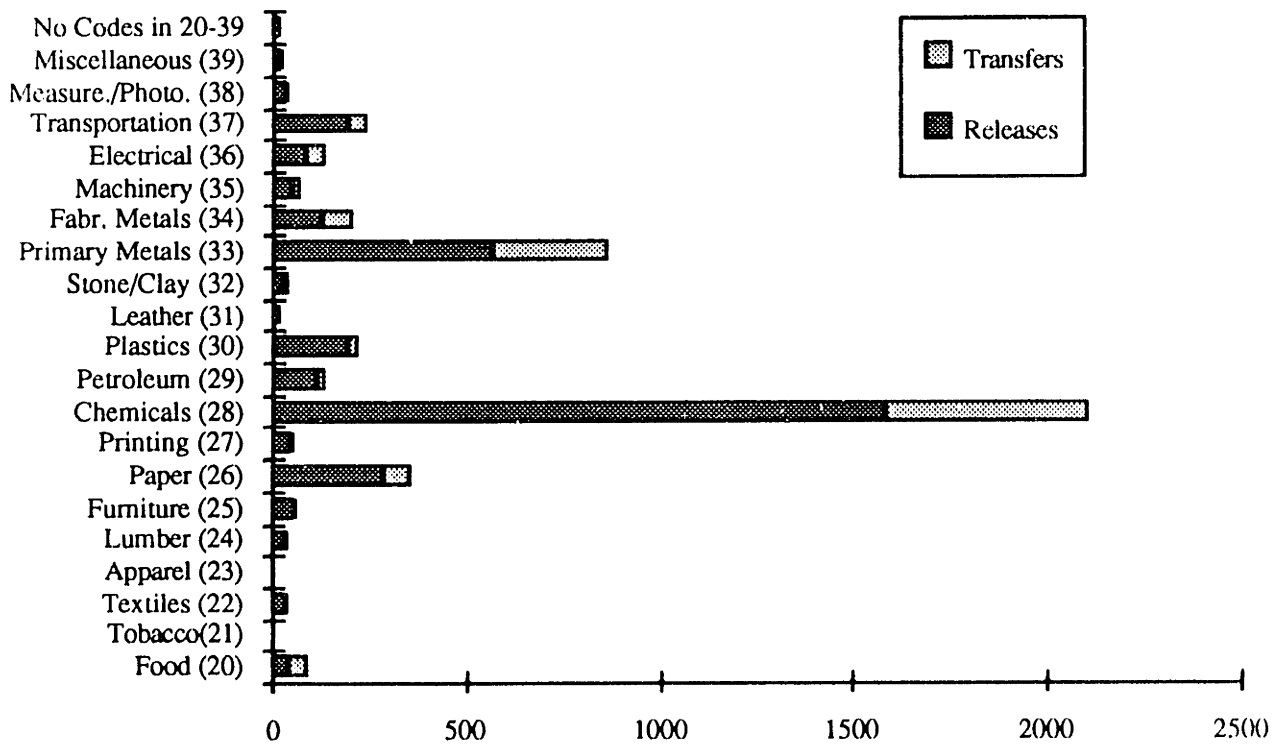
4.3. The Chemical and Petroleum Industries

Environmentalism affects both individual and groups of firms differentially. This fact necessitates that the focus of study be narrowed to a unit of analysis that captures commonly evolving firms. For the purposes of this thesis, the preceding propositions will be tested using two specific industries: chemicals (SIC Code 28) and oil (SIC Code 29)⁶. These were chosen due to their prominence in the environmental arena. Both have been the subject of considerable public and legislative scrutiny. In 1990, the US Environmental Protection Agency ranked them as the first and the seventh most polluting industries, with the chemical industry producing just over 2 billion and oil producing just over 120 million pounds of toxic waste — see figure 4-2. The

⁶ Even these groupings can be vague generalizations. On the one hand, most petroleum companies fall under, not only SIC code 29, Petroleum Refining, but also SIC Codes: 1382, Oil & Gas Exploration; 5541, Gasoline Service Stations; 4912 and 4913, Crude and Refined Petroleum Pipelines. On the other hand, SIC Code 28 covers a vast range of chemical companies who may or may not be in direct competition with each other. The chemical industry produces over 60,000 different products (CMA, 1992). For example, the largest chemical subgroup, SIC Code 2834, Pharmaceuticals (341 companies with \$135,270,000,000 in 1993 revenues) covers a unique set of firms that would not likely compete with other areas of the chemical industry such as SIC Code 2813, Industrial Gases or SIC Code 2875, Fertilizers.

chemical industry alone, produces more than twice as much pollution as the next most polluting industry, primary metals (SIC Code 33), and roughly 40 percent of the total toxic waste produced across all industries (US EPA, 1992a). In the EPA's assessment, the chemical and petroleum industries ranked as the first and the ninth best opportunities for industrial pollution prevention (US EPA, 1991a) — see table 4-1. Beyond government pressure, both industries suffer from a steadily declining public opinion of their environmental performance (Cambridge Reports/Research International, 1992).

FIGURE 4-2
1990 Toxic Release Inventory Data (Millions of Pounds)



(Source: US EPA (1992a))

TABLE 4-1
Waste Minimization Industry Priorities

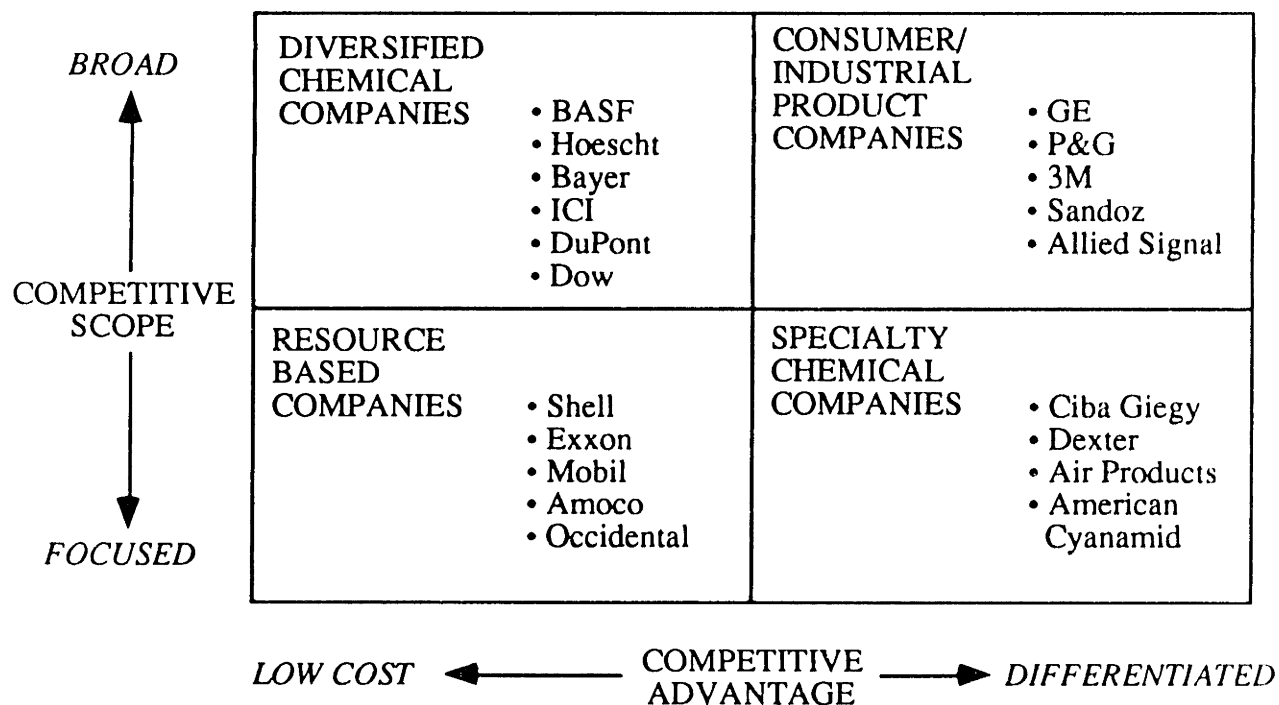
| <u>Rank</u> | <u>SIC Code</u> | <u>2-Digit SIC Descriptor</u> |
|-------------|-----------------|-----------------------------------|
| 1 | 28 | Chemicals |
| 2 | 34 | Fabricated Metal Products |
| 3 | 27 | Printing, Publishing |
| 4 | 33 | Primary Metals |
| 5 | 37 | Transportation Equipment |
| 6 | 26 | Paper |
| 7 | 36 | Electrical/Electronics |
| 8 | 72 | Personal Services |
| 9 | 29 | Petroleum |
| 10 | 10 | Metal Mining |
| 11 | 24 | Lumber & Wood Products |
| 12 | 49 | Electric, Gas & Sanitary Services |
| 13 | 22 | Textile Mill Products |
| 14 | 75 | Auto Repair |
| 15 | 31 | Leather Products |

(Source: US EPA (1991a))

Given this elevated pressure and scrutiny, it is expected that environmental concerns within these two industries emerged earlier and developed with more intensity than for other less controversial industries. As a result, it would be expected that the legitimacy and practice of environmental management will have been institutionalized to greater depths. Furthermore, given the commonality of both the technology used and natural resource based nature of these two industries, it is expected that there will be consistency in their co-evolution making them compatible pairs for a research study. In fact, given these two factors, most oil companies have chemical subsidiaries creating a segment of the industry referred to as the petro-chemical industry or resource based chemical companies — see figure 4-3. These companies derive their strength from forward integration built on feedstock position. Generating between \$3 and \$10 billion of revenues per year, their portfolios are dominated by sales of commodity petrochemicals and polymers (Lynch, 1993). These

industrial segments should provide a rich history of data, standing out as prime candidates for the analysis of corporate environmental behavior.

FIGURE 4-3
Chemical Industry Company Groupings



(Source: Lynch (1993))

Aside from their similarities, there are some differences that are worth noting. First, while as an industry chemicals are greater in number and revenues, as individual firms, oil companies are much larger. Where the chemical industry comprised 1.7 percent of the GNP in 1993, the oil industry accounted for only 0.7 percent (US Census Bureau, 1994). However, the relative number of companies within each sector are quite disparate. According to *Ward's Business Directory of U.S. Private and Public Companies* (Gale Research, 1994), there are 2838 chemical companies that fall under the SIC Classification 28 versus only 423 oil companies that fall under SIC Classification 29. As a result, of the 500 largest industrial corporations, petroleum refining firms enjoy the highest

sales per employee ratio of any other industry, \$567,000, versus chemical firms which are sixth on the ranking with \$227,000 (US Census Bureau, 1994).

Oil companies make up some of the largest companies in the country (by sales). Of the top twenty largest US companies, five are oil companies and two are chemical companies — see tables 4-2 and 4-3 (Gale Research, 1994).

TABLE 4-2
The 10 Largest Chemical Companies by Sales, 1993 (\$ millions)

| Overall Rank | Company | Net Sales |
|--------------|------------------------------|-----------|
| 14 | E.I. DuPont de Nemours & Co. | \$37,090 |
| 17 | Proctor & Gamble Co. | \$29,362 |
| 28 | Dow Chemical Co. | \$18,971 |
| 42 | Johnson & Johnson Co. | \$13,753 |
| 57 | Allied-Signal | \$12,042 |
| 61 | Bristol-Myers Squibb | \$11,156 |
| 88 | Unilever | \$8,900 |
| 100 | Monsanto | \$7,763 |
| 110 | Pfizer | \$7,230 |
| 120 | Hoescht Celanese | \$7,000 |
| | TOTAL | \$153,267 |

TABLE 4-3
The 10 Largest Petroleum Companies by Sales, 1993 (\$ millions)

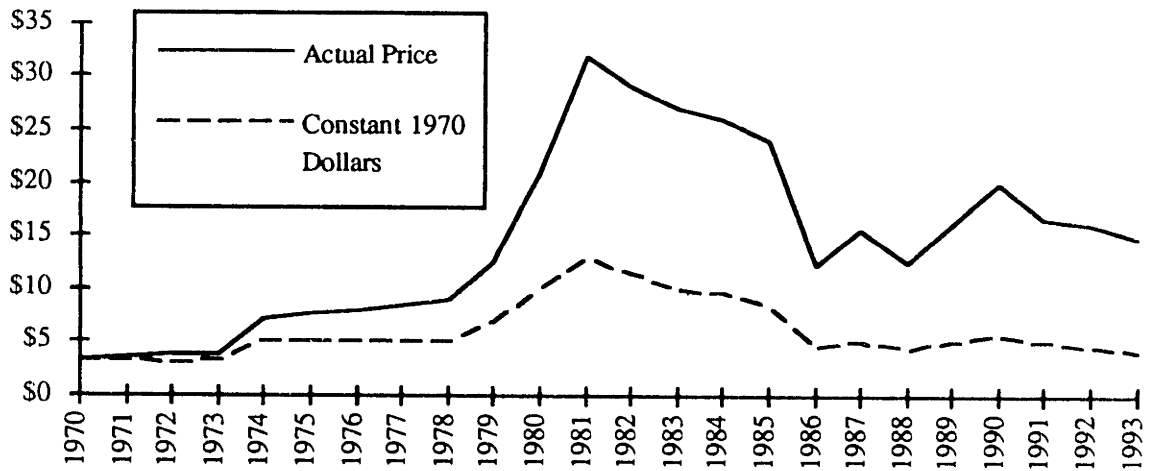
| Overall Rank | Company | Net Sales |
|--------------|------------------------|-----------|
| 2 | Exxon Corp. | \$103,160 |
| 6 | Mobil Corp. | \$64,076 |
| 11 | Chevron Corp. | \$42,893 |
| 13 | Texaco | \$37,654 |
| 18 | Amoco Corp. | \$28,219 |
| 22 | Shell Oil Co. | \$22,201 |
| 26 | ARCO | \$19,248 |
| 39 | BP America | \$15,010 |
| 55 | Phillips Petroleum Co. | \$12,140 |
| 69 | Sun Co. | \$10,445 |
| | TOTAL | \$355,046 |

Both industries appear to be somewhat oligopolistic with one firm, or a group of firms, enjoying dramatically larger revenues than the rest. As an

oligopoly, the role of trade associations becomes more dynamic in fulfilling the legitimate purposes of data dissemination, collective advertising and government lobbying, as well as the potential illegitimate practices of collusion and competition limitation. Some research presently shows that the benefits of keeping one's information monopoly are likely to be much larger in an oligopoly industry than in a competitive one (Evans, 1992). As such, trade associations should play a minimal role in each industry, however, both the Chemical Manufacturer's Association (CMA) and the American Petroleum Industry (API) play a prominent role in establishing environmental standards by which firms are expected to comply. This suggests that market structure alone does not determine the usefulness of trade associations. Characteristics of the information being shared may also be critically important.

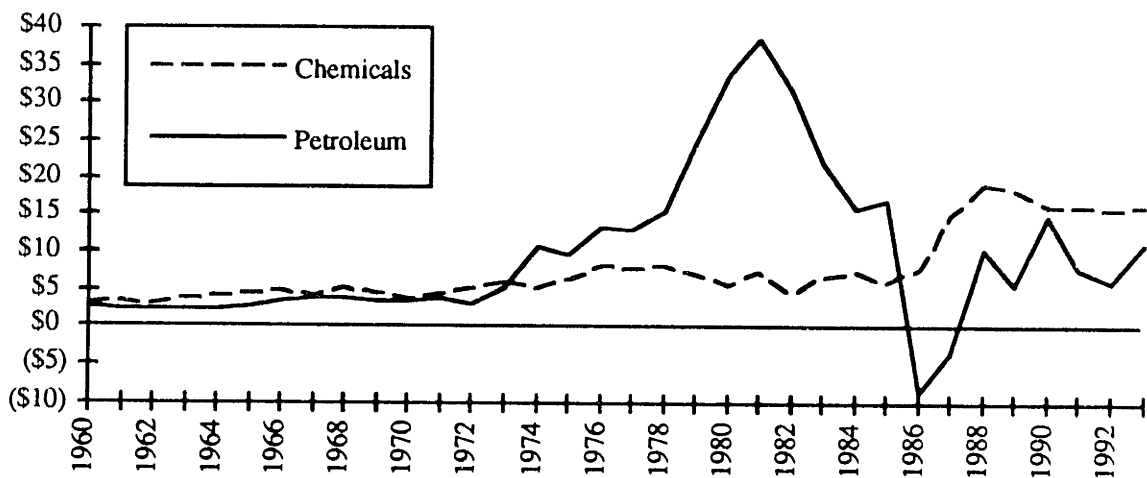
The economics of these two industries has been quite different with the oil industry presently recovering from some distressful years. The price of oil has been on a steady decline since its all-time high in 1981. In constant 1970 dollars, the average well-head price for oil is the same as it was in 1970 — see figure 4-4. In 1986, the price took a dramatic drop, driving industry profits to their lowest point in thirty years — see figures 4-5A and 4-5B.

FIGURE 4-4
Average US Well-Head Price for Crude Oil



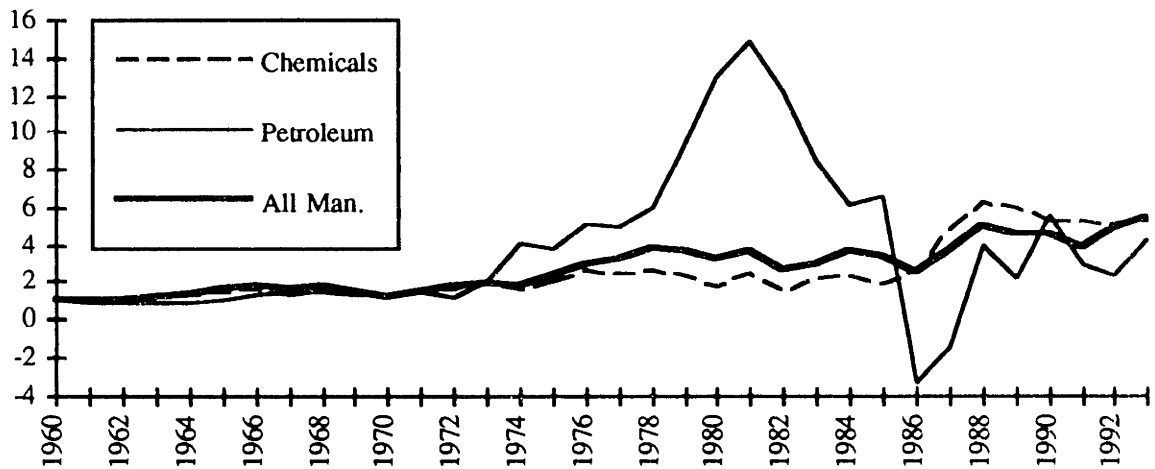
(Source: Mack, Norman, Rudnitsky & Tanzer (1994))

FIGURE 4-5A
Industry Profits (\$ billions)



(Source: US Council of Economic Advisors (1994))

FIGURE 4-5B
Industry Profit Index (using 1960 as base year)

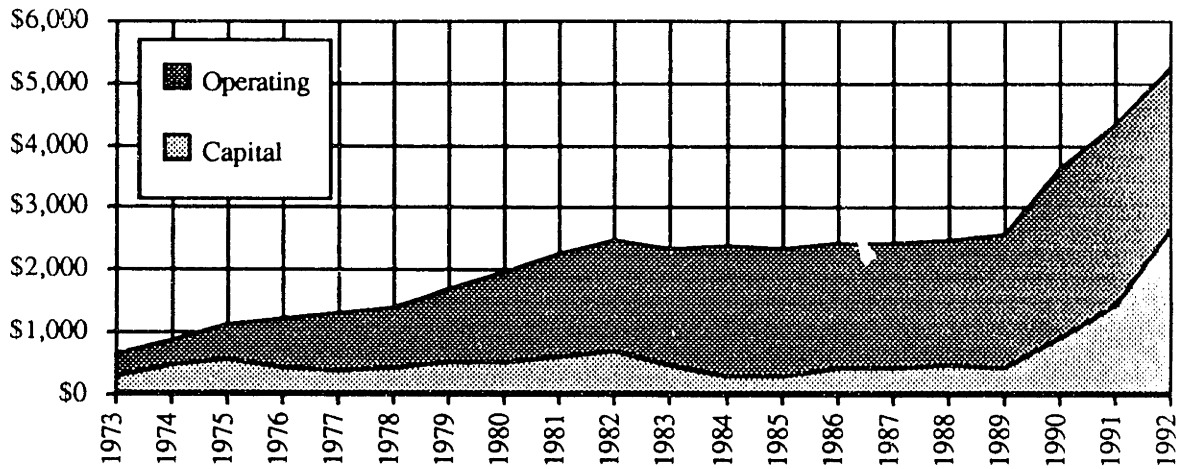


(Source: US Council of Economic Advisors (1994))
Baseline Values (\$ billions)

| | 1960 | 1993 |
|-------------------|------|-------|
| Chemical | \$3 | \$16 |
| Oil | \$3 | \$11 |
| All Manufacturing | \$24 | \$129 |

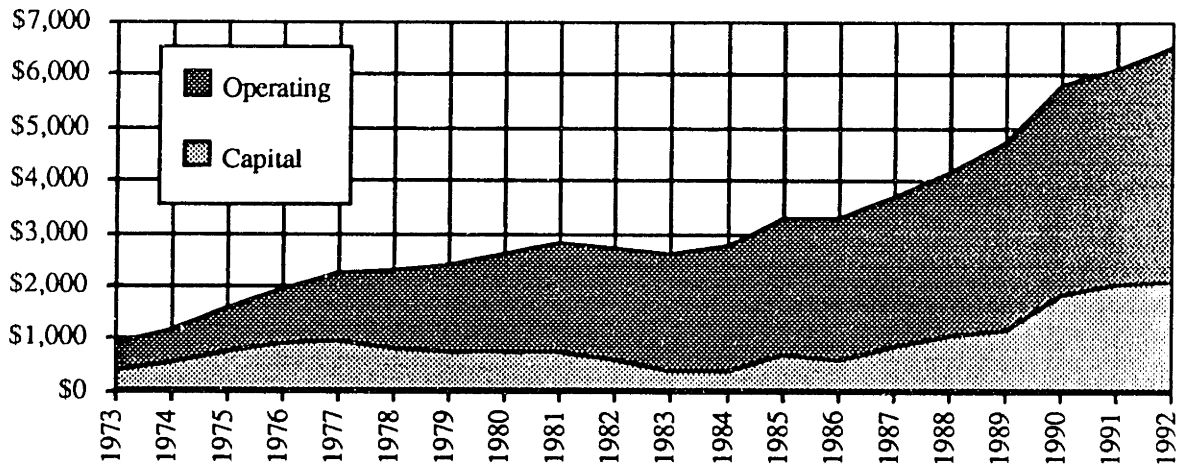
Environmentalism has affected both industries in some similar and dissimilar ways. Both have been the subject of early environmental initiatives, with the chemical industry bearing the brunt of pesticide regulation in the late-1960s and early-1970s and the oil industry bearing the brunt of gasoline reformulation (lead, and sulfur and nitrogen oxides) in the early-1970s. As a result, they have both seen their environmental expenditures increasing steadily from the start — see figures 4-6 and 4-7.

FIGURE 4-6
 Petroleum Industry Environmental Expenditures (\$ millions)



(Source: US Department of Commerce (1973-1992))

Figure 4-7
 Chemical Industry Environmental Expenditures (\$ millions)

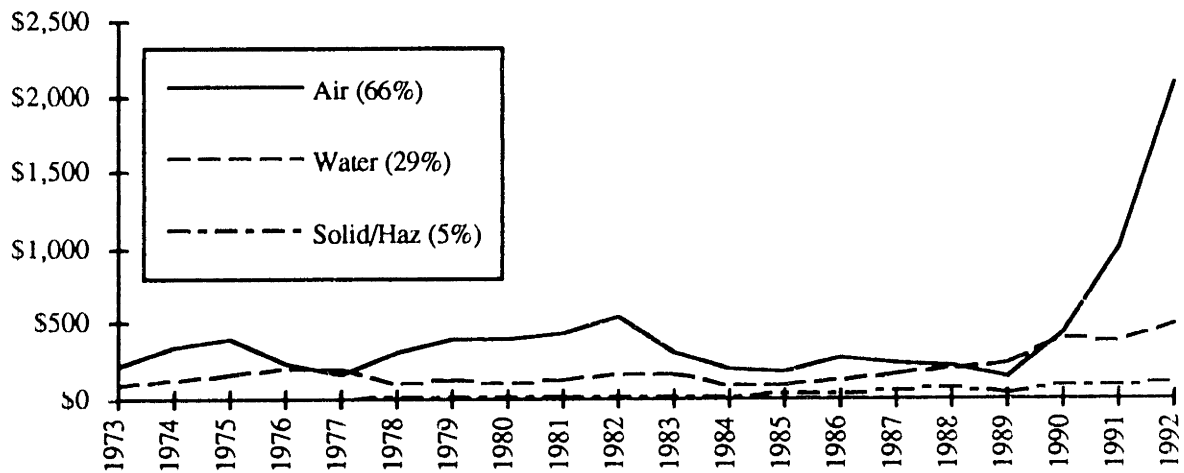


(Source: US Department of Commerce (1973-1992))

These costs have been directed at different areas. The oil industry has concentrated most of its environmental spending over this twenty-year period on air pollution control — see figure 4-8, while the chemical industry has concentrated on water pollution control — see figure 4-9. The air focus of oil industry expenditures is more in-line with overall industry expenditures — see

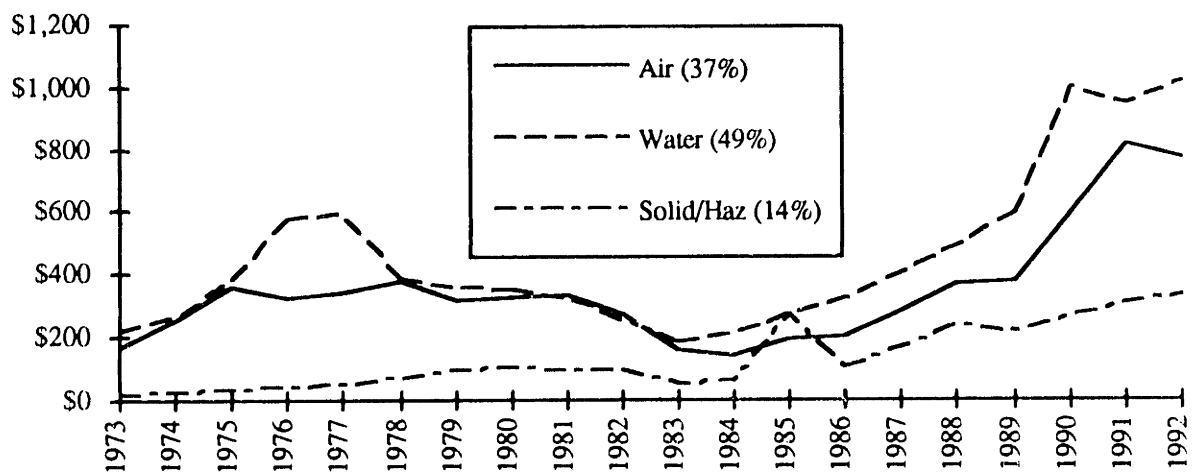
figure 4-10. Hazardous waste costs have been considerably higher for the chemical industry than for the oil industry, and the rest of industry for that matter. Of the top fifty companies cited as potentially responsible parties (PRPs) at Superfund sites, 50 percent are chemical companies, while only 16 percent are oil companies (US EPA, 1991b) — see Appendix B.

FIGURE 4-8
Petroleum Industry Environmental Capital Expenditures by Media (\$ millions)



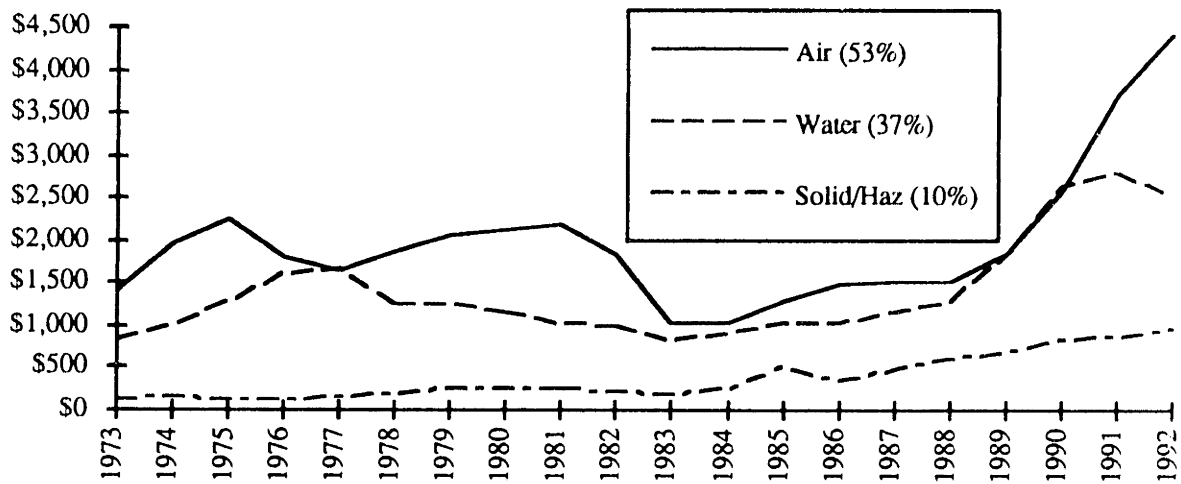
(Source: US Department of Commerce (1973-1992))

FIGURE 4-9
Chemical Industry Environmental Capital Expenditures by Media (\$ millions)



(Source: US Department of Commerce (1973-1992))

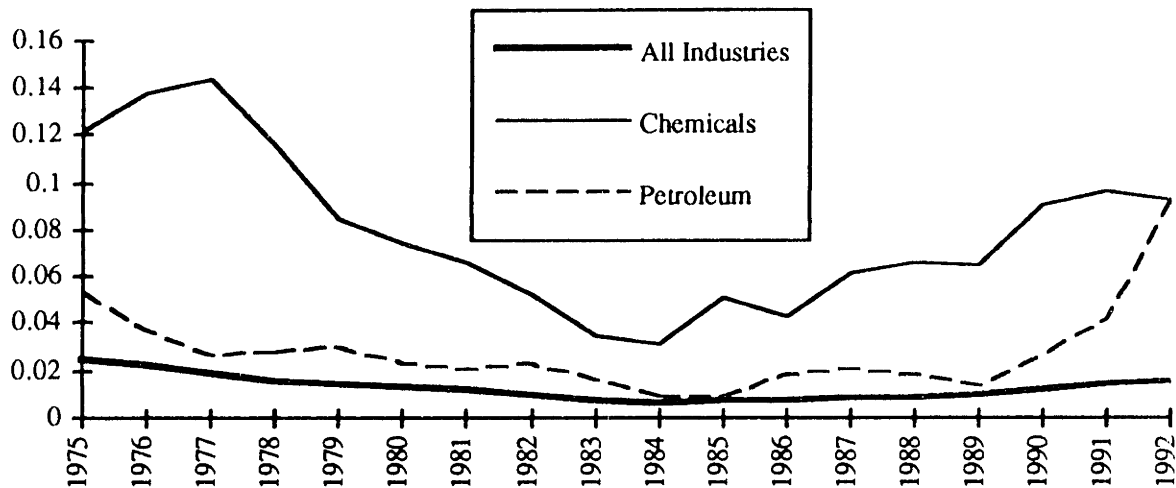
FIGURE 4-10
Overall Industry Environmental Capital Expenditures by Media (\$ millions)



(Source: US Department of Commerce (1973-1992))

As a result of this high sensitivity to air pollution considerations, the Clean Air Act of 1990, and heightened concerns over global warming in the late-1980s had a dramatic impact on environmental costs for the oil industry. As a percentage of total capital expenditures, environmental capital costs jumped enormously, to levels at which they were not accustomed but to which the chemical industry had long been burdened — see figure 4-11.

FIGURE 4-11
Environmental Capital Expenditures as a Percentage of Total Capital Expenditures



(Source: US Department of Commerce (1973-1992), and US Census Bureau (1980-1993))

Although there are similarities in the types of technologies used, there are material and technological differences that create restrictions for one, and possibilities for the other in the area of pollution prevention. On the one hand, the oil industry is unique in that its raw materials, its primary wastes, and its products can be considered as one. Considering all aspects of the industry, from drilling to the various forms of hydrocarbon processing, source reduction and recovery/recycling become indistinguishable. Recovery of a waste from one segment readily becomes source reduction at a later segment. Furthermore, process or product substitutions are not a real option. Although gasoline, the only feasible product, is theoretically available from other sources such as shale or coal, crude oil remains the only currently economically viable raw material. Likewise, the processes used to take the raw material to product, such as catalytic cracking, hydrogenation, and distillation, are largely defined and open to only limited modification. Substitutions in acids and catalysts are possible, but their impact is slight (US EPA, 1991a). As a result, opportunities for source reduction become quite limited.

The chemical industry, on the other hand, has been a leader in the pollution prevention effort, through changes in equipment, products and raw materials. For example, solvent recovery has presented the industry with a clear opportunity to minimize emissions on the basis of cost-consciousness. Similarly, waste water reduction (which accounts for a major portion of the industry's waste-stream) can be accomplished through alterations in the product mix at the plant, the type of processing being done and the complexity of the operations underway.

4.4. Summary

These facts are intended to provide (1) an overview of the evolution of the Environmental Protection Agency and (2) an understanding of the basic structure and environmental considerations within the chemical and petroleum industries. The first is intended to point out that the EPA has not been static in its approach to dealing with corporate environmental issues, and those actions are reflected within the perspectives of the institutional field. The second is intended to acquaint the reader with the characteristics of the study industries.

In summarizing the latter issue, each industry has one firm that is considerably larger than the rest of the field (Exxon and DuPont), beyond which is a relatively small number of large firms, thereby demonstrating within their respective industries an oligopolistic nature. The profitability of each industry has been quite different as the oil industry has suffered some serious setbacks related to the consistently declining price of oil.

Each industry is relatively similar in its increasing trends in environmental costs, although the oil industry has shown a considerable increase in the early-1990s. This is the direct result of an increase in air pollution spending, towards

which the oil industry directs most of its attention. Yet, for all these increases in environmental spending in the oil industry, this has only brought their percentage of capital expenditures for environmental controls in line with levels to which the chemical industry has been spending for some time. The chemical industry, conversely, focuses its spending on water pollution control. Hazardous waste spending is also more heavily weighted towards the chemical industry. Pollution prevention efforts and opportunities for the chemical industry have been much more widespread than for the oil industry. Each of these considerations will be important to understanding the dynamics of their respective environmental evolution.

Chapter Five: Research Methodology

5.1. Introduction

To restate the propositions to guide the research inquiry:

(1) The present status of corporate environmental management is the historical product of a negotiation among the internal members of the firm and external members of the firm's institutional field: primarily the government, other firms sharing similar technological and political burdens, and environmentalists;

(2) Shifts in the makeup and power balances of the field will result in shifts within the structure and strategy of the firm;

(3) Individual members of the institutional field are not completely subservient to the field but have differential power in influencing its makeup and development;

(4) Once established, the member of the institutional field tend towards a convergence of strategy and structure, and;

(5) Events or crises disrupt this convergence process, empowering new members to join the field or shifting power balances among the established members.

Central to these propositions are four key variables: the institutional field, organizational strategy, organizational structure and external events. Identifying the historical development and inter-relationship among these variables will be the objective of the total of five data sources utilized in this research study, which range from specific company level to broad industry levels of analysis:

1) General Industry Level: a) Trade Journal Content Analysis; b) Federal Case Law Statistical Analysis, and; c) Investor Proxy Statement Statistical Analysis;
2) Specific Organizational Level: a) Case Study of the Amoco Corporation, and; b) Case Study of the Council of Environmentally Responsible Economies. The first level of general industry can be viewed as an inductive hypothesis building exercise. The second organizational level will act as more of an exercise which tests and provides an example of the hypotheses developed. Table 5-1 identifies how the four variables will be analyzed by each of the five data sources.

These five data sources and collection methods represent a diverse range of perspectives from which to view the evolution of corporate environmental practice, creating certain advantages in both building and testing a credible model of this phenomena. They offer glimpses into the various levels of organizational behavior ranging from macro to micro in nature. Likewise, they utilize a range of quantitative and qualitative methods both in the collection of data and in its presentation. Such diversity allows triangulation of the resultant model from several perspectives, thereby increasing the credibility of its

conclusions. Such triangulation also allows for a clearer and richer presentation of the model and its related information.

TABLE 5-1
Research Format

| | | Level of Analysis | |
|-----------------|--------------------------|---|----------------------------|
| | | General Industry | Specific Organization |
| Variable | Organizational Strategy | Trade Journals | Amoco Study CERES Study |
| | Institutional Field | Trade Journals Federal Cases Proxy Statements | <i>not applicable</i> |
| | Organizational Structure | <i>not applicable</i> | Amoco Study CERES Study |
| | Events | Trade Journals | Amoco Study CERES Study |

5.2. Trade Journal Study

An historical content analysis of the trade journals, *Chemical Week* and *Oil and Gas Journal*, provides both quantitative and qualitative data in characterizing the evolution of the institutional field, industry-wide strategy towards environmental protection and the emergence of specific events which had a significant effect on their respective development. Content analysis is used for making inferences by systematically and objectively identifying specified characters within text (Stone, Dunphy, Smith & Ogilvie, 1969). These inferences provide information about the sender(s) of the text, the message itself, or the audience of the message (Weber, 1985). It can reveal the focus of individual, group, institutional or societal attention to a specific issue or groups of issues.

By directing this type of analysis at trade journals, I am effectively reviewing an extemporaneous log of internal industry views, not only on the actions undertaken, but also the motivations behind this action. The role that trade journals play in the institutionalization process is twofold. First, they act as a common source of information, aiding in the normalization of industry perspectives. Second, they act as an historical record of the key actors, the activity undertaken, the motivations behind this activity and the events that initiated that action.

However, consideration must be given to the bias of the information provided and recorded. On the one hand, trade journals may be argued to represent the predominant perspectives of the audience: industry. On the other hand, they may be argued to represent the singular perspective of the sender: the editor. In actuality, they serve both functions. In the main body of the journal, customer interests must be satisfied by offering usable information that is of interest to the broad readership. If the information does not meet this criteria, circulation can be expected to decline. Editor biases can be influential in article choice, tone and content, but within bounds of the dominant industry interest. On the editorial page, the editor's biases can be more clearly revealed swaying across wide ranging extremes through guest editorials and direct advocacy positions. But again, these editorials must reflect perspectives that exist within the industry or they will be dismissed out of hand and the journal's readership will again decline. As a result, it is expected that this data source will uncover a level of institutional connectedness that is meaningful to the field's inhabitants.

Three characteristics were of particular importance in choosing the specific journals to be analyzed. The particular journals had to be (1) of sufficient circulation to be considered representative of industry attitudes, (2) of particular focus to represent distinct industry segments, and (3) of particular direction to

target business and technical management audiences. Finally, the two journals had to be comparable in size and frequency of publication so as to allow direct comparison between the resulting data. Given that the intent of this research is to study the chemical and oil industries specifically, seven trade journals were identified as possible subjects for analysis — see table 5-2.

TABLE 5-2
Trade Journals Considered for Analysis

| <u>Journal</u> | <u>Frequency</u> | <u>Circulation</u> |
|--|------------------|--------------------|
| <i>Chemical & Engineering News</i> | Weekly | 138,574 |
| <i>Chemical Engineering</i> | Monthly | 70,205 |
| <i>Chemical Week</i> | Weekly | 46,440 |
| <i>Oil & Gas Journal</i> | Weekly | 42,500 |
| <i>Chemical Marketing Reporter</i> | Weekly | 17,000 |
| <i>National Petroleum News</i> | Weekly | 12,797 |
| <i>Oil & Gas Investor</i> | Monthly | 6,500 |

Although *Chemical Engineering* and *Chemical & Engineering News* enjoy the highest circulation, they were ruled out for analysis due to their focus. *Chemical Engineering* targets issues pertinent to both the chemical and petroleum industries. This would disallow a distinction between the two for comparative analysis. *Chemical & Engineering News* not only covers the chemical and petroleum industries but also targets academic and government audiences in its readership. In terms of meeting the objective criteria, *Chemical Week* (*Chemweek*) and *Oil & Gas Journal* (*O&GJ*) are perfectly matched. They have comparable circulation (46,440 versus 42,500). They are reasonably distinct in their industry specialization. They both target business and technical management. And finally, they are both weekly publications.

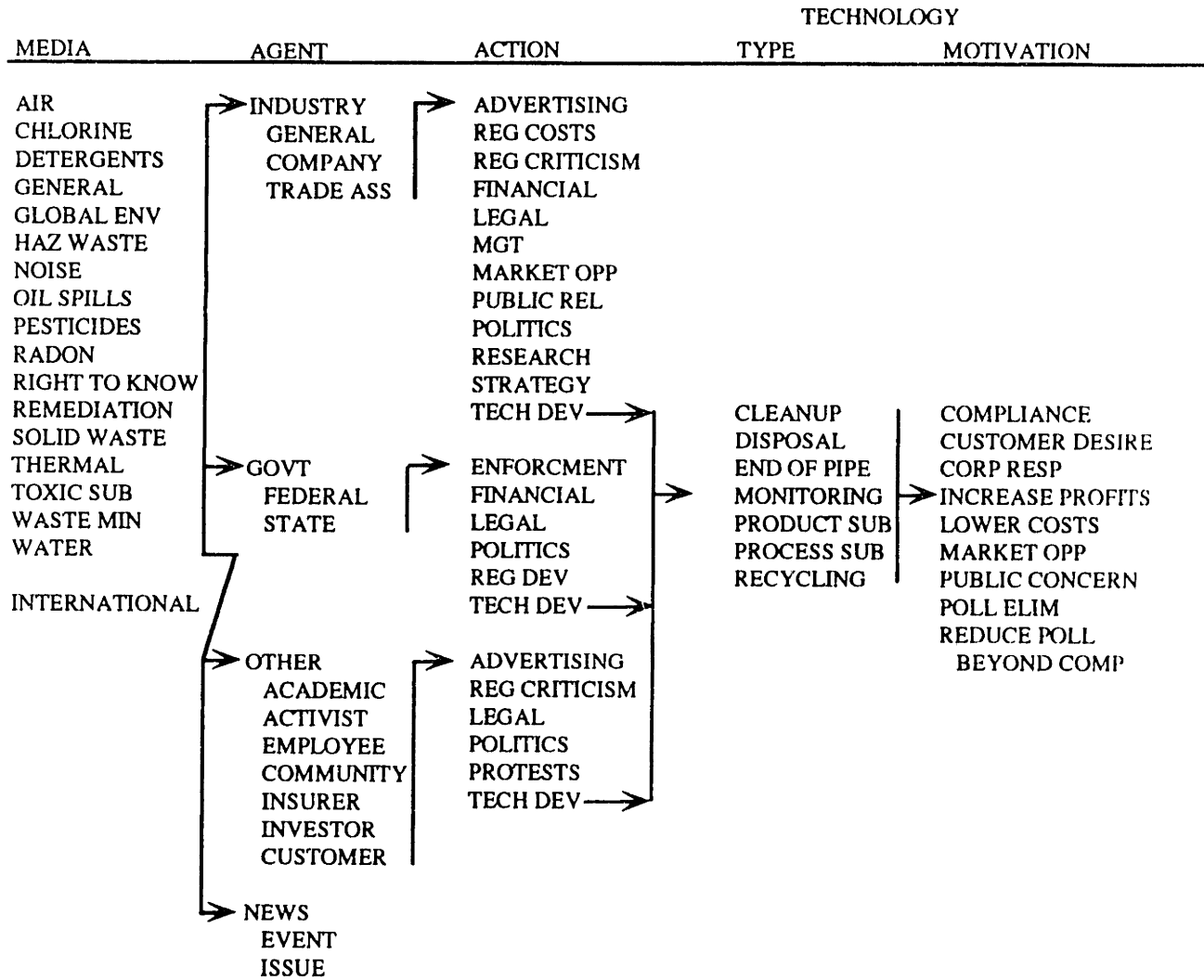
Having chosen the journals for analysis, each issue from 1960 until 1993 was then reviewed. First, articles which focused on environmental issues were

identified through the table of contents. Environmental articles were defined as any article dealing with the protection or preservation of natural resources, the political and social aspects of environmental protection, the technological or management concerns related to both regulatory compliance and pollution control or any business aspects of environmental regulation or pollution control. Issues regarding radiation and nuclear waste were excluded as a separate and distinct issue. This analysis provides the first variable for analysis, the fundamental level of environmental concern exhibited within the industry.

Once identified, each specific article was reviewed in more depth for five constructs dealing with its focus: (1) the media, (2) the agent, (3) the action undertaken, and if technological in nature, (4) the type of technology described, and (5) the motivation for its use or development. Editorials were also reviewed to deepen the understanding of the characteristics and motivations of the institutional evolution. Table 5-3 depicts the coding sequence applied.

In any type of content analysis, three types of reliability must be considered: stability, reproducibility and accuracy (Krippendorff, 1980). Stability is the extent to which the results of content classification are invariant over time. Reproducibility refers to the extent to which the classification procedure produces the same results when the same text is coded by more than one coder. And, accuracy refers to whether the classification of text corresponds to a standard or norm (Weber, 1985: 16-17).

TABLE 5-3
Content Analysis Coding Sequence



Stability in this research was assessed by comparing the turnover of editors (both editor-in-chief and environmental editor) with detected shifts in number, tone or focus of articles. In both *Chemweek* and *O&GJ*, none was observed. Reproducibility was controlled by the use of only one researcher for all coding. Furthermore, the coding was performed consecutively from one journal to the next over a two month period to assure consistency in the administration of the coding sequence. Accuracy in content analysis, however, always remains a concern. Although this coding sequence deals with the most

fundamental characteristics of the articles rather than a detailed analysis of the actual text, there is always uncertainty of whether this assessment is a true representation of the variable desired. To assure more control over accuracy, data uncovered here was checked against corroborating data wherever possible. Further analyses of other trade journals would serve to reconfirm accuracy by checking whether the results obtained represent the particular journal style or the overall industry.

5.3. Federal Case Law

In an attempt to further characterize the relative influence and power among the constituents of the institutional field, a statistical review of all environmentally related federal case law from 1960 until the present was conducted. Using cases argued in the US Supreme Court, Court of Appeals, District Courts, Bankruptcy Courts, Court of Federal Claims, US Tax Court, Military Courts and related federal and territorial courts as collected through the Westlaw® system — FENV-CS (see Appendix A for a description of the full scope of FENV-CS) — this data characterizes the evolution of the institutional field, identifying both the emergence of new members and the transition in power among these members as revealed by the volume of cases directed among the various institutional interests. Key words for extracting the applicable cases fell into five categories: 1) Environmental Groups, 2) Community, Labor and Insurance Groups, 3) The Government, 4) The Chemical Industry, and 5) The Petroleum Industry. A more detailed description of the search strategy is provided in Appendix A.

The total number of citations collected under this search scheme was 5588. After duplicates were eliminated, the database numbered 3572 citations.

Defendants and plaintiffs were then individually characterized as either environmentalists, government, industry or other, with further sub-classifications: Under environmentalists — community groups, employee groups, environmental groups, insurance companies, or other; Under government — city, state, DOA, DOI, EPA, or other federal agency; Under industry — chemical company, petroleum company, other company, chemical trade group, petroleum trade group, or other trade group. With plaintiffs and defendants classified as such, case law could be sorted and analyzed according to the respective influential parties and analysis conducted as to the evolution of the institutional field.

The use of legal data for classification of the institutional field does present certain biases. Primarily, it restricts the search to more formal and confrontational forms of institutional interaction and remains blind to organizations geared more towards either protests or cooperative interaction. One notable institutional constituent being overlooked in this analysis is that of the press, which has become increasingly influential in the inner workings of the firm. Legal data does, however, offer a balance to the trade journal analysis while providing greater depth of data on the prominent institutional members: environmentalists, community groups, employees, insurers, industry and the government. The institutional connectedness uncovered in this analysis will be more objectively based than that of the trade journal analysis. In this way, a comparison between the trade journal analysis and that of the federal case law provides an opportunity for triangulation, testing the observed phenomena from two disparate sources.

5.4. Investor Initiated Corporate Environmental Proxy Resolutions

While lawsuits may be illustrative of the interaction among environmentalists, community groups, employees, insurers, industry and the government, investor groups have not traditionally used this mechanism. Therefore, data on the frequency and focus of investor directed environmental resolution statements will serve as an illustration of the emergence of this institutional member, further expanding the analysis of the evolution of the institutional field. This data has been collected from a literature review of actions by the Council for Environmentally Responsible Economies (CERES) and the Interfaith Center on Corporate Responsibility (IRRC). Each of these groups has been active in the area of social investing (on environmental and other issues), has been involved directly in the initiation of environmental resolution statements or has recorded information on those initiated by others.

5.5. Amoco Corporation Case Study

The previous three data sources will provide an overview of the development of the institutional field. The two specific case studies (Amoco and CERES) will provide a test of the results of this work while adding new insights into institutional behavior. First, an in-depth case study of the Amoco Corporation reveals the evolution of organizational structure and strategy within a single corporation, while providing illustrative examples of (1) the influence of the institutional field on this firm's evolution, (2) the influence of this corporation on the development of the institutional field and (3) the influence of events in the evolution of both the organization and the institutional field.

This segment of the research involved a variety of sources which can be subsumed under the headings: external archival data, internal archival data, ethnographic interviews and participation observation. The intent was to collect longitudinal data in order to determine how and when Amoco progressed through its environmental development. Although my analysis and involvement with Amoco began in the summer of 1993 working for the oil company's pipeline division, the formal research methodology was negotiated and approved by Senior Amoco Executives in the Environmental Affairs and Safety Management Committee in Chicago on February 3, 1994. Formal research began shortly thereafter.

External archival data included a review of several computerized literature search sources, journal and newspaper articles available at M.I.T. as well as a review of all (1960-1993) annual reports, 10-K reports and company environmental statements. Internal archival data included a review of internal communication documents, committee minutes, organizational charts, company newsletters, and formal reports to outside agencies.

The objectives of such a literature review was twofold. The first was to uncover the background information upon which to place the increasingly substantive layers of data. Information such as corporate objectives, markets and technologies, environmental compliance records, release and emission history, the progression of organizational change and notable environmental and corporate milestones and advances should be understood to form a basis for more in-depth discussions with corporate personnel. The second objective was more substantive. Since present day interviews are likely to best uncover motivations and objectives of present day activities, archival records will become the most reliable sources for "snap-shots" of the motivations and objectives of past actions.

Formal interviews were conducted with Amoco employees in EH&S Corporate, EH&S Oil, EH&S Chemical, EH&S Exploration, Research and Development Oil, Research and Development Chemicals, Human Resources, Public Relations, Legal Affairs, Advertising, Chemical Plant Operations, and Refinery Operations. The interviews were designed to establish both the perspectives of environmentally related managers and unrelated managers who have been impacted by environmental concerns.

Finally, participant observation data was collected in as much depth as possible at staff meetings, program presentations, compliance inspections and informal interactions.

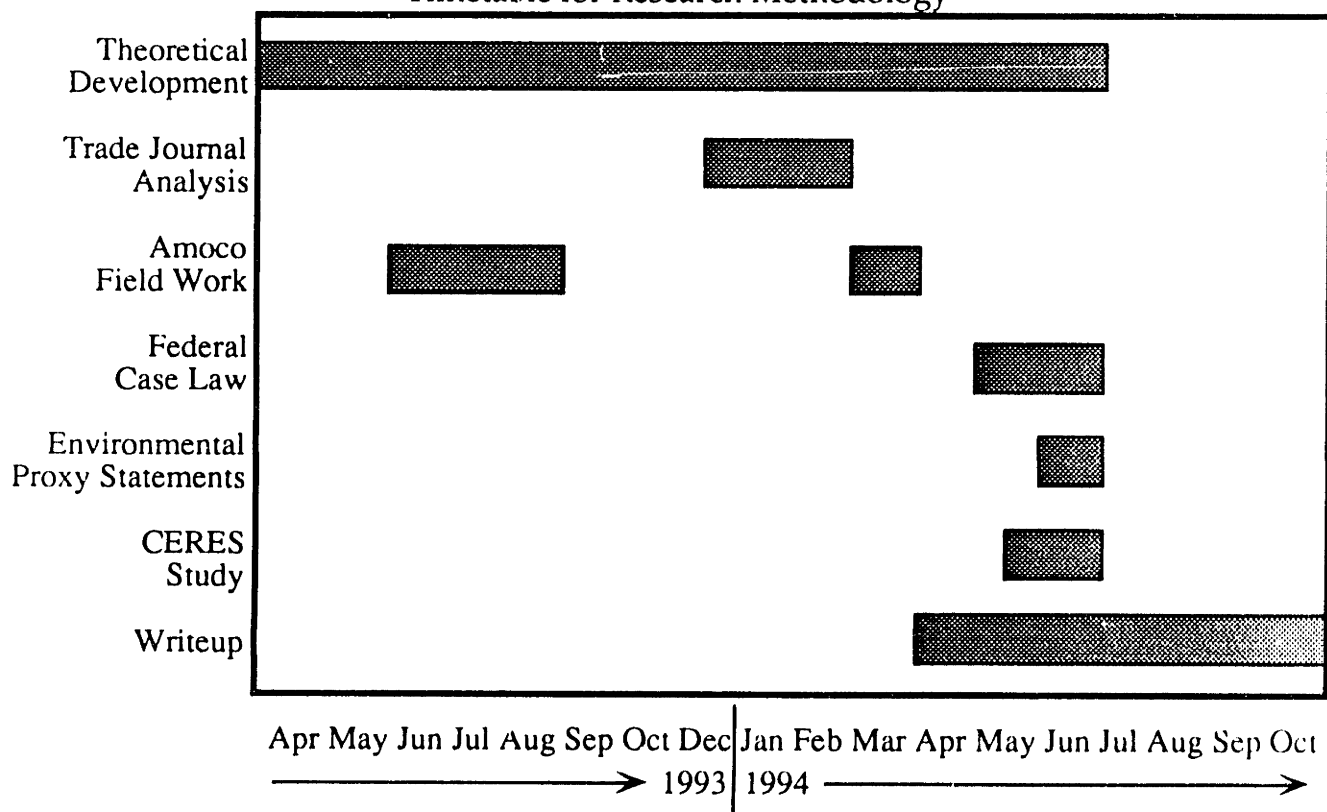
5.6. CERES Case Study

In less detail, a case study of the environmental investor group, the Council for Environmentally Responsible Economies (CERES), provides an illustration of the entrance of a new institutional member and the effects it has had on both the institutional field and the development of practices within the subject firm, Amoco. Interviews of the CERES founder Joan Bavaria have been conducted as well as literature review of magazine, newspaper and internal CERES documents. This case study will also show how the institutional field, in turn, influenced CERES such that it altered its strategies and postures to align more with the dominant strategies and postures of the institutional field.

5.7. Timetable

This research has been conducted over a two and half year period, commencing with the approval of the doctoral program in April 1992, the initiation of formal research activities in May 1993 and concluding with the dissertation defense in the fall term of 1994— see table 5-4.

TABLE 5-4
Timetable for Research Methodology



Part Three:

Data and Analysis — Hypothesis Building

"Ability to see the cultural value of nature boils down, in the last analysis, to a question of intellectual humility. The shallow-minded modern who has lost his rootage in the land assumes that he has already discovered what is important; it is such who prate of empires, political or economic, that will last a thousand years. It is only the scholar who appreciates that all history consists of successive excursions from a single starting point, to which man returns again and again to organize yet another search for a durable scale of values."

Aldo Leopold (1949: 200)

Chapter Six: The Evolution of the Institutional Field

6.1. Introduction

Corporate environmental strategy and attention will co-evolve, not with shifts in environmental costs, but rather with shifts in the makeup and power balances in the institutional field. The first step in testing such a hypothesis is to develop a model for the evolution of the institutional field. That is the purpose of this chapter. The chapter that follows will develop a model for the evolution of corporate strategy and attention to environmental issues. The hypothesis will be supported if a link can be inferred between the two evolutionary models as being co-dependent.

In terms of the institutional field, data collected through the federal case law statistical analysis, the trade journal content analysis, and the environmental proxy statements (as well as supporting data from US EPA records) reveals an

evolution in the institutional field where new interests sequentially emerge, while the power balance among existing constituents continues to shift. Federal case law data reveal when particular interests emerged within the institutional field while at the same time allowing a more detailed analysis. Rather than merely identifying which actors are acknowledged by the respective industries, these data reveal each actors presence as measured by a more objective criteria, legal activity. At the same time, case law can reveal the trajectory of the interaction among the various interests through plaintiff versus defendant analyses. Trade journal analysis data provides corroborating evidence as perceived from the industry perspective. It also reveals the relative influence of these interests in comparison to industry influence as measured by the relative frequency of articles.

As a starting point for discussion, overall federal case data reveals a stepped trend — see figure 6-1. Using linear regression analysis to determine how this trend can best be described, the data were segmented into a variety of sequential stages and checked for statistical significance. The trend that best fits this data has breaks in 1970, 1982, and 1989 — see table 6-1.

FIGURE 6-1
Total Federal Environmental Cases (1960-1993)

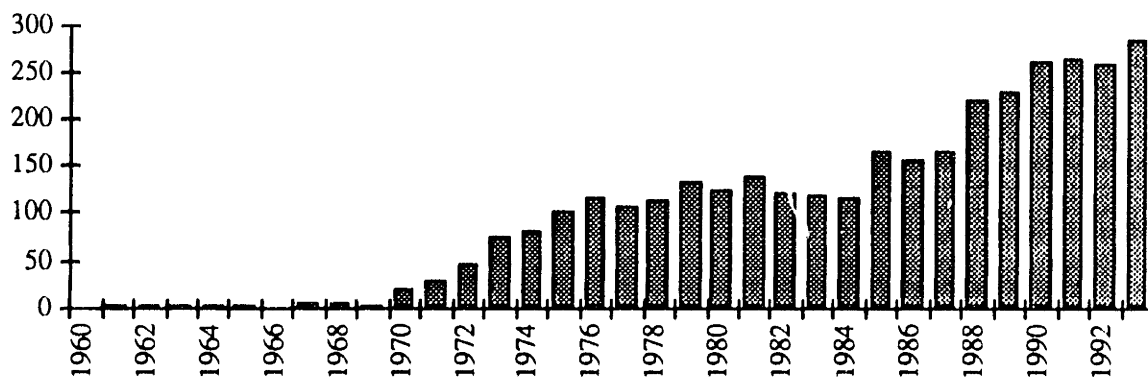


TABLE 6-1
Linear Regression Trend Analysis
Total Federal Environmental Cases (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|-----------|----------------|----------------|-----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 9.45 *** | -18570 *** | 0.86 | 67.89 *** |
| 1982-1989 | 16.86 *** | -33308 *** | 0.86 | 36.64 *** |
| 1989-1993 | 11.10 * | -21840 * | 0.77 | 10.25 * |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

Similar analyses were conducted on the individual case data for each specific institutional constituent detected: all industry, chemical industry, petroleum industry, government, environmental groups, community groups, employee groups and insurance companies. Table 6-2 and Figure 6-2 provide a compilation of the results of that statistical work.⁷

TABLE 6-2
Linear Regression Modeling Results of Federal Case Law Data

| Date | slope | y-intercept | r ² | F-value |
|---------------------------------|-----------|----------------|----------------|-----------|
| <u>Industry Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1981 | 6.29 *** | -12386 *** | 0.88 | 74.56 *** |
| 1981-1990 | 12.88 *** | -25494 *** | 0.78 | 28.06 *** |
| 1990-1993 | 12.53 ** | -24796 ** | 0.71 | 17.01 ** |
| <u>Chemical Industry Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 0.86 *** | -1699 *** | 0.83 | 54.50 *** |
| 1982-1989 | 2.44 ** | -4830 ** | 0.82 | 26.46 ** |
| 1989-1993 | -1.80 | 3604 | 0.34 | 1.56 |
| <u>Petroleum Industry Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 0.42 * | -819 * | 0.39 | 6.99 * |
| 1982-1990 | 2.95 *** | -5844 *** | 0.83 | 34.46 *** |
| 1990-1993 | -6.50 | 12964 | 0.67 | 4.08 |
| <u>EPA Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 5.54 *** | -10912 *** | 0.73 | 30.14 *** |
| 1982-1988 | 5.36 *** | -10574 *** | 0.89 | 39.23 ** |
| 1988-1993 | -3.94 * | 7916 * | 0.73 | 10.75 * |

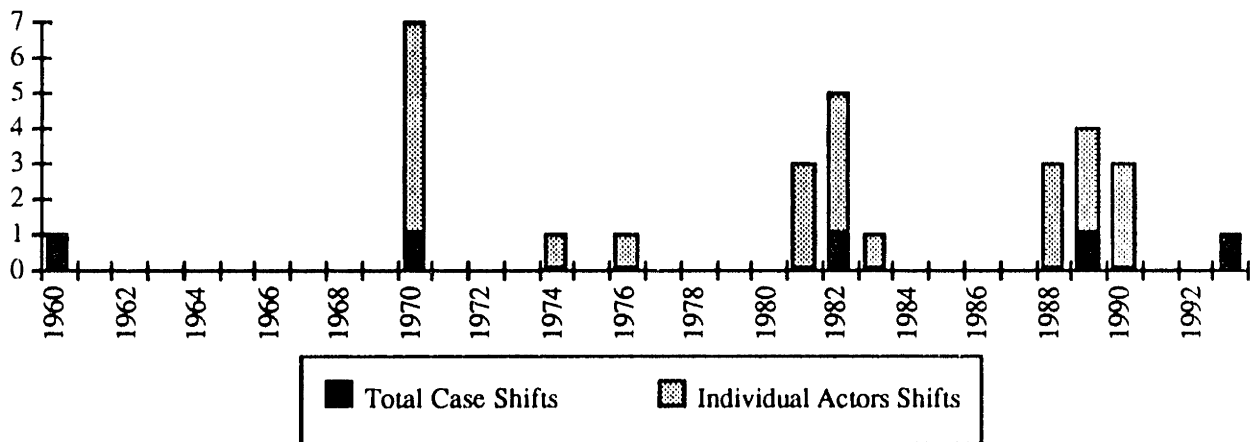
⁷ A full presentation of that data is compiled in Appendix D.

TABLE 6-2, continued

| <u>Environmental Group Cases</u> | | | | |
|----------------------------------|---------|----------------|------|----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1974 | 8.20 * | -16145 * | 0.82 | 13.78 * |
| 1974-1981 | -0.82 | 1658 | 0.32 | 2.81 |
| 1981-1989 | 3.85 * | -7597 * | 0.53 | 7.79 * |
| 1989-1993 | 2.50 | -4915 | 0.37 | 1.76 |
| <u>Community Group Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 0.27 * | -539 * | 0.37 | 6.52 |
| 1982-1988 | 0.39 ** | -776 ** | 0.72 | 12.87 |
| 1988-1993 | -0.20 | 401 | 0.47 | 3.50 |
| <u>Employee Group Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1976 | 0.04 | -71 | 0.02 | 0.13 |
| 1976-1981 | -0.40 | 792 | 0.14 | 0.68 |
| 1981-1988 | 0.51 * | -1014 * | 0.62 | 9.61 * |
| 1988-1993 | -0.31 | 628 | 0.25 | 1.35 |
| <u>Insurance Company Cases</u> | | | | |
| 1960-1970 | | <i>no data</i> | | |
| 1970-1983 | | <i>no data</i> | | |
| 1983-1990 | 4.33 ** | -8590 ** | 0.74 | 17.44 ** |
| 1990-1993 | 14.10 * | -28030 * | 0.91 | 20.14 * |

($p \leq 0.05$ *, $p \leq 0.01$ **, $p \leq 0.001$ ***)

FIGURE 6-2
Timing of Shifting Points in Linear Regression Modeling



As the graph shows, shifts in the emergence of the various institutional actors occurred around the same time intervals: 1970, 1982 and 1989 (with two exceptions — 1974 for environmental groups and 1976 for employee groups — which will be discussed later). Given this temporal uniformity, the evolution of the institutional field is most clearly described as a four stage progression. Table 6-3 provides the breakdown and a brief description of how each stage is characterized.

TABLE 6-3
Stages in the Evolution of the Institutional Field

| Stage | Time Period | Description |
|---------|----------------|---|
| STAGE 1 | 1960 - 1970 | THE INDUSTRIAL FIELD Industry Dominates the Institutional Field |
| STAGE 2 | 1970 - 1982 | THE REGULATORY FIELD The State Begins to Dominate the Institutional Field. Industry Influence Declines. |
| STAGE 3 | 1982-1989 | THE SOCIAL FIELD Environmental Interests Enter the Institutional Field. Industry Influence Begins to Rise. |
| STAGE 4 | 1989 - present | THE STRATEGIC FIELD Economic Interests Enter the Institutional Field. Industry Influence Continues to Rise. |

The preceding table and the explanatory discussion that follows is not intended to infer a theory of punctuated equilibrium (Gersick, 1991). The stages are presented as an analytical device for descriptive purposes. The model that is created is highly stylized, purposely designed not to reflect the gradual changes within each of the stages, but rather to provide an abstract model of interaction patterns within the field during regular time periods. The stages are not argued to homogenous, but rather depicting dominant trends between shifting points. It is the shifting points that are of most importance as they mark the entrance (or

exit) of institutional actors, or changes within the power balances of the field. These are the shifts against which shifts in corporate environmental strategy will be compared.

The dates presented in this evolutionary model, likewise, are not intended to be precise. They should overlap. In fact, as figure 6-2 shows, the data depicts institutional shifts that vary from the first, rather definitive shift in 1970 to more diffuse shifts from 1981 to 1983 and 1988 to 1990. The first aligns with a discrete and formative event, the creation of the Environmental Protection Agency. The subsequent stages align with less prominent events which will be discussed later. However, to delineate the stages, the mean date of each shift will be used as the shifting points: 1970, 1982 and 1989.

Corroborating this four-stage depiction of the institutional field, the coverage of institutional stakeholders in the trade journals *Chemical Week* and *Oil & Gas Journal* undergo a similar evolution. Although only four institutional actors — industry, government, environmental groups and insurance companies — gain coverage, there are both obvious and subtle changes within the coverage which supports the four-stage hypothesis. Table 6-4A and 6-4B are an overview of these data, presenting the arithmetic means (and the percentages) of the number of articles focused on each particular institutional constituent per year. This format will allow a normalized comparison of the data along the four stages.

TABLE 6-4A
Chemical Week Content Analysis: Agent Focus
 Arithmetic Means and Percentages: Standard Deviation in Parentheses

| | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1989 | Stage 4: 1989-1993 |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Chemical Industry | 13.64 (9.05) 56% | 31.25 (11.18) 46% | 28.14 (7.29) 39% | 54.25 (20.17) 50% |
| Government | 10.27 (6.00) 42% | 33.00 (9.70) 48% | 38.71 (6.45) 56% | 50.75 (15.20) 46% |
| Environmental Groups | 0.36 (1.84) 2% | 3.42 (1.93) 5% | 4.29 (1.60) 6% | 3.75 (1.50) 4% |
| Insurance Companies | 0 | 0.33 (0.65) 0.5% | 0.86 (1.07) 1% | 0.25 (0.50) 0.2% |

Note: Numbers may not add up to 100% due to rounding.

TABLE 6-4B
Oil & Gas Journal Content Analysis: Agent Focus
 Arithmetic Means and Percentages: Standard Deviation in Parentheses

| | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1989 | Stage 4: 1989-1993 |
|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Petroleum Industry | 26.36 (27.99) 66% | 38.83 (22.37) 57% | 19.71 (9.48) 59% | 57.00 (13.69) 74% |
| Government | 13.36 (16.73) 34% | 28.42 (10.86) 42% | 13.43 (6.53) 40% | 19.50 (3.79) 25% |
| Environmental Groups | 0.09 (.30) 0.5% | 0.92 (1.16) 1% | 0.14 (0.38) 0.5% | 0.75 (0.50) 1% |
| Insurance Companies | 0 | 0.08 (0.29) 0.1% | 0 | 0.25 (0.50) 0.3% |

Note: Numbers may not add up to 100% due to rounding.

Providing a richer elaboration on this evolution, the federal case law data reveals the trajectory of institutional interaction. Appendix D also contains a complete presentation of the plaintiff/defendant data. Table 6-5 is an overview of these data, presenting the arithmetic means of the number of legal cases argued between each interest. The percentage of the total activity for that stage is also provided so as to allow a normalized comparison of the data along the four stages. Using supporting evidence from EPA records, this data is used to construct a depiction of the evolution of the institutional field.

TABLE 6-5
Federal Case Law Analysis: Plaintiff/Defendant Case Breakdown
Arithmetic Means and Percentages: Standard Deviation in Parentheses

| Plaintiff | Defendant | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1989 | Stage 4: 1989-1993 |
|--------------------|----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| All Industry | Environmental Groups | | 0.58 (0.79) 2% | 1.10 (1.29) 3% | 0.50 (0.58) 1% |
| | Insurance Cos | | | 7.00 (10.10) 16% | 28.25 (4.11) 46% |
| | Community Groups | | | | |
| | Employee Groups | | | | |
| | Government | | 28.92 (19.06) 98% | 34.20 (8.75) 80% | 32.25 (7.46) 52% |
| Chemical Industry | Environmental Groups | | | 0.38 (0.74) 8% | |
| | Insurance Cos | | | 0.25 (0.46) 5% | 1.20 (1.10) 25% |
| | Community Groups | | | | |
| | Employee Groups | | | | |
| | Government | | 4.15 (3.08) 100% | 3.88 (1.89) 86% | 3.60 (2.88) 75% |
| Petroleum Industry | Environmental Groups | | 0.23 (0.44) 9% | 0.22 (0.44) 7% | |
| | Insurance Cos | | | 0.56 (0.88) 18% | 1.25 (0.96) 46% |
| | Community Groups | | | | |
| | Employee Groups | | | | |
| | Government | | 2.46 (1.27) 91% | 2.33 (1.32) 75% | 1.50 (1.73) 54% |
| Government | Environmental Groups | | 0.62 (0.87) 66% | 0.29 (0.49) 18% | 0.33 (0.52) 19% |
| | Insurance Cos | | | | |
| | Community Groups | | | | |
| | Employee Groups | | | | |
| | Chemical Industry | | | 0.71 (1.11) 44% | 0.17 (0.41) 10% |
| | Petroleum Industry | | | 0.14 (0.38) 9% | 0.17 (0.41) 10% |
| | All Industry | | 0.31 (0.48) 33% | 1.29 (1.11) 82% | 1.33 (1.21) 81% |

TABLE 6-5, continued

| Plaintiff | Defendant | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1989 | Stage 4: 1989-1993 |
|------------------------------------|-------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Environmental Groups | Insurance Cos | | | | |
| | Comm Grps | | | | |
| | Emp Grps | | | | |
| | Government | 0.27 (0.19) 100% | 15.08 (5.65) 91% | 21.00 (4.82) 72% | 25.50 (4.82) 70% |
| | Chemical Industry | | | 1.56 (1.33) 5% | 2.40 (1.14) 7% |
| | Petroleum Industry | | | 0.78 (1.39) 3% | 1.40 (1.14) 4% |
| | All Industry | | 1.50 (1.30) 9% | 8.22 (6.20) 28% | 10.60 (3.21) 30% |
| Community Groups | Environmental Groups | | | | |
| | Insurance Cos | | | | |
| | Emp Grps | | | | |
| | Government | | 1.85 (1.34) 100% | 1.00 (0.82) 58% | 0.83 (0.75) 55% |
| | Chemical Industry | | | | |
| | Petroleum Industry | | | | |
| | All Industry | | | 0.71 (0.76) 42% | 0.67 (0.82) 42% |
| Employee Groups (see note 2) | Environmental Groups | | | | |
| | Insurance Cos | | | | |
| | Comm Grps | | | | |
| | Government | | 0.50 (0.84) 100% | 0.25 (0.46) 100% | 0.50 (0.84) 38% |
| | Chemical Industry | | | | |
| | Petroleum Industry | | | | |
| | All Industry | | | | 0.83 (0.41) 62% |
| Insurance Companies | Environmental Groups | | | | |
| | Comm Grps | | | | |
| | Emp Grps | | | | |
| | Government | | | | |
| | Chemical Industry | | | 1.13 (1.13) 14% | 1.75 (1.50) 12% |
| | Petroleum Industry | | | 0.38 (0.74) 5% | |
| | All Industry | | | 7.63 (7.23) 100% | 15.00 (3.46) 100% |

Note 1: Chemical/Petroleum industry are considered as part of all Industry in percentage totals.

Note 2: Stage two for Employee Groups begins in 1976, not 1970.

Note 3: Percentages may not add to 100% due to rounding.

Note 4: Where no number is present, the value is zero.

6.2. Stage 1 (1960-1970): THE INDUSTRIAL FIELD.

Industry Dominates the Institutional Field. In this, the first stage of the institutional evolution, industry resides virtually alone in the institutional field. There exists little pressure from external interests to change, although government influence appears to be increasing (primarily through the Departments of Agriculture, Interior, and Health, Education and Welfare which were enacting rules with which industry easily complied). The field may be argued to be non-existent at this time, however, given that the journals are increasingly covering the issue and inter-industry debate appears to be growing (in the journals), the field is argued to be coalescing in the fashion designed by industry.

In both *Chemweek* and *O&GJ*, articles in this first stage of institutional development focus more attention on industry initiatives than on government actions — see figures 6-3A and 6-3B⁸. Although this focus is steadily shifting towards a government focus, median values for industry related articles comprised the majority through this period for both journals: a mean of 56 and 66 percent for *Chemweek* and *O&GJ* respectively. Outside stakeholders were not given significant attention. Environmental activists, first noted in *Chemweek* in 1967 and in *O&GJ* in 1970 are given little significant attention.

⁸ Figures 6-3A and 6-3B also highlight a difference between the two industries which will be discussed later. The petroleum industry appears more internally focused than the chemical industry which balances its coverage between industry and government more evenly.

FIGURE 6-3A
Agent Focus of Environmental Articles* - *Chemical Week*

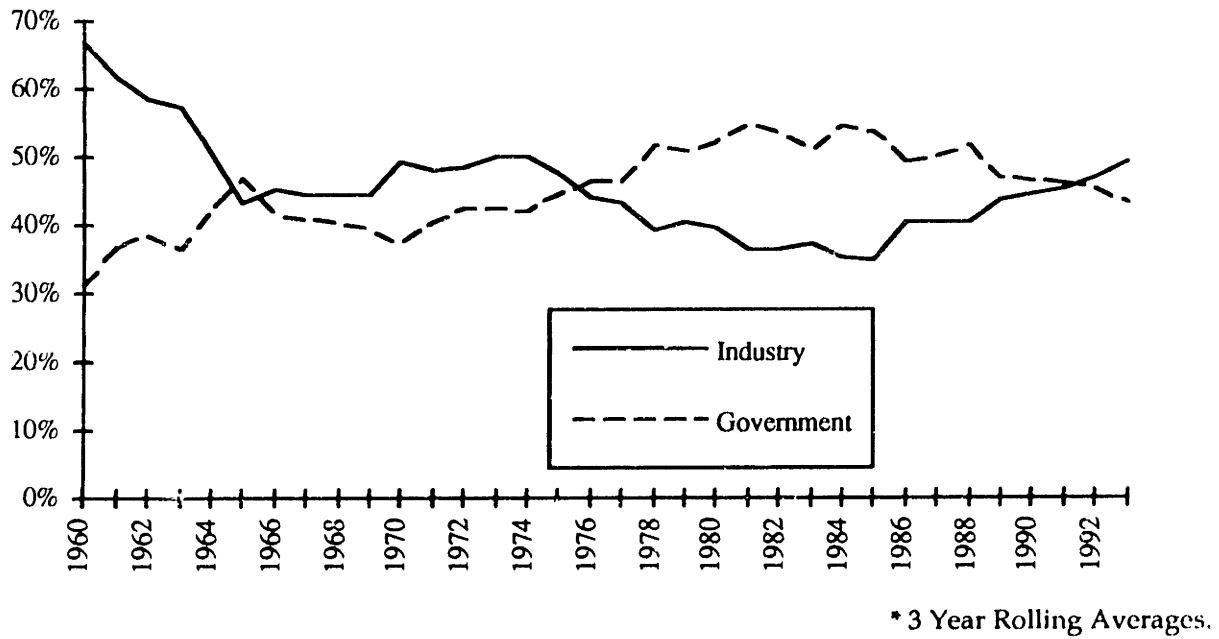
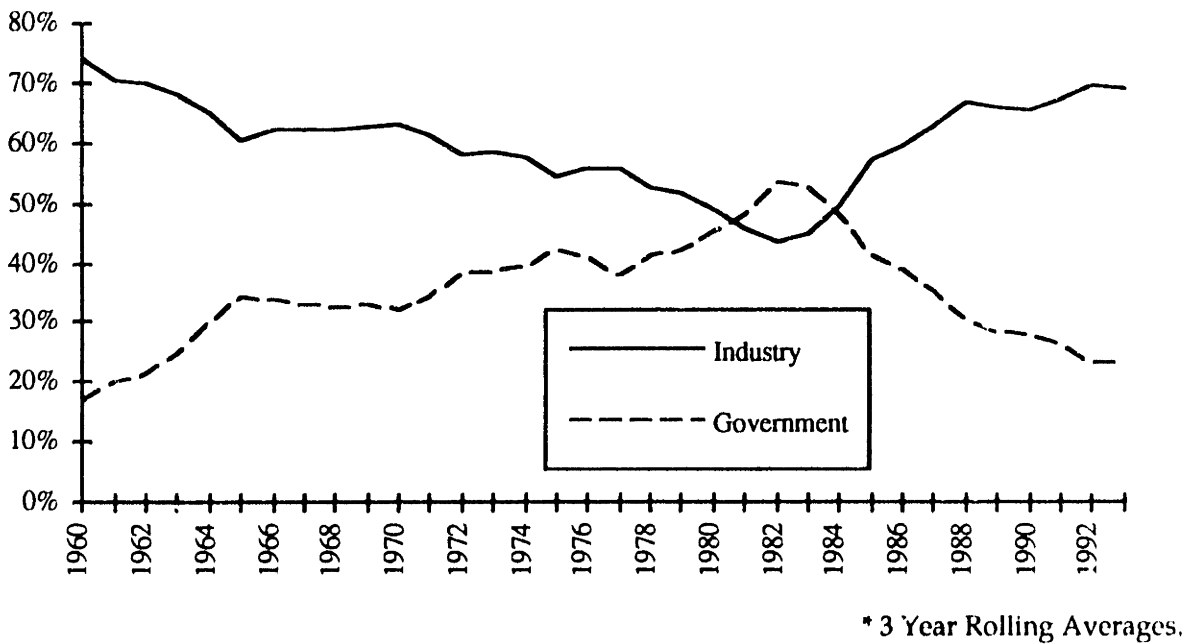
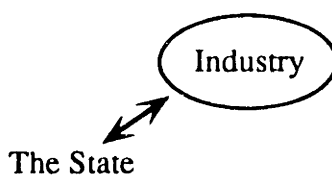


FIGURE 6-3B
Agent Focus of Environmental Articles* - *Oil & Gas Journal*



In regards to federal case law, there is little legal activity among industry, government and external stakeholders — see figure 6-1. A mean of only 0.54 cases per year are observed. Industry is essentially left to its own devices in protecting the environment. Figure 6-4⁹ depicts a schematic of the state of the institutional field in this first stage.

FIGURE 6-4
Schematic: Stage 1 (1960-1970)
THE INDUSTRIAL FIELD
Industry Dominates the Institutional Field



6.3. Stage 2 (1970-1982): THE REGULATORY FIELD.

The State Begins to Dominate the Institutional Field. Industry Influence Declines. In this second stage of the evolution, the government (in the form of the Environmental Protection Agency, created in December 1970) gains increasing control over the institutional field as industry influence steadily declines. Environmental interests (primarily environmental groups, but to a lesser degree community groups and later employee groups) gain influential power, not in the field directly, but through influencing the government. As such, they remain external to the institutional field which is increasingly dominated by the state. The dominant focus of industrial environmental management is on regulatory compliance.

⁹ The arrows designate the direction of influence practiced by the institutional constituents. The ovals represent the institutional field, which in this context refers to who may be considered as legitimate actors in directly influencing corporate action and strategy.

In both journals, attention moves away from a predominately industry viewpoint — see figures 6-3A and 6-3B. Mean values for industry-related articles decrease by 18 and 14 percent for *Chemweek* and *O&GJ* respectively. In both cases, external interests begin to emerge in coverage with environmental activists gaining mean values of 5 percent (*Chemweek*) and 1 percent (*O&GJ*). However, in both cases this coverage is more negative than positive, focusing primarily on protests, regulatory and corporate activism and political and legal actions. Within *Chemweek*, the makeup of industrial constituents of the institutional field also begins to shift as environmental protection begins to emerge as a possible market. Environmental cleanup firms (in particular Waste Management Inc.) start to receive increasing coverage.

Federal case law data reveals added insights into this stage of institutional evolution. As figure 6-5 shows, environmental groups emerge in 1970 as an influential force within the institutional field. As a plaintiff, environmental groups initiate a mean of 16.49 lawsuits per year during this stage, up from only 0.27 in the previous year. 91 percent of these are directed, not at industry directly, but at the government — see table 6-4 and figures 6-6 and 6-7. Activity levels off in 1974 and remains at this level until 1981.

FIGURE 6-5
Lawsuits Involving Environmental Groups (1960-1993)

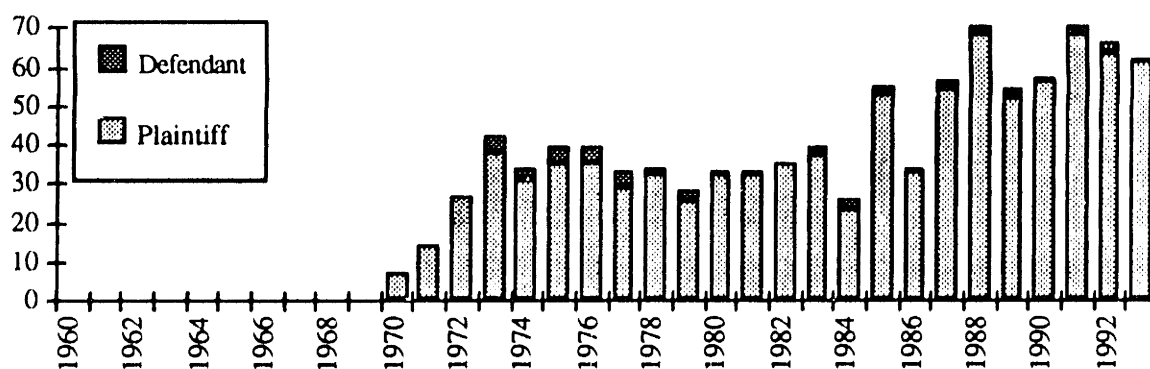
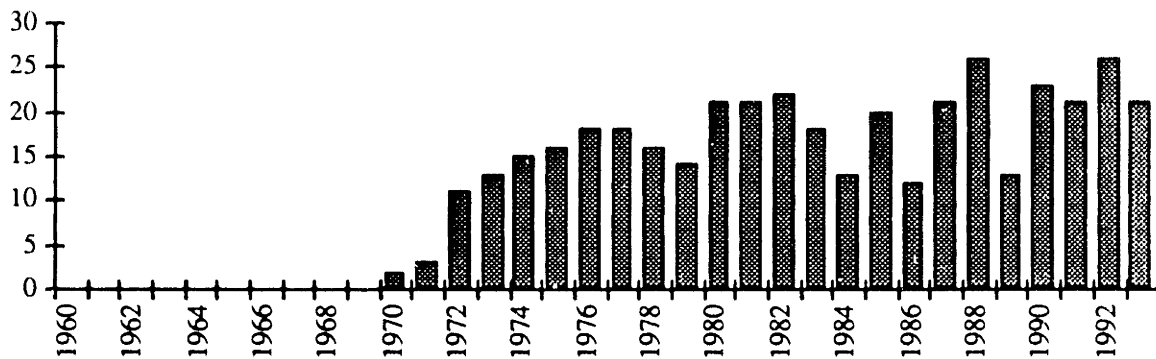
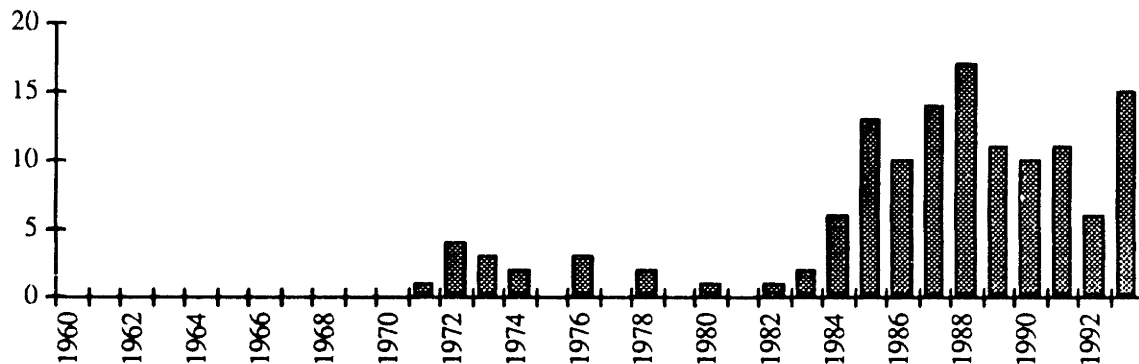


FIGURE 6-6
Lawsuits: Environmental Groups versus the Government (1960-1993)



Note: Government refers to EPA and DOI.

FIGURE 6-7
Lawsuits: Environmental Groups versus Industry (1960-1993)



Community groups also emerged at the beginning of this period — see figure 6-8 — and employee groups would emerge slightly later in 1976 — see figure 6-9. However, based on their volume of legal action (mean values of 2.25 and 0.50 respectively), their level of influence would be relatively low¹⁰. In conjunction with newly emerging regulations (i.e. the Resource Conservation and Recovery Act and new work-place standards under (OSHA), their presence had the effect of changing the direction and focus of the pressure exerted on the

¹⁰ In actuality, oftentimes environmental groups would act as intervenors or provide legal support to such groups who could not support these activities themselves.

firm by the institutional field, inserting work-place and community health concerns into the environmental debate.

FIGURE 6-8
Lawsuits Involving Community Groups (1960-1993)

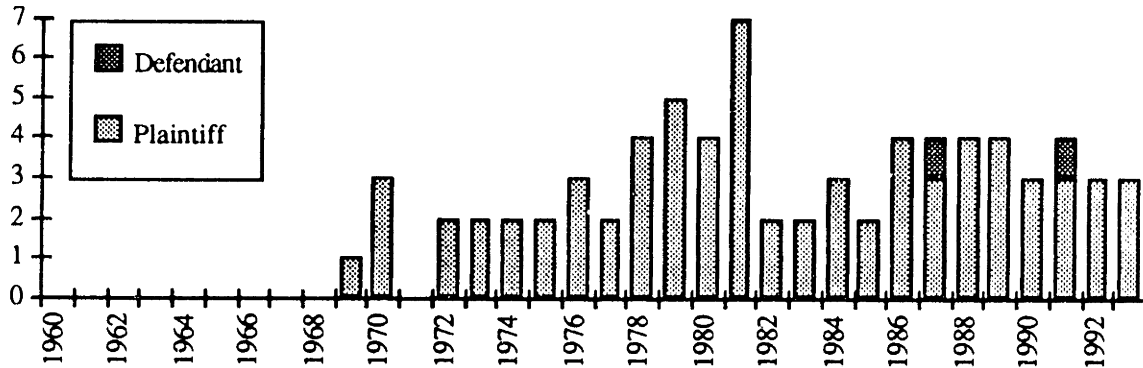
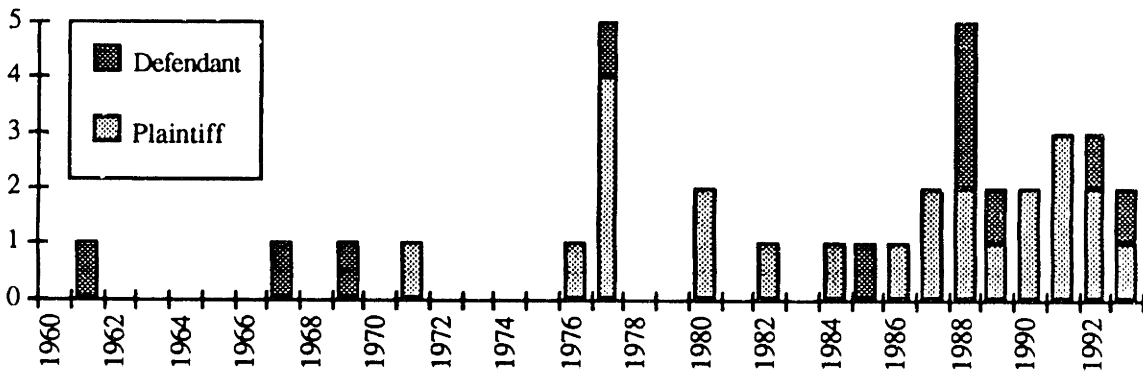


FIGURE 6-9
Lawsuits Involving Employee Groups (1960-1993)



Industry, too became very active in this stage. Both industry as a whole, and the chemical and petroleum industries in specific, increased their legal activity significantly — see figures 6-10A, 6-10B and 6-10C. This activity represented efforts to resist and alter the field rather than respond to it. Industry representatives were plaintiffs more often than defendants: 5.5 times more for general industry and 4.6 times more for the chemical and petroleum industries. For both industries, between 96 and 97 percent of these lawsuits were directed at the government — see table 6-5.

FIGURE 6-10A
Lawsuits Involving Industry (1960-1993)

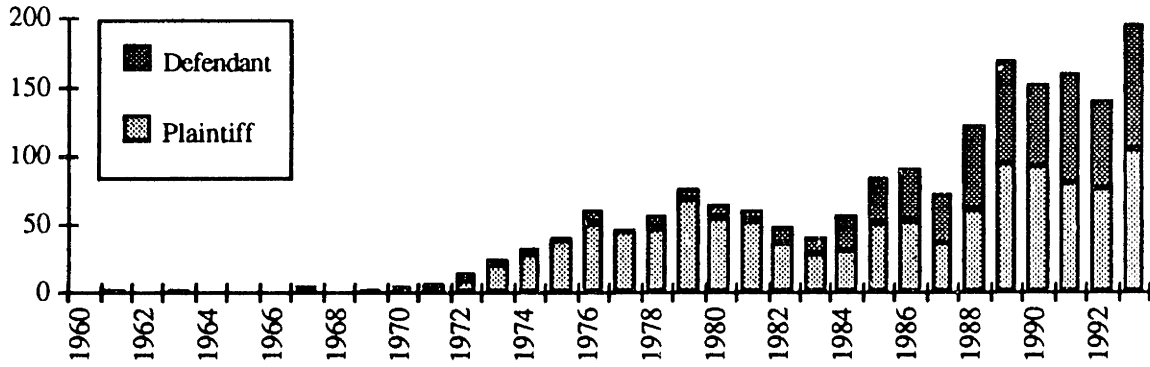


FIGURE 6-10B
Lawsuits Involving the Chemical Industry (1960-1993)

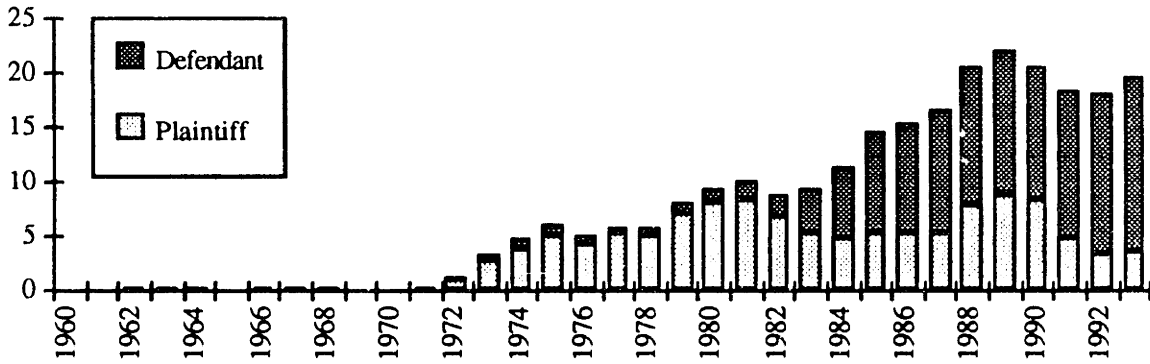
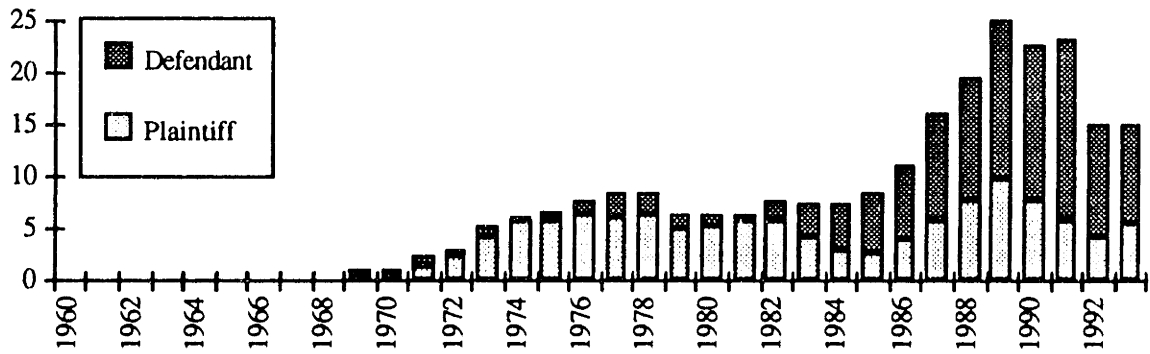
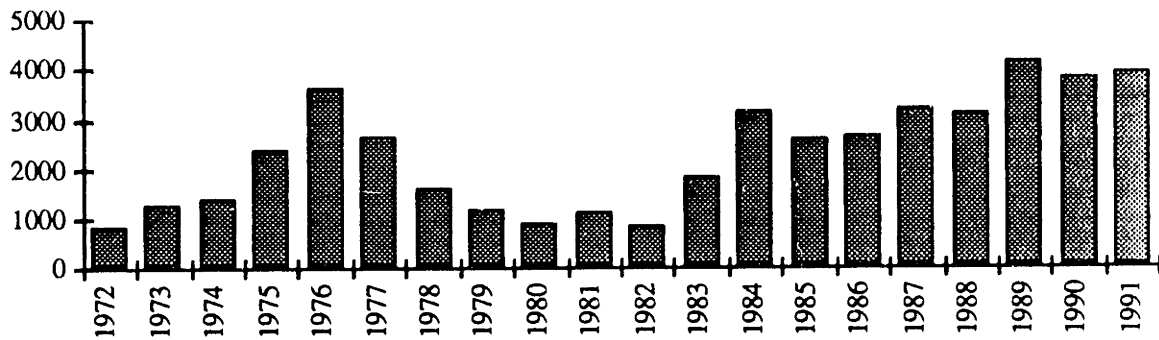


FIGURE 6-10C
Lawsuits Involving the Petroleum Industry (1960-1993)



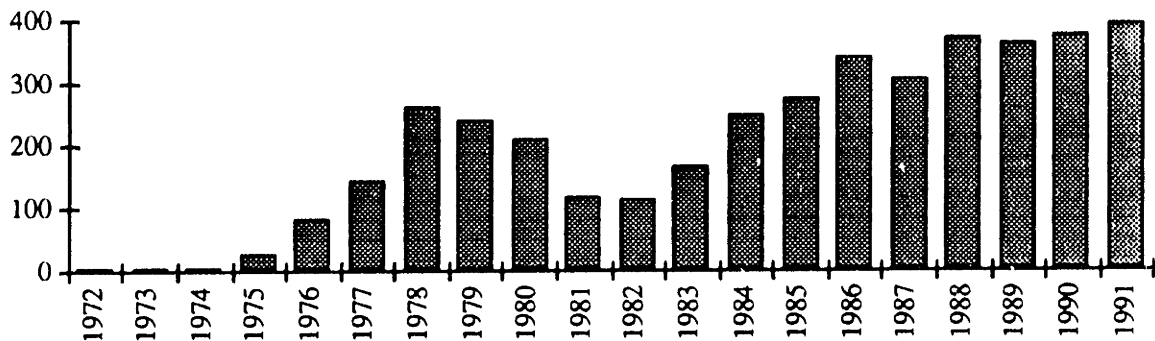
For its part, the Environmental Protection Agency was also increasing in its power to influence industry. As figures 6-11A and 6-11B show, EPA began its tenure by beefing up its administrative and civil actions against industry. This was the strategy of the first EPA administrator, William Ruckelshaus, who felt that once government set standards and began to enforce them, industry would fall in line and the problem would essentially disappear (US EPA, 1993). During the first 60 days, EPA brought five times as many enforcement actions as the agencies it inherited had brought during any similar period (Landy, Roberts & Thomas, 1990).

FIGURE 6-11A
Administrative Actions by EPA



(Source: US EPA (1992b)).

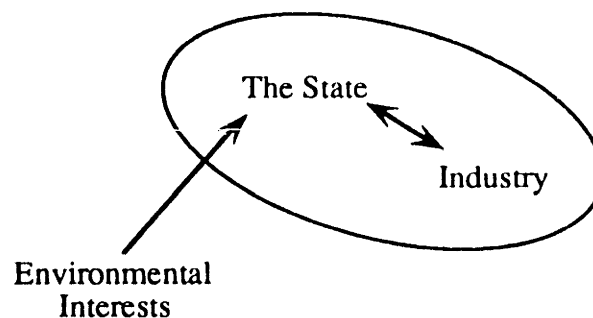
FIGURE 6-11B
Civil Referrals by EPA



(Source: US EPA (1992b))

Therefore, it appears that between the period 1970-1982, industry began to lose control of its external environment. It initiated resistant and confrontational activities in the face of an administrative agency that was growing in power to influence internal decisions of the firm. Environmental groups (including community and employee groups) were increasingly influential during this period affecting internal industry decisions, not directly but through the EPA. As such, they remained external to industry's institutional field. The dominant focus of corporate environmental management had become that of regulatory compliance. Figure 6-12 presents a schematic depiction.

FIGURE 6-12
Schematic: Stage 2 (1970-1982)
THE REGULATORY FIELD
The State Begins to Dominate the Institutional Field.
Industry Influence Declines.



6.4. Stage 3 (1982-1989): THE SOCIAL FIELD.

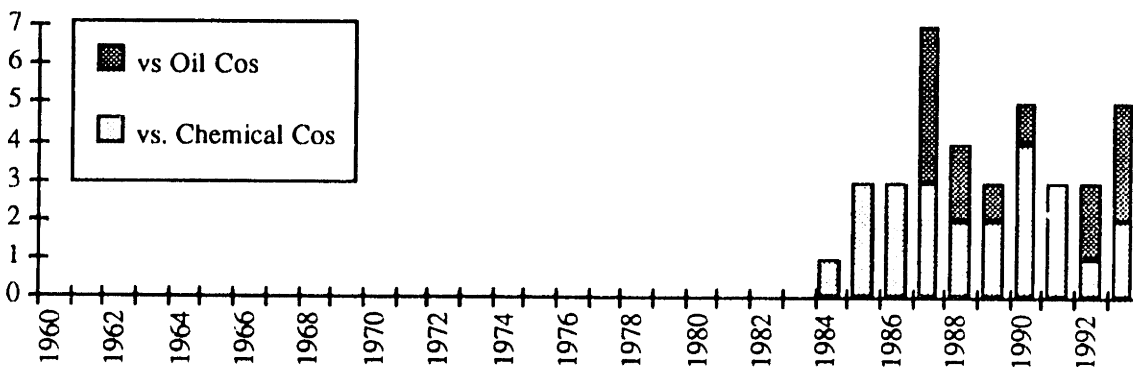
Environmental Interests Enter the Institutional Field. Industry Influence Begins to Rise. The third stage of the institutional evolution is marked by two important developments. First, although environmental interests continued to pressure government, who, in turn, continued to pressure industry, they also began to initiate a significant volume of legal activity towards industry directly. This established them as an active member of the institutional field. As a second development, industry decreases its level of confrontational pressure

against the government, as it begins to reverse its previous trend of declining influence within the field. Given these developments, industrial environmental management is now moving away from a focus on regulatory compliance as it begins to consider the influential demands of social interests such as environmentalists, employee groups and community groups.

Within both journals, attention on outside interests continues to grow as environmental groups appear to grow in influence. Not only has coverage increased, but the tone of that coverage, rather than focusing on protests and legal actions of environmentalists, gives more attention to the scientific and policy research they conduct.

Federal case law supports the observation of their presence in influencing industry affairs. Environmental groups increase their legal activity by over 100 percent. Now instead of directing all of their attention at government, they are devoting one third of that activity towards influencing industry directly — see figure 6-7. 10 percent is directed at the chemical and petroleum industries — see figure 6-13. This effect can also be seen in figures 6-10A, 6-10B and 6-10C. In each case, this stage is marked by an increase in defendant cases from the low average of 15 percent from 1970 to 1982, to between 41 and 56 percent from 1982 to 1989.

FIGURE 6-13
Lawsuits: Environmental Groups versus Chemical and Oil Companies (1960-1993)



In terms of industry posture, 1982 represents a significant turning point in the level of industry focus within both journals. Statistical analysis (Chow, 1960) of the trend data found a similar structural break at 1982 within both journals. The decreasing trend in industry related articles noted through the previous two stages reverses itself — see table 6-6 and Appendix C for the statistical results. The shift in *O&GJ* was more dramatic while that of *Chemweek* was more gradual. Figures 6-14 (A - D) and tables 6-7 and 6-8 show the results a linear regression analysis on this data after being separated into two segments at 1982.

TABLE 6-6
Chemweek and *O&GJ* Data: Chow Test Results

| Data Set | Year of Break | Chow Test | F-value |
|----------------------------|---------------|-----------|----------|
| <i>Chemweek</i> Industry | 1982 | 6.35 *** | 9.67 *** |
| <i>Chemweek</i> Government | 1982 | 2.42 * | 4.77 * |
| <i>O&GJ</i> Industry | 1982 | 20.95 *** | 1.10 |
| <i>O&GJ</i> Government | 1982 | 19.75 *** | 0.99 |

($p \leq 0.05$ *, $p \leq 0.01$ **, $p \leq 0.001$ ***)

This self-directed and less confrontational activity is again supported by federal law data. Legal actions against the government decreased dramatically at the beginning of the third stage in 1982 — see figure 6-15. Mean values for industry actions against government drop off by 19 percent for the chemical and petroleum industries and by 3 percent for all of industry — see figures 6-16 and 6-17.

FIGURE 6-14A
 Linear Regression: Government Focus — *Chemical Week*

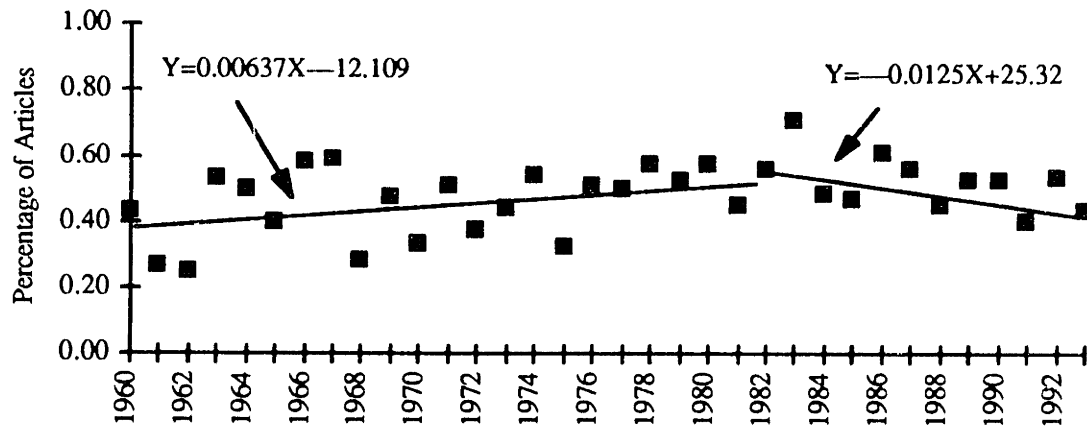


FIGURE 6-14B
 Linear Regression: Industry Focus — *Chemical Week*

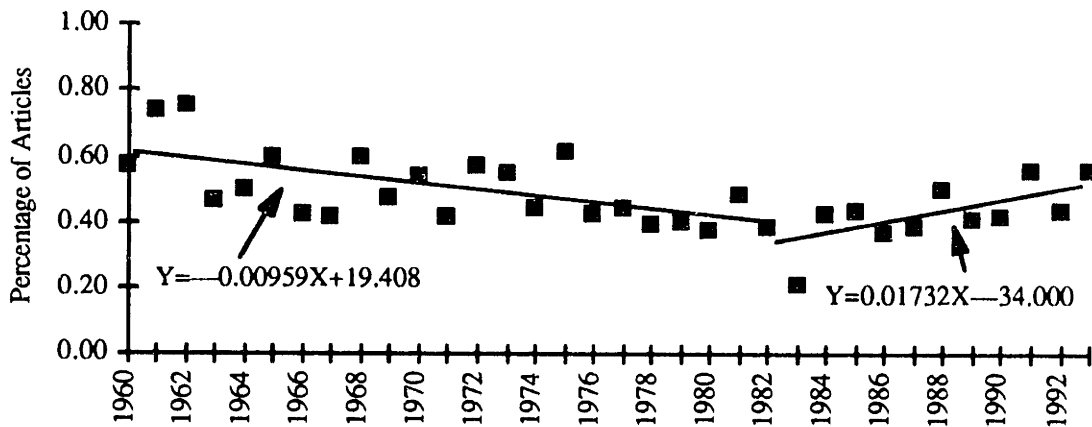


TABLE 6-7
Chemical Week Linear Regression Trend Analysis

| Date | slope | y-intercept | r ² | F-value |
|-------------------|----------|-------------|----------------|----------|
| <u>Government</u> | | | | |
| 1960-1982 | 0.01 * | -12.10 * | 0.17 | 4.18 * |
| 1982-1993 | -0.01 | 25.32 | 0.29 | 4.04 |
| <u>Industry</u> | | | | |
| 1960-1982 | -0.01 ** | 19.41 ** | 0.37 | 12.35 ** |
| 1982-1993 | 0.02 ** | -34.00 ** | 0.46 | 8.46 ** |

($p \leq 0.05$ *, $p \leq 0.01$ **, $p \leq 0.001$ ***)

FIGURE 6-14C
Linear Regression: Government Focus — *Oil & Gas Journal*;

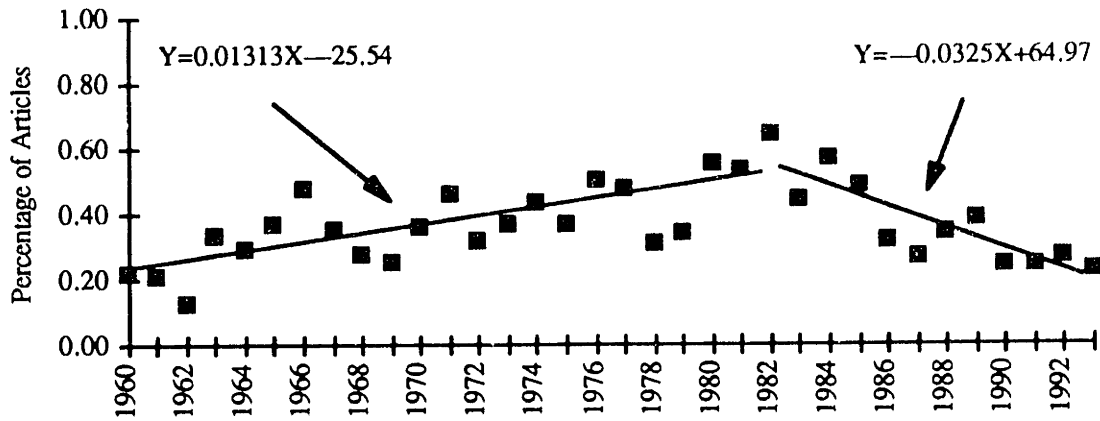


FIGURE 6-14D
Linear Regression: Industry Focus — *Oil & Gas Journal*

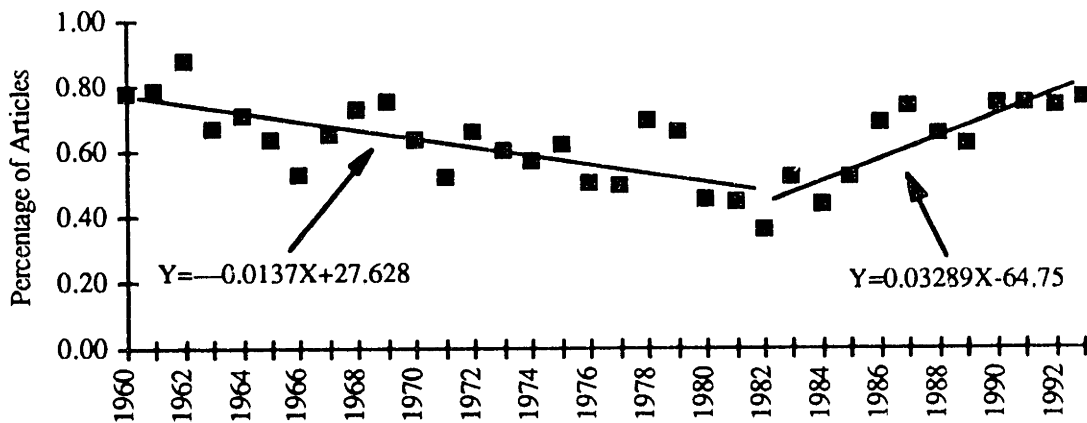


TABLE 6-8
Oil & Gas Journal Linear Regression Trend Analysis

| Date | slope | y-intercept | r ² | F-value |
|-------------------|-----------|-------------|----------------|-----------|
| <u>Government</u> | | | | |
| 1960-1982 | 0.01 *** | -25.54 *** | 0.53 | 23.51 *** |
| 1982-1993 | -0.03 *** | 64.97 *** | 0.73 | 26.72 *** |
| <u>Industry</u> | | | | |
| 1960-1982 | -0.01 *** | 27.63 *** | 0.55 | 25.23 *** |
| 1982-1993 | 0.03 *** | -64.75 *** | 0.75 | 29.09 *** |

($p \leq 0.05$ *, $p \leq 0.01$ **, $p \leq 0.001$ ***)

FIGURE 6-15
Lawsuits Involving the Environmental Protection Agency (1960-1993)

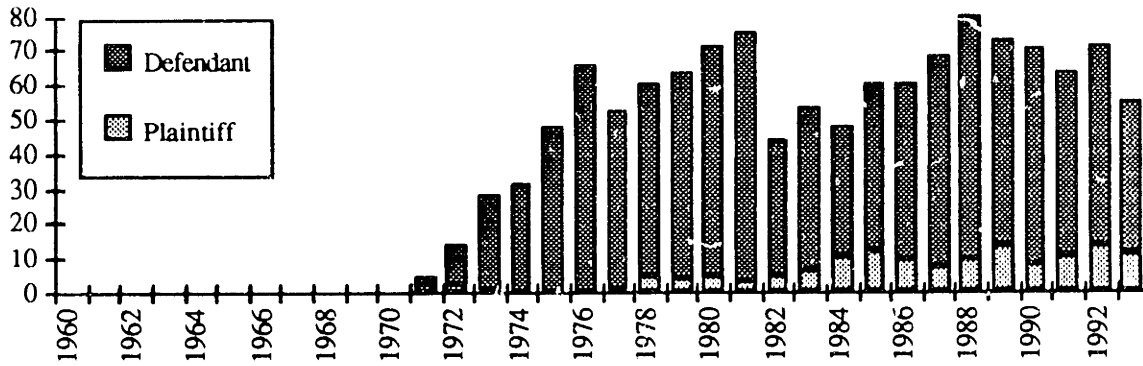


FIGURE 6-16
Lawsuits: Industry versus the Government (1960-1993)

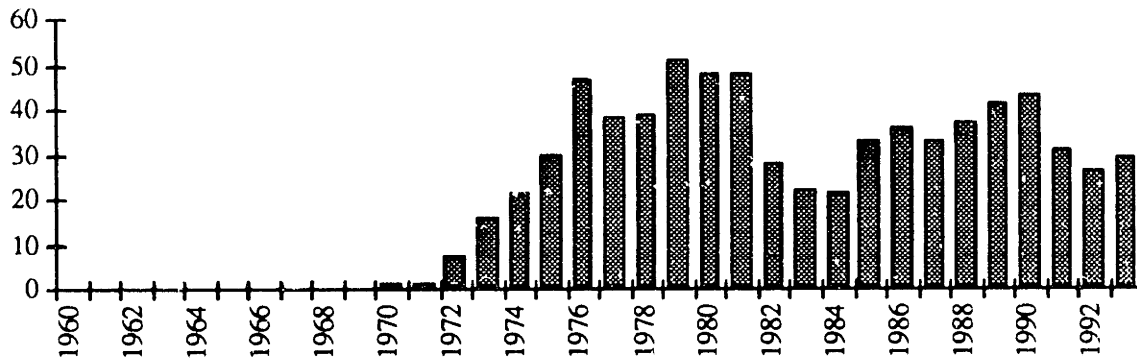
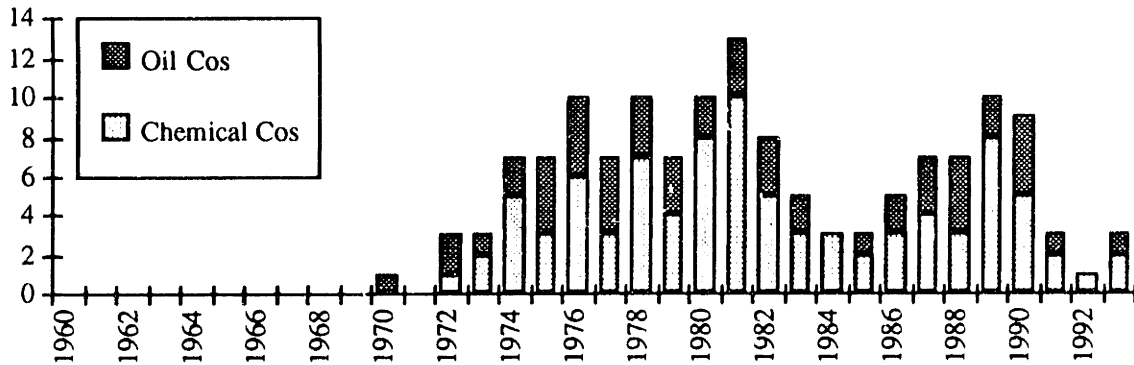


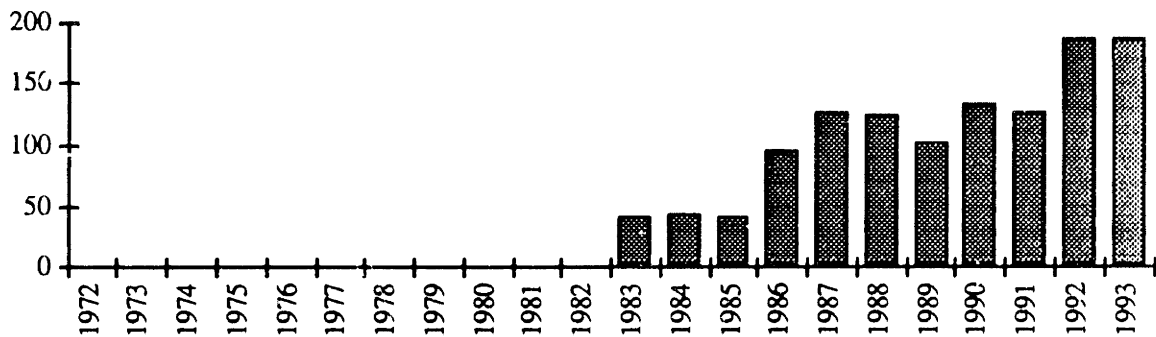
FIGURE 6-17
Lawsuits: Chemical and Oil Companies versus Government (1960-1993)



Note: All Chemical Company cases were against the EPA, 85% of Oil Company cases were against EPA, 15% against DOI.

However, simultaneous with this decrease in industry action against the government, government action against industry increases in intensity. Administrative actions and civil referrals increase — see figures 6-11A and 6-11B — and criminal indictments by the EPA begin to emerge in 1983 — see figure 6-18.

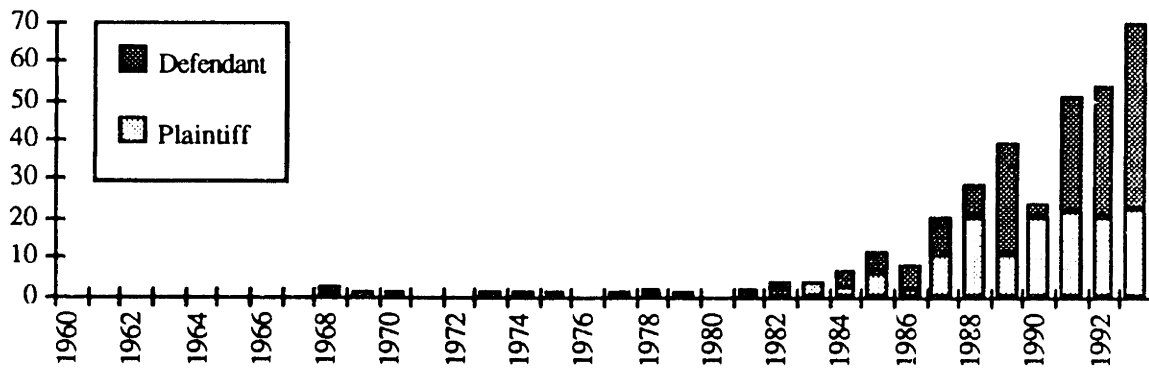
FIGURE 6-18
Criminal Indictments by EPA



(Source: US EPA (1992b)).

As a preview of what will become a significant institutional actor in the fourth stage, this period witnesses the emergence of a new institutional actor, insurance companies — see figure 6-19. While industry legal activity decreased against the government, it grew overall due to an increased level of effort directed at insurance companies. 16 percent for all industry action, 5 percent of chemical industry action and 18 percent of petroleum industry action is directed at insurance carriers, while insurance companies direct a roughly equal amount of influence in return — see table 6-5. To a less significant degree, industry legal actions were also directed at environmental groups directly (3 percent for all industry and 8 and 7 percent for the chemical and petroleum industries respectively).

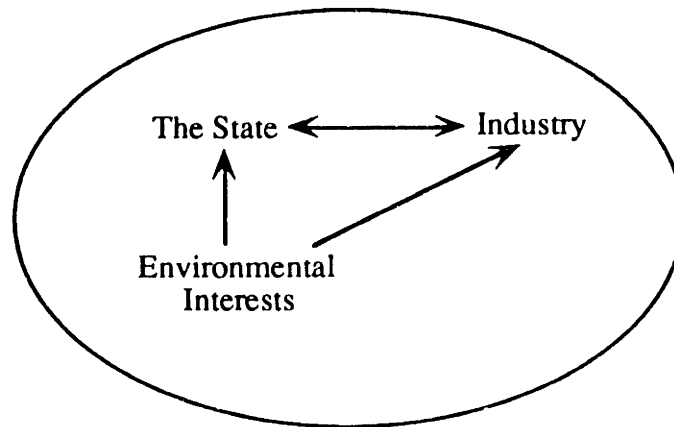
FIGURE 6-19
Lawsuits Involving Insurance Companies (1960-1993)



Therefore, it appears that the period 1983-1989 represent a period of increased attention on industry directed efforts. It is a period in which industry is seeking a less confrontational relationship with the Environmental Protection Agency while, at the same time environmental groups emerge as influential members of the institutional field, with industry recognizing their legitimacy and scientific and policy expertise. This signifies a shift in institutional power such that environmental groups no longer must influence industry through an intermediary but can influence companies directly. Yet, the environmentalist/industry relationship remains predominately uni-directional as industry seeks control through cooperation primarily with the government. Concurrent with this increased pressure on industry, environmental groups also step up their pressure on the EPA, apparently enjoying increased institutional power across the board. Given these developments, industrial environmental management is now moving away from a focus on regulatory compliance as it begins to consider the influential demands of social interests such as environmentalists, employee groups and community groups. Insurance companies also join the institutional field, although their level influence remains

significantly less than that of environmental groups. Figure 6-20 provides a schematic depiction.

FIGURE 6-20
Schematic: Stage 3 (1982-1989)
THE SOCIAL FIELD
Environmental Interests Enter the Institutional Field.
Industry Influence Begins to Rise.



6.5. Stage 4 (1989-present): THE STRATEGIC FIELD.

Economic Interests Enter the Institutional Field. Industry Influence Continues to Rise. In this, the most recent stage, a significant development occurs in regards to the source of environmental pressure in the institutional field. Rather than coming primarily from environmental interests, the field accommodates the entrance of two traditionally economic interests, owners and insurers. Activity by these two grows, with their attention directed almost exclusively at industry. At the same time, environmental interests and industry appear to be enjoying a more balanced and less confrontational relationship within the field. Journal articles begin to focus on strategic alliances between the two groups as legal actions by environmentalists towards industry stabilize and actions in return drop to nearly zero. Since economic interests such as investors

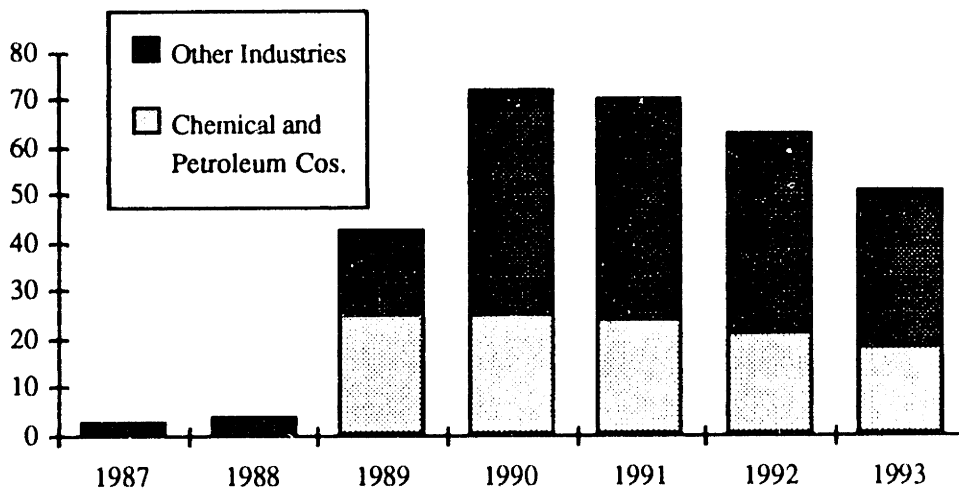
and insurers trigger core mechanisms within the organization, the institutional perspective on environmental management in this stage shifts from one of responding to social demands to one of focusing on strategic issues.

Within the trade journals, coverage continues to move towards industry related initiatives and away from a government focus, continuing the trend initiated in 1982. Industry appears to be gaining power and influence within the institutional field in designing their own responses to environmental issues. Environmentalists are growing in their influence within the field, now being seen as fully integrated members with articles increasingly focusing on partnering and cooperative efforts among industry, government and environmental groups. Coverage of issues related to insurance firms continue to grow in prominence and owners/investors initiatives emerge in the news. In particular, pressure to sign the Valdez Principles created by the Council for Environmentally Responsible Economies grows as a significant issue.

Federal case law again corroborates this finding as insurance companies increase dramatically in their influence as an institutional stakeholder. Actions by insurance companies against industry increase by 200 percent. The comparable amount against chemical industry is 50 percent, while action against the oil industry disappears. For the industry as a whole, this surpasses the level of influence exerted by environmental groups who continue to increase their pressure across the board. Environmental group cases against government increase by 21 percent, cases against industry increase by 28 percent, and cases against the chemical and petroleum industries increase by 53 and 79 percent respectively. The proportion of influence remains constant from stage three to stage four with government receiving roughly 70 percent of environmentalist attention.

Investor initiated corporate resolution statements rise dramatically in this period, thereby establishing them as a significant member of the institutional field — see figure 6-21. Of these resolutions, roughly 37 percent were directed at oil and chemical companies. Virtually every major chemical¹¹ and oil¹² company had been targeted. Roughly 68 percent of these resolutions were in regards to signing or endorsing the Valdez Principles, formed after the Exxon Valdez oil spill. Other resolutions dealt with such issues as: the establishment of an environmental policy committee, revised health and safety policy, toxic wastes in ethnic/minority communities, controlling carbon dioxide emissions, and eliminating the use of specific compounds.

FIGURE 6-21
Investor-Initiated Environmental Resolutions.



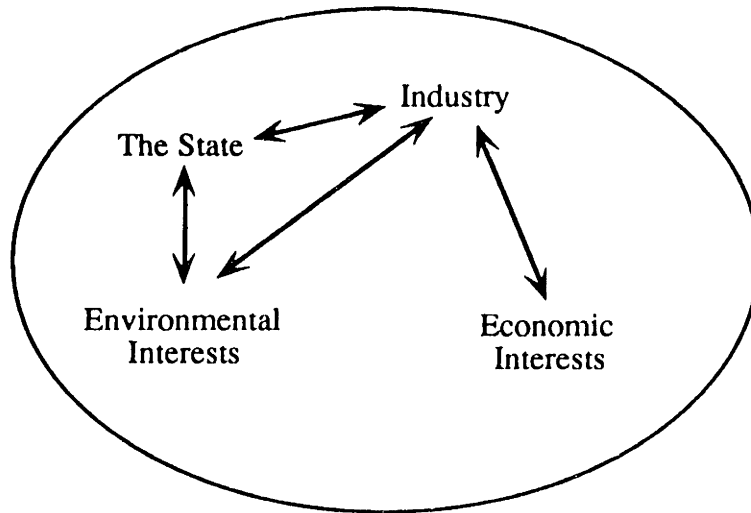
¹¹ Allied Signal, Bristol-Myers Squibb, DuPont, Dow, Eastman Kodak, WR Grace, Great Lakes Chemical, Proctor and Gamble, Union Carbide, American Cyanamid, and Ethyl.

¹² Amoco, ARCO, Chevron, Coastal, Exxon, Phillips, Unocal, Occidental, Mobil.

Industry continued its cooperative posture and continued to decrease its pressure against government, down 6 percent (5 and 35 percent decrease for chemical and petroleum firms respectively). Industry lawsuits against environmental groups in both cases drops to near non-existent levels. However, cases against insurance companies increase dramatically. Insurance companies now receive 25 and 46 percent of chemical and oil industry legal attention respectively, up from only 5 and 18 percent in stage three. Insurance company legal action is up 400 percent for all of industry.

Therefore, it appears that environmental groups continue to increase in their legitimacy and influence within the institutional field. Simultaneously, industry increasingly attempts to gain control of its external environment. With the introduction of economic interests such as investors and insurers which trigger core mechanisms within the organization, the institutional perspective on environmental management in this stage shifts from one of responding to social demands to one of focusing on strategic issues. Through isomorphic forces, at this point, industry, government, environmental groups (including employee and community groups), insurance companies and owner/investors share multi-directional avenues of influential power and dialogue. In such an environment, rather than being construed as separate and distinct, each increasingly becomes an integral part of the institutional field, influencing and being influenced directly by each other — see figure 6-22.

FIGURE 6-22
Schematic: Stage 4 (1989-present)
THE STRATEGIC FIELD
Economic Interests Enter the Institutional Field.
Industry Influence Continues to Rise.



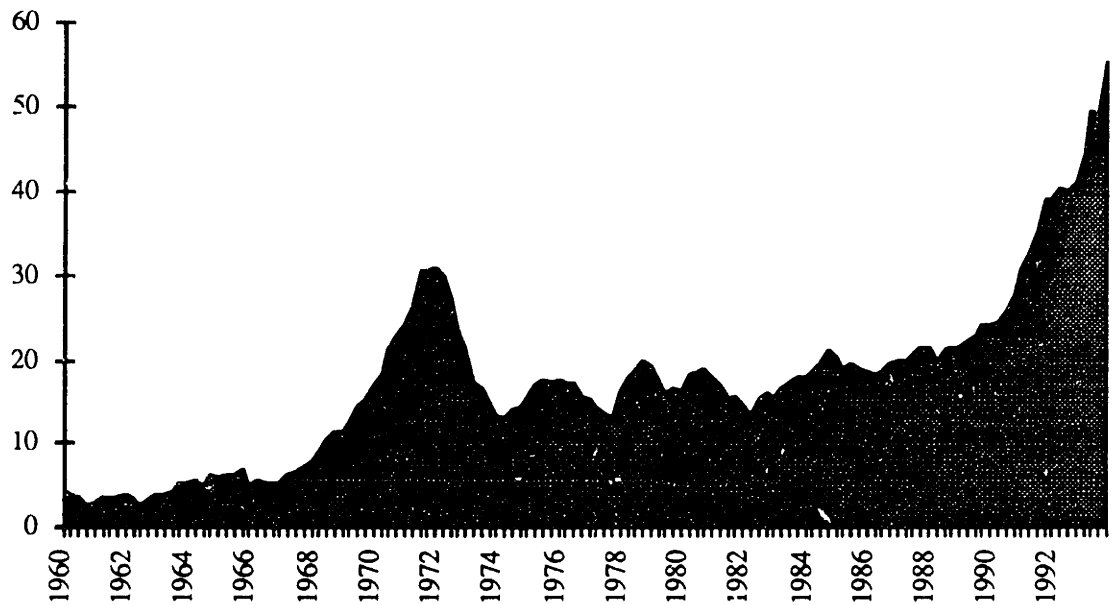
Chapter Seven: The Evolution of Corporate Strategy

7.1. Introduction

Having first developed a model for the evolution of the institutional field, attention now turns to the development of a model for the evolution of corporate strategy and attention. Again, as in chapter six, the model that is developed is a stylized depiction of overarching attitudes of industry strategy. The stages are not homogenous. Although gradual changes can be described through the descriptive rhetoric used within the journals, the stages depicted are intended as an abstract model of strategic development within the two industries. Rather than a model of punctuated equilibrium (Gersick, 1991), dominant attitudes are classified along regular time intervals. The shifts in these time intervals are not precise, but rather reflect general points of departure from one dominant conception of environmental strategy to another.

On the most easily uncovered level of the data, corporate attention¹³ to environmental matters is represented by the number of articles focused on environmental issues within each trade journals — see Figures 7-1A and 7-1B.¹⁴

FIGURE 7-1A
Environmental Articles per Quarter* — *Chemical Week*

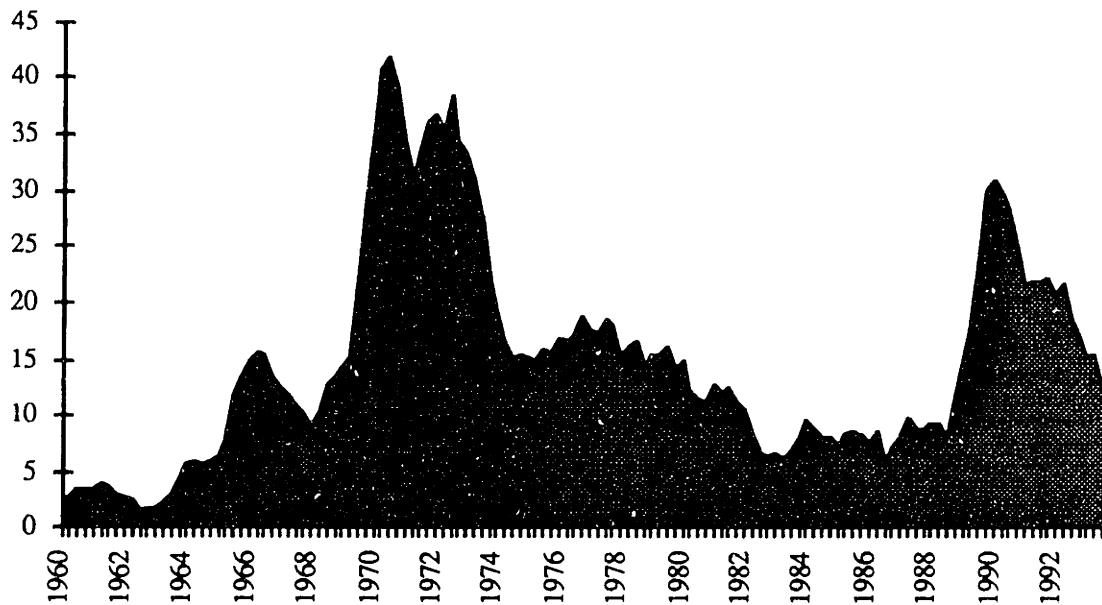


* 5 Quarter Rolling Averages

¹³ There has been debate over whether the volume of articles represent the level of attention given the issue or the level of concern. Attention was decided to be the more appropriate descriptor. Attention deals with the saliency of an issue. As other issues emerge (i.e. the energy crisis in the early 1970s), concern for the environment may not have dropped while attention did.

¹⁴ While absolute numbers of environmentally related articles were in similar proportions between the two journals, the comparisons as a percentage are quite disparate. Throughout the study, *Chemical Week* averages a fairly consistent 220 articles per quarter while *Oil & Gas Journal* averages 450. This translates to an aggregate 34 year average percentage (of environmentally related articles to total articles) of 9% for *Chemical Week* and 3% for *Oil & Gas Journal*. This should not detract from the research results, however, as it is trends in the evolution that are of interest.

FIGURE 7-1B
Environmental Articles per Quarter* — *Oil & Gas Journal*

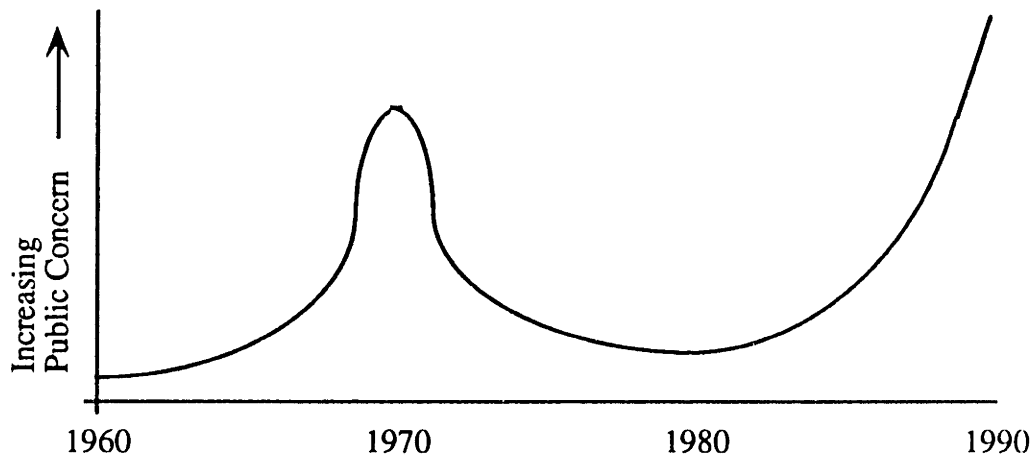


* 5 Quarter Rolling Averages

These overall trends bear striking resemblance to Dunlap's (1991) depiction of the evolution of public concern for environmental protection — see figure 7-2.¹⁵

¹⁵ As described in Chapter One, Dunlap has pieced together available longitudinal data on public concern towards the environment and found that: "(a) environmental concern developed dramatically in the late 1960s and reached a peak with the first Earth Day in 1970; (b) such concern declined considerably in the early 1970s and then more gradually over the rest of the decade, but remained substantial; (c) the 1980s saw a significant and steady increase in both public awareness of the seriousness of environmental problems and in support for environmental protection, with the result that by the twentieth anniversary of Earth Day in 1990, public concern for environmental quality reached unprecedented levels" (1991: 285).

FIGURE 7-2
Dunlap's Observed Trend in Public Concern for Environmental Issues



Similar to the evolution of public concern, corporate attention to the issue (in both industries) grew dramatically in the late 1960s to reach peaks in the early 1970s. However, where Dunlap noted a peak in public concern in 1970 with the first Earth Day in April, oil industry attention peaked in late-1970 and maximum chemical industry attention followed in 1972. These correspond, in the oil industry case to the enactment of the Clean Air Act in December 1970 and in the chemical industry case to the enactment of the Clean Water Act in 1972¹⁶.

Following their respective peaks in attention in the early 1970s, both industries saw an equally dramatic decrease in attention that lasted well into the mid-1980s. Beginning in 1989, both industries showed increased attention with chemical industry attention reaching unprecedented heights, not in 1990 as Dunlap shows public concern, but in 1991. Oil industry attention reached a peak in 1990 which never rivaled that of 1970 and then steadily declined such that by 1993, attention had reached lows similar to that of the late 1960s.

¹⁶ As noted in chapter four, air pollution dominates oil industry environmental spending while the chemical industry focuses on water pollution. This observation was supported by the trade journal analysis.

The hypothesis regarding the coincidental events surrounding each industry's respective peaks in environmental attention in the early 1970s is supported by the media focus of those articles, air dominates oil industry attention while water is a major concern within the chemical industry. Between 1970 and 1974, 51 percent of *O&GJ* articles dealt with air issues versus 16 percent for water and 17 percent for oil spills. The *Chemweek* focus was reversed with 39 percent dealing with water versus 27 percent for air, 10 percent for toxics and 8 percent for pesticides. Over the entire 34 years of the study, 43 percent of the *O&GJ* articles dealt with air issues, 16 percent with water, 15 percent with oil spills and 6 percent with hazardous and solid waste, *Chemweek* was more even-handed with the various media as 18 percent dealt with air, 18 percent dealt with water, 24 percent dealt with hazardous and solid waste and 8 percent dealt with toxic substances — see Figures 7-3A and 7-3B.

FIGURE 7-3A
Media Breakdown (1960-1993) — *Chemical Week*

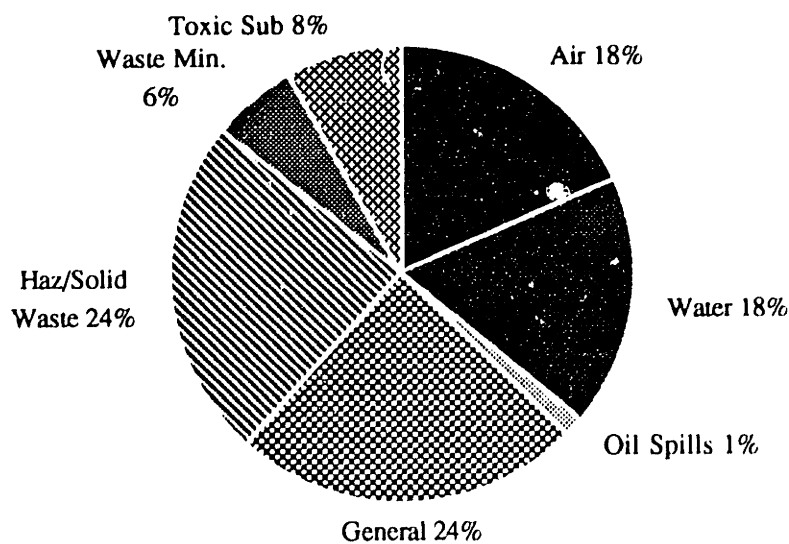
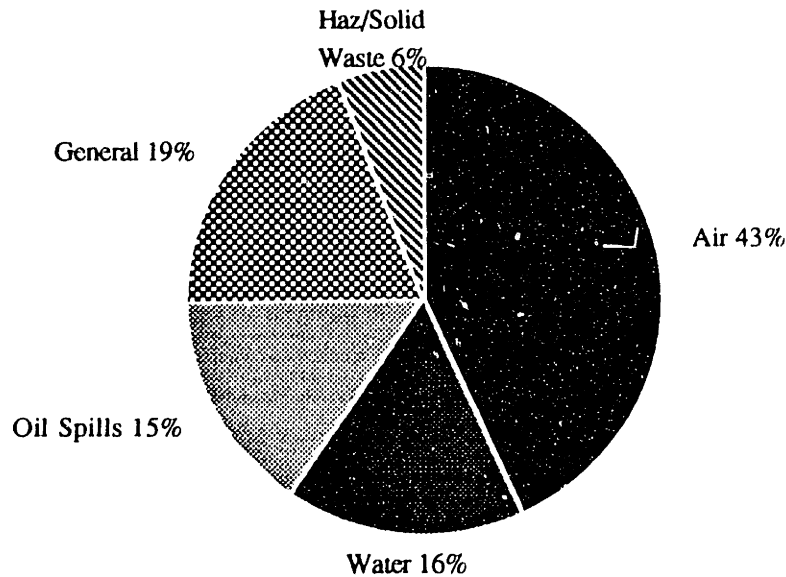


FIGURE 7-3B
Media Breakdown (1960-1993) — *Oil & Gas Journal*



Note: Toxic Substances and Waste Minimization not listed — totals negligible.

Looking deeper than mere aggregate numbers of articles reveals a more critical assessment of the evolution of corporate environmental strategies. The strategic evolution of environmentalism within both the chemical and petroleum industries was found to have followed comparable four stage progressions until 1990. In 1990, the oil industry enters a fifth stage while the chemical industry continues its fourth stage development. Although shifts between these stages are not as precise as this type of model may project, for descriptive purposes industry strategy can most easily be described along these lines — see Table 7-1

TABLE 7-1
Stages in the Evolution of Corporate Strategy

| Stage | Time Period | Description |
|---------|----------------|---|
| | | <u>Oil and Chemical Industries</u> |
| STAGE 1 | 1960 - 1970 | INTEGRATION of Institutionally Defined Goals <i>Industry is the Solution.</i> |
| STAGE 2 | 1970 - 1982 | ADAPTATION to Institutionally Defined Goals: <i>Industry is the Problem.</i> |
| STAGE 3 | 1982 - 1988 | FRAGMENTED INTEGRATION of Institutionally Defined Goals: <i>Industry & Government are the Solution.</i> |
| | | <u>Chemical Industry</u> |
| STAGE 4 | 1988 - present | INTEGRATION of Institutionally Defined Goals: <i>Industry is Again the Solution.</i> |
| | | <u>Oil Industry</u> |
| STAGE 4 | 1988 - 1990 | INTEGRATION of Institutionally Defined Goals: <i>Industry is Again the Solution.</i> |
| STAGE 5 | 1990 - present | ADAPTATION to Institutionally Defined Goals: <i>Industry is Again the Problem.</i> |

The key words in this model are "adaptation" and "integration" (Lorange, Gordon & Smith, 1976). Adaptation refers to the development of strategies in response to a perceived threat or opportunity in the environment. Conversely, in employing integration strategies, the firm is striving to assure that the various parts of the corporation are coordinated to facilitate efficient implementation of the adjusted firm strategies. "While adaptation focuses on the development and revision of the corporation's strategies, an important aspect of integration will be the monitoring of performance progress towards successful strategy implementation" (Lorange, Gordon & Smith, 1976: 1).

The use of these terms has direct implications for both structure and strategy. In the case of adaptation, firms will devote ancillary attention and

resources to develop a response based on externally defined compliance, keeping the effects of the issue isolated from the operating core of the company. This may involve either strategies of denial, buffering or, co-optive strategies. That is, attempting to change the views of external stakeholders without changing themselves. In essence, the firm does not recognize the institutional perspective as being legitimate. In the case of integration, however, the firm will attempt to incorporate the issue into all applicable aspects of the organization in an attempt to create a coordinated response dedicated to internal performance measures. The institutional perspective is considered to be valid.

7.2. Stage 1 (1960-1970): INTEGRATION.

Industry is the Solution. In the first stage, industry sees itself as the solution to the environmental problem. It pays little attention to external calls for increased government controls and displays unbounded confidence that pollution can be eradicated through a concerted effort of its own technological prowess. In this way, industry strategy can be defined as integration of environmental goals as defined by the institutional field as it then existed, namely as defined by industry themselves. Industry related articles in both journals focus predominately on emerging innovations for controlling pollution — see table 7-2. For each industry, this comfortable stance is rocked by the emergence of a sudden event that creates a tremendous public outcry to which politicians cannot ignore. For the chemical industry, that awakening came in 1962 with the publication of *Silent Spring* by Rachel Carson (1962). For the oil industry, the Santa Barbara oil spill of 1969 puts them on the defensive. Given this increasing public scrutiny and political activity, both industries shift their stance towards federal standards and begin to see them as an opportunity to

create some order out of the widely differing state regulations that are beginning to grow.

TABLE 7-2
Journal Article Means: Industry Technological Development
(Standard Deviation in Parentheses)
Percentage Figure is the Percentage of Total Industry Articles for that Stage

Chemical Week

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Technological Development | 8.91 (5.30) 66% | 13.38 (5.81) 43% | 7.00 (2.71) 27% | 6.67 (3.20) 14% |

Oil & Gas Journal

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|---------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Technological Development | 14.73 (14.25) 56% | 19.69 (14.66) 45% | 3.71 (2.14) 24% | 3.33 (2.31) 8% | 14.67 (7.57) 24% |

The Chemical Industry (1962-1970). In 1960 and 1961, the overall tone in articles reflects a mild interest in environmental matters. The thrust of the interest is anti-regulation. Editorials direction is blunt: "*anti-trust archaic*", "*anti-vivisection harasses research*", "*product liability unfair and raises costs*", and people who complain about food additives are "*quacks*". In July 1962, the industry's self-image of promoting a better quality of life through technological advancement (by increasing food production) is dealt its first serious blow by the publication of *Silent Spring*. This is the first environmental issue to warrant significant editorial interest which, continuing well into 1963, is scathing. For example, "*Those opposed to chemical pesticides . . . are a motley lot ranging from superstitious illiterates and cultists to educated scientists.*" And, "*industry must again take up the Sisyphean task of repeating that its research is aimed at profits through knowledge, not a public be damned approach*".

As a result of the uproar over *Silent Spring* and the subsequent debate over possible government intervention, pollution is mentioned for the first time in the 1963 year-end list of important issues facing the industry. Industry, however, sticks to its view that it is a problem it can handle itself. Government intervention is viewed as unnecessary. Nevertheless, government attention in the journal continues to grow.

Events would conspire to add to the building momentum against pesticides. In 1964, several fishkills in the midwest are reported. In particular, a fishkill in which over one million fish wash up dead on the shores of the Mississippi River causes a severe controversy. The pesticide endrin, manufactured by Velsicol is blamed. This spurs talk of pesticide bans, and once again industry defends the position it took against *Silent Spring*. Primarily one of denial, that there is no conclusive scientific evidence that pesticides damage the ecosystem and that its role in increasing food production is a proud example of the CPI's (Chemical Processing Industry) contribution to progress. Government actions are viewed as unfair and guided by public opinion.

In 1966, anti-Vietnam and anti-napalm activists begin to harass chemical firms. Editorials recommend that CPI firms conduct their interviews off campus to avoid protests and facilitate assistance from the local police. Of the companies most often cited as feeling the heat, Dow Chemical is repeatedly the subject of public and campus protests. These events coincide with a shift in the tone of the articles and editorials towards more acceptance of some environmental responsibility. *"We have reached a point in our economic development where we are concerned not only with dollars but also social and aesthetic implications of our work."* Believing that a solution can be amicably found, one editorial recommends that the *"process industry should face up to pollution problem. Granted we are more often blamed for others sins. But if we act voluntarily, we will avoid community ill will."*

And, *"Government-industry partnership as in atomic energy and space programs, is the best approach to achieve clean water."*

In 1968, the need becomes evident for a common national set of rules to establish regulatory consistency. Inconsistent regulations are being developed in each of the State legislatures and the Departments of Agriculture, Interior, and Health, Education & Welfare. One editorial argues *"Anti pollution agencies must settle jurisdictional disputes soon. Federal vs. state vs. city vs. county jurisdictions are overlapping and contradictory."* And later, *"Anti-pollution performance may fall short of promise because of local official wariness or plant manager lack of authority. We need alignment of plant managers incentives and enforcement from a higher authority."*

In 1969, as the level of attention begins to rise, technological optimism of industry's capabilities reaches new heights: *"We predict that by the end of the century, we will have prevented further environmental degradation and will have begun to reverse the process towards melioration."* Industry begins the process of calling attention to the legitimacy of its efforts. In January 1969, a story announces that Standard Oil of New Jersey spent \$1.4 million in 1968 for environmental advertising and will spend another \$1.4 million in 1969, focusing on their advances in pollution control and the need for industry flexibility. In June 1969, a cover story titled *"Meet the pollution managers"* introduces business managers at Allied, Stauffer and Union Carbide whose sole responsibility is pollution control. In 1970 optimistic predictions again reach bold proportions: *"Non-polluting auto by 1975; Economically competitive extraction of oil from shale by 1980; An inexpensive method for removing sulfur from coal before burning by 1983."* At this time, companies are also beginning to acknowledge their joint ownership of the environmental problem. In June 1970, American Cyanamid's CEO Clifford Siverd discusses environment as part of a broader interview. *"Our plants have done more than required but we could do more. There are some companies unfortunately*

— usually smaller ones with cost problems — that skimp a little. This gives us all a black eye."

In April 1970, industry executives attempt to participate in the growing movement but are jeered by students at the first Earth Day. Again, Dow takes significant heat from activists for its production of napalm and agent orange. This prompts Dow's CEO Doan to announce that increased regulation is necessary. In late 1970, President Nixon's decision to establish the Environmental Protection Agency is viewed within industry as a positive step to "*Help to bring order out of confusion.*" One editorial optimistically looks for "*pollution policy that is both sane and enforceable.*"

By the end of 1970, attention to the environment has reached a level far above that at the beginning of the decade. Both Dow and DuPont begin to emerge at this time as the most referenced companies in relation to environmental issues. The journal's focus on technological solutions to environmental problems is being displaced by management, public relations, legal and political concerns. The environmental issue has been presented primarily as an ecological issue. Visible forms of air and water pollution (at the end of the pipe) are the objective goals. Human health concerns from more minute levels of contaminants are not yet acknowledged. And finally, industry has remained consistent in its strategy that pollution is a problem it can solve through its own technological prowess.

The Oil Industry (1964-1970). Environmental concern starts a little later for the oil industry and with less of a sudden jolt. From 1961 through 1963, early attention is paid to urban smog and the health effects of lead. In both cases, however, articles focus on denying the problem. In June, 1960, one editorial reads "*Now oil must concern itself with pure air — Unfair blame is being put on refiners*

for evaporative losses from storage tanks in major cities." It goes on to argue that blame should be put on automobiles and dry cleaners. In December 1961, an article presents its evidence that *"Leaded gasoline poses no threat to public health."*

In 1963, articles start to acknowledge that federal pollution laws are likely. Although occasional articles argue a preference for state rule over federal rule, this is not accompanied with the same kind of concern over the federal bureaucracy as with the chemical industry. The tone of articles appears more cooperative with government efforts. This may be due to the extent to which the industry has already been regulated from Washington through energy and conservation policies from the Departments of Energy and Interior.

From 1965 through 1967, the first major environmental debate emerges, gasoline reformulation through reduced volatility, sulfur and most importantly, lead concentrations. The industry continues to argue that such emissions are not harmful. The debate begins to pit oil producers against auto-makers and themselves. In April 1969, *"Oilmen oppose lead rush but does Washington know it? — Someone certainly needs to blow the whistle on the gamesmanship of auto-makers, some refineries and federal authorities. Auto-makers want to push onus of air pollution control from their hardware to fuels. Some refineries took heat to join advantage but others reacted violently."* And in January 1970, *"Automotive pollution: time for a decision — Government must settle the debate between oil and autos. How far should Detroit reduce compression rates and how far should petroleum go in matching required octanes? The stakes are too high for an individual industry to take off on its own."*

Showing an enlightened attitude more reflective of the 90s, an August 1964 article touts *"Vapor control at refinery improved refinery efficiency and paid financial dividends. But refiners are now willing to go further and assume considerable burdens to end the cause. This will pay dividends through improving industry's public image"* This reference to public opinion is also reflected in a growing

acknowledgment of industry's responsibilities to society. In November 1967, *"Like it or not, the inescapable fact is that government and business are so inextricably mixed up in each other's affairs that they cannot be put in separate compartments. The public demands from government broad social programs which will not be denied no matter how much they impinge on industry. Industry has the responsibility to adjust, adopt and respond to these social charges."* And in March 1968, *"Oil's new look in public relations — The old idea of publicity campaign to make the public like what it gets from oil is shifted to give the public what it wants. There is a new social and economic environment in this country. People are no longer content that an industry give good products and service. They demand that business become an active force in the country to improve living conditions in all respects."*

This social activism comes to an abrupt end in 1969 when the 1969 spill from Chevron's Platform A in the Santa Barbara shipping channel creates an uproar of public anger. This event spurs editorial activity that, coupled with the lead debate already underway, creates a peak in environmental opinion comparable to the chemical industry's response to *Silent Spring*. Representative of the industry perspective is a February 1969 editorial, *"Calm appraisal needed to end Santa Barbara hysteria — A disaster it wasn't. . . Descriptions are not in touch with reality. . . Hysteria is beyond belief. . . Resulting spill can and is being cleaned up."* The intensity of this concern forces efforts at closing industry ranks. In June 1969, ten oil companies form an oil control coordinating committee to fight oil spills on the Delaware River. And, in November 1969, *"Correcting industry's image has become everyone's job — Realization that oil's image has deteriorated badly finally has penetrated the highest echelons of the oil industry. Public views industry as a bunch of fat cats who'll do anything for a buck. Santa Barbara fanned the flames."*

Events of the latter part of 1969 and the early part of 1970 do not help matters. With public scrutiny focused on oil spills, four spills in a matter of five

months (Marpessa off West Africa, Arrow off Nova Scotia, Delian Apollo off Florida and Chevron's Platform C off Louisiana) push industry further into a defensive posture. Articles stress that oil spills cause no damage to the ecosystem. And, with this comes the beginnings of pitting pollution against energy security as conservationists use the spills to argue for controls on the leasing of public lands for oil drilling.

By the end of 1970, industry attention has increased dramatically, peaking ahead of the chemical industry by over a year. Oil spills and the earlier enactment of the Clean Air Act (1970) make the oil industry an early target of environmentalists. In viewing the issue, the overall perspective of environmentalism is that of ecological protection through the installation of end-of-the pipe technologies. However, the debate over lead in gasoline has forced a human health aspect to the issue that hasn't yet emerged in the chemical industry. In the face of these institutional developments, the oil industry is sticking to its strategy that pollution is a problem it can solve itself.

7.3. Stage 2 (1970-1982): ADAPTATION.

Industry is the Problem. It is the formation of the Environmental Protection Agency in 1970 that initiates the second stage of the strategic evolution. Both the chemical and petroleum industry are optimistic that the solution to the environmental problem will be regulated reasonably and attention declines. This decline is further facilitated by the energy crisis that displaces coverage of environmental issues in both journals. However, concern begins to again increase as environmental regulations become increasingly burdensome and costly. Concern shifts to resistance and ultimately opposition as industry executives see the EPA's powers to be getting too strong. Given this

resistance, industry is described as adopting an adaptation strategy. They do not recognize the legitimacy of the EPA in influencing internal decisions and are reluctant to alter internal core functions. Environmentalism is not viewed as an issue that warrants the level of attention being placed on it from the institutional field. Articles reveal that throughout this stage, industry appears to be continually surprised and disturbed by the steadily increased costs related to environmental protection — see table 7-3 — although it would appear that the chemical industry becomes aware of this issue earlier than the oil industry. By the end of 1981, both industries appear embattled in their response to environmental concerns.

TABLE 7-3
Journal Article Means: Industry Regulatory Costs
(Standard Deviation in Parentheses)
 Percentage Figure is the Percentage of Total Industry Articles for that Stage

Chemical Week

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Regulatory Costs | 0.91 (1.22) 7% | 5.23 (3.09) 17% | 1.14 (1.35) 4% | 3.67 (1.97) 8% |

Oil & Gas Journal

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Regulatory Costs | 2.00 (2.32) 8% | 3.85 (2.70) 10% | 2.14 (1.77) 14% | 2.67 (1.15) 6% | 4.33 (0.58) 7% |

The Chemical Industry (1970-1982). 1970 marks the beginning of the chemical industry's resistance to environmentalism. Activists deal their first significant blows with Ralph Nader suing Union Carbide in March and attacking DuPont in December. For the first time, an environmental group gains a cover story and significant coverage. This pressure in addition to the rising costs of compliance pushes industry into a confrontational posture. Legal actions against

the government begin to develop and the industry starts to pay particular attention to the costs of regulatory compliance. Beginning in 1971, articles emerge several times a year stressing that the industry is again spending continually increasing amounts on the environment. Acknowledging this high level of expenditures, environmental attention within firms is elevated: *"pollution problems may no longer be addressed by the assistant plant manager but may require board approval."* And in September, the *"SEC wants companies to disclose pollution expenditures to stockholders."* In November, Monsanto's Cunningham offers the journal's first interview with a corporate CEO dealing strictly with environmental issues.

From 1973 to 1975, the energy crisis displaces environmental protection as the central social issue. In August 1973, *"Will pollution standards ease in face of energy crisis? Congress waves EIS for Alaska pipeline. This may signal softening stance."* In 1974, *"Energy crisis makes pollution control job tougher"*. And, in February 1975, *"The Ford Administration is urging relaxation of some environmental standards to improve the nation's energy supply and to lift the sagging economy."* Conferences cite energy conservation as the dominant issue.

By the end of 1975, environment returns as the chief social issue. Government enforcement is again on the rise from an energy crisis low in 1974 to a high in 1978. This recreates the defensive posture initiated before the energy crisis: *"EPA writes the rules, plays against you, keeps score, and makes arbitrary decisions."* And later, *"After four years of debate, Congress seems determined to add one more regulation (TSCA) to the already 27 H&S regulations we must answer to. This will make EPA a chemical czar. No agency in a democracy should have that authority."*

Editorials in 1977 start to complain of increasing litigation brought on by external interests. *"Environmentalists have decided that law is the only way to settle and they've set up NRDC, EDF and the Center for Law in the Public Interest. This*

could tie us up in court for decades." And, later, an article reports that the "NAS says EPA should have fewer lawyers, more scientists."

By 1978, industry appears embattled. In February, one editorial asks "Who's David and who's Goliath? — Hardy activist groups with Ralph Nader as their prophet have forced a series of government actions that add up to a Consumer's Bill of Rights. The Goliath's of modern industry are armed with slingshots while the consumerist David's carry the heavy artillery." Editorials begin to see biases everywhere: on TV, in Hollywood (The China Syndrome). One editorial attacks the "The hidden agenda of the 'coercive utopians' — not to stop or slow the wealth generating machine of society but to control it."

In 1979, Love Canal hits the news, not with a story about the catastrophe (which emerged in the *New York Times* one year earlier) but about the government buyout of the homes. The articles focus on Hooker Chemical Co. in a tone that is supportive of the company's plight. On the broader subject, industry sees hazardous waste remediation as a way to take the initiative on an environmental issue. Articles reveal a continuing view of the growing federal bureaucracy as a menace and argues site cleanups as an industry problem that it can tackle itself. The eventual enactment of Superfund is viewed as patently unfair. In December: "The passage of Superfund may be the first skirmish in the battle on personal liability."

At this time, liability emerges as a serious concern within the industry and insurance companies are added to the list of external stakeholders gaining coverage on environmental issues. Reflecting this increased seriousness, Allied Chemical, in July 1978 is "one of the few, if not the only one to make environmental affairs the sole responsibility of a Vice President." Coinciding with this increased focus on liability, the enactment of Superfund, the growing impact of the Resource Conservation and Recovery Act (RCRA) and the creation of work-place

air standards under the Occupational Safety and Health Administration (OSHA) have created a shift in attention away from pure ecological concerns towards human health concerns.

By 1980, the posture of the industry shifts from embattled to defeated in tone. The growing federal bureaucracy is now viewed as out of control and virtually running the chemical industry. The first editorial in January, titled "*OK David, you've knocked off Goliath. Now what?*" asks, "*Have the David's we used to cheer assumed some of the trappings of a Goliath. In little more than a decade, the US Chemical Industry has been smothered with upwards of 30 health and safety enactment's. It is an industry virtually run, not just regulated, from State and Federal Agencies. Have the David's upset the political 'ecology' to such an extent that the field is left to the biggest predator of them all, big government.*" And later, in an editorial entitled "*In terms of regulation, you ain't seen nuttin yet!*", the journal lashes out with criticism of OSHA, TSCA and the myriad of other health and safety laws, explicitly comparing the situation to the George Orwell book, 1984.

To counter this growing threat, the CMA begins to emerge as a newly formed player, in 1980. A February editorial, entitled: "*Industry must enter the debate*", calls the CMA's newly adopted role of advocacy "*an interesting test of industry's commitment to joining the public debate on chemical industry issues.*" In June, "*CMA hopes to save industry \$4 billion in the battle over hazardous waste control rules.*" And in January 1981, "*The CMA learned that it does pay to advertise.*" And later, "*Its efforts at lobbying suffered a setback with Superfund. Justifiably or not, the chemical industry did not emerge as the one wearing the white hat. But, the bill did not turn out as bad as it might have.*"

By 1982, environmental attention have decreased from the 1972 peak to a level that has remained relatively flat since 1974. The issue has evolved beyond a strictly ecological concern to include human health and economic liability

concerns. But, end-of-the-pipe solutions remain the dominant perspective. In response to these developments, the industry has reached a critical point of frustration in dealing with the environmental issue and is extremely defensive in its strategic posture. In contrast to this posture, Dow Chemical gains increasing attention to its "product stewardship" program which establishes procedures for assessing the present and future liability for the companies products and processes.

The Oil Industry (1970-1982). As with the chemical industry, the decade begins with a confrontational tone as the industry sees "*Environmentalists forcing energy crisis on nation*". A March 1971 editorial goes on to argue that "*environmentalists don't care a snap about the economic impact from the instant changes in American life they demand. The approaching energy crunch has all the markings of a national tragedy.*" In June 1971, "*It's time to blow the whistle on run-away environmentalists — The reckless tendency of environmentalists to whip up emotions for instant zero pollution has gone too far. They exaggerate the perils and totally disregard the consequences.*"

For its part, the oil industry responds with some dire predictions of its own. In September 1972, "*Bad auto-emission controls being forced on motorists — There is a distinct possibility that the personal auto will be put out of financial reach of many Americans by politically inspired auto standards.*" And in November, "*Environmental deeds, oil supply on collision course — Demand for additional petroleum supplies created by new environmental regulation (lead standards) cannot be met.*" By the end of 1972, the impending energy crisis displaces environmental concerns in the industry's attention as quickly as they emerged just 3 years before.

In January 1972, friction between the oil industry and the auto industry also begins to erupt when a General Motors executive argues publicly that

unleaded should be priced two to four cents lower or equal to regular.

Concurrent with this infighting, a broader debate continues over the merits of catalytic converters and their associated need for low lead and sulfur content in fuels. Confrontational strategies with the EPA also flourish. In December 1973, Ethyl sues EPA to prove that lead is a health hazard. In May 1978, Exxon challenges EPA's authority to regulate drilling in the outer continental shelf. In February 1979, the API files suit to overturn the new ozone standards. And in October 1979, Getty Chairman Berg calls EPA "*the worst enemy the US oil industry has.*"

The decade ends with two major oil spills that refocus public attention on crude oil transport. In 1978, the Amoco Cadiz garners extensive coverage after it runs aground off the Brittany Coast of France. And in 1979, a blowout in the Bay of Campeche off Mexico by Petroleos Mexicanos (Pemex) begins what will be a steady eight months of flowing oil into the Gulf of Mexico. However, by the end of 1982, attention to the environment has dropped to levels equal to those in 1965. Response to Superfund does not appear as a high concern¹⁷ and, therefore, economic liability does not emerge as an overriding influence. As with the chemical industry, the industry appears beleaguered at compliance costs and remains confrontational in its strategy in dealing with environmentalism.

¹⁷ This lack of concern is corroborated by the fact that only eight of the top 50 companies named as Superfund Potentially Responsible Parties (PRPs) are oil companies while twenty-five are chemical companies (US EPA, 1991b).

7.4. Stage 3 (1982-1988): FRAGMENTED INTEGRATION.

Industry and the Government are the Solution. Marking the beginning of the third stage, the appointment of Ann Gorsuch by President Ronald Reagan in 1981 offers a ray of hope for industry that this increasingly onerous trends will be reversed. Burford, assisted by Rita Lavelle make explicit overtures to industry to assist in the drafting of new regulations. Simultaneously, they begin to slow down progress in environmental enforcement and, in particular, Superfund litigation. Industry now sees a partnership forming with the EPA for which it holds an optimistic perspective of the future. This relief quickly shifts to potential disaster as public concern, followed by political pressure forces the ouster of both Gorsuch and Lavelle and places new congressional members in office who are sympathetic to environmental concerns. However, this does not hinder the trend initiated by Gorsuch. At this point, industry is fragmented in its acceptance of the legitimacy of the institutional field. It has now begun to integrate the perspectives of government into its structures and strategies, yet it continues to adopt adaptation strategies towards environmental groups. Given that they are both influential (both directly and indirectly) in industry affairs, this bisected posture maintains tension within the institutional field.

Articles reveal that both industries begin to adopt a more high profile position in the debate over new regulations — see table 7-4. Articles also show the chemical industry beginning to focus more attention on strategic solutions to environmental problems. The oil industry is seen to develop such a perspective later, in the fourth stage — see figure 7-4. Environmentalists are covered to a greater extent, but this coverage is predominately negative, focusing on protests and legal actions.

TABLE 7-4

Journal Article Means: Industry Regulatory Development and Environmental Strategy
(Standard Deviation in Parentheses)

Percentage Figure is the Percentage of Total Industry Articles for that Stage

Chemical Week

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Regulatory Development | 0.36 (0.67) 3% | 2.54 (2.07) 8% | 4.00 (2.08) 16% | 4.83 (1.17) 10% |
| Environmental Strategy | 0.18 (0.40) 1% | 0.92 (0.86) 3% | 4.00 (2.77) 16% | 6.17 (2.79) 13% |

Oil & Gas Journal

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Regulatory Development | 2.00 (2.32) 8% | 3.85 (2.70) 9% | 2.14 (1.77) 14% | 2.67 (1.15) 6% | 4.33 (0.58) 7% |
| Environmental Strategy | 1.64 (5.10) 6% | 3.62 (5.25) 8% | 0.57 (0.79) 4% | 8.00 (6.24) 18% | 7.00 (5.20) 12% |

The Chemical Industry (1982-1988). In May 1981, the appointment of Ann Burford Gorsuch offers relief to a much beleaguered industry. She is seen as someone who will bring rationality to the environmental issue by working cooperatively with industry. However, concerns soon arise in October about whether the *"knife has cut too deep."* Editorials stress that an EPA in disarray could mean problems for industry. This is the most active editorial stage in the 34 years of the study. In stark contrast to past editorials, many are now supportive of the Agency. For example, *"EPA has been criticized for going too slow on RCRA. Still, we think that it is doing a good job. Give and take is part of the process."* And later, *"Many are complaining that the administration is dragging its feet on acid rain. We believe that the argument against power plants is a strong one, but alternative solutions should be considered."* And again, *"Criticism is unnecessary. Critics expect overnight fix. EPA deserves credit for its pace and accomplishments."* Editorials are also supportive of Burford. In February, *"A bright, tough minded Gorsuch set out to*

change the direction and style of EPA. But she has alienated environmentalists and Congress. We sympathize with her effort."

With Burford's removal from office in March 1983 and the effects of the decimation of the EPA seen, the chemical industry fears a backlash. It proactively acknowledges the importance of stern but fair legislation it once again, begins to see itself (in cooperation with the government) as a part of the solution. Activists are now seen in a more constructive light. Displacing the previous focus on protests, articles now highlight the results of policy and scientific research performed by these groups. Gaining significant recognition, activists are the subject of a cover story in October 1983: *"Environmental activists: They've grown in competence and they're working together"*. The article, however, warns that *"they have more influence in Washington and they are talking more with industry. How far will it go?"* Less confrontational industry stances are repeatedly advocated and cooperation is encouraged. As part of the industry's strong focus on voluntary efforts to clean up waste dumps, Clean Sites Inc. is formed in May 1984. And in July 1984, an editorial, *"Nice guys may be back in style"* states that *"the 60s and 70s saw too much confrontation with NRDC and EDF versus the Pacific Legal Foundation and National Legal Center for the Public Interest. But new alliances like Clean Sites Inc. and the National Coal Policy Project may begin an 80s era of cooperation."* In June 1984, an editorial revives its former technological optimism: *"With Superfund, CSI and other efforts, we see waste dumps resolved by the end of this decade."*

In December 1984, this optimism comes to a sudden halt as the Bhopal disaster puts the industry back into a confrontational posture. Unlike the company focus of previous disasters, this is viewed as an industry-wide issue. Articles represent a defensive style indicative of earlier years. In April 1985, *"No you're not paranoid — A report by the Media Institute substantiates that the mass*

media accentuates the negative when it comes to chemical risks." And later, "Killing the golden geese — Litigation by environmental witchhunters kills off one useful product after another."

The aftermath of Bhopal signals a third shift in the defining characteristics of corporate environmentalism. Previously covering ecology, human health and economic liability, environmentalism is now also defined in terms of employee and community right-to-know and plant safety. Simultaneously, insurance liability grows further in prominence.

By 1986, Bhopal has blown over and industry returns to its cooperative posture. Arguments emerge for more proactive management. In April 1987, *"Environmental law: more than compliance — Companies obeying the letter of the law are heading for trouble. Congress is trying to legislate an ethic: thou shalt not pollute."* More cooperation is also advocated. In August, 1989 *"The root of the environmental problem is the lack of consensus in a public policy making approach to science, technology, industry and environment. Industry must build partnerships with academic institutions, policy makers and the public."* And the CMA continues to win praise for its efforts in the environmental arena, being applauded for *"more lobbying, public awareness and pro-active action."* In November, CMA starts the Community Awareness and Emergency Response Program (CAER), the predecessor to the Responsible Care program.

By the end of 1988, attention to the environment has grown steadily from its 1983 low. The issue of corporate environmentalism has expanded to include employee and community right-to-know and plant safety while there is growing attention to look beyond end-of-the-pipe solutions towards more process and product changes. Overall, industry is adopting a more cooperative strategy, seeking input from a wider range of sources and pro-actively initiating environmental initiatives.

The Oil Industry (1982-1988). Just as for the chemical industry, President Reagan's 1981 appointment of Ann Burford Gorsuch is met with optimism. In March, 1981, *"Better balance seems assured between energy and environment — Reagan administration seems about to relax environmental standards."* In August 1981, *"Lead phasedown should be among first targets in regulatory reform."* Marking what may be the beginnings of a cooperative posture, a December 1981 editorial reads *"Environmental self-policing serves industry's best interests — Oilmen have learned the importance of protecting the environment. Unfortunately, a few bad actors threaten to spoil things in the traditional oil patch. If self-policing doesn't work, the entire industry will be made to pay for the mistakes of a careless few."*

With Burford's eventual removal from office, the oil industry also fears a backlash. In April 1983, *"US environment and economy will lose if the EPA issue is used for political gain — With Burford out and Ruckelshaus in, the US is at a critical crossroads in policy. Will we put this risky episode behind us and clean the environment? Or will we continue the scandal for the Democrats? This would produce a reckless pursuit of a pristine environment."*

Environmental attention remains relatively low and flat from 1983 until 1988. But, article focus, for the first time, begins to shift away from a predominately air issue. In 1984, attention shifts towards the Superfund Act reauthorization and is supportive of EPA. In August 1984, *"Shouldn't rush reauthorization for political reasons. Give EPA time to analyze options."* When the bill is finally passed in October, the industry sees a partial victory, *"New bill is hard for industry. Raises taxes on petroleum, it's too big. But Reagan should sign it because it could have been much worse."*

In general, the period is marked by very little attention to environmental issues. Bhopal and the emission reporting requirements of SARA Title III are

given scant coverage. The strategic posture by the end of 1988 appears to be cooperation or perhaps, more accurately, resigned acceptance.

7.5. Stage 4 (1989-present): INTEGRATION.

Industry is Again the Solution. The fourth stage begins in 1988 as industry's cooperative stance turns pro-active in nature. Pollution prevention begins to become the increasing focus of environmental articles and the journals, on the whole, take on a more international focus in their environmental coverage. Alliances between environmental groups and industry begin to emerge and the article coverage of environmentalists, as a whole, shifts from the previous negative focus on protests and legal actions to one that is more positive, highlighting the research work they perform — see table 7-5. In what appears as cyclical, industry has returned to an integration strategy much like that of stage one. However, in this case, the institutional field is grossly different than what it was in the 1960s and the institutional perspectives that industry is integrating are likewise, vastly different. Industry is now integrating a completely new definition of what is considered legitimate environmental management while at the same time acknowledging a completely new relationship between itself and external members of the institutional field.

Industry related articles in both journals begin to focus heavily on internal management issues related to the environment, while at the same time investigating potential market opportunities created by the issue — see table 7-6. Industry directed programs such as CMA's Responsible Care Program and the API's STEP program gain increasing attention. At this time, the chemical industry also commits an increased level of attention on issues related to public affairs which the oil industry does not similarly follow — see table 7-7.

TABLE 7-5
Journal Article Means: Activist Legal Actions, Protests and Research
(Standard Deviation in Parentheses)
Percentage Figure is the Percentage of Total Activist Articles for that Stage

Chemical Week

| ACTIVIST ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Legal Action | 0.09 (0.30) 50% | 0.31 (0.63) 22% | 0.29 (0.49) 13% | 0.33 (0.52) 13% |
| Protests | 0 | 0.31 (0.48) 22% | 0.19 (0.49) 13% | 0.50 (0.84) 19% |
| Research | 0 | 0 | 0.86 (0.69) 38% | 1.50 (1.38) 56% |

Oil & Gas Journal

| ACTIVIST ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Legal Action | 0 | 0.23 (0.44) 43% | 0.14 (0.38) 100% | 0 | 0 |
| Protests | 0 | 0.08 (0.28) 14% | 0 | 0 | 0 |
| Research | 0 | 0 | 0 | 0.33 (0.58) 100% | 0.50 (0.58) 100% |

TABLE 7-6
Journal Article Means: Industry Management Issues and Market Opportunities
(Standard Deviation in Parentheses)
Percentage Figure is the Percentage of Total Industry Articles for that Stage

Chemical Week

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Management Issues | 0.73 (1.49) 5% | 3.08 (2.43) 10% | 1.57 (2.15) 6% | 12.00 (12.82) 26% |
| Market Opportunity | 0.27 (0.65) 2% | 1.92 (1.26) 6% | 1.71 (1.11) 6% | 3.67 (1.86) 8% |

Oil & Gas Journal

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|-------------------------------|
| Management Issues | 1.09 (1.58) 4% | 3.62 (2.66) 8% | 2.29 (2.36) 15% | 13.00 (13.11) 29% | 15.00 (11.53) 25% |
| Market Opportunity | 1.09 (1.51) 4% | 0.31 (1.11) 1% | 0.29 (0.76) 2% | 1.33 (1.15) 3% | 1.00 (1.00) 1% |

TABLE 7-7
Journal Article Means: Industry Public Relations
(Standard Deviation in Parentheses)
Percentage Figure is the Percentage of Total Industry Articles for that Stage

Chemical Week

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Public Relations | 1.00 (1.34) 7% | 0.77 (0.83) 2% | 1.00 (1.41) 4% | 4.83 (4.36) 10% |

Oil & Gas Journal

| INDUSTRY ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Public Relations | 0.09 (0.30) 1% | 0.15 (0.38) 1% | 0 | 0 | 0 |

The Chemical Industry (1988-present). 1988 is an turnaround year on many fronts. The chemical industry is becoming more global in its environmental thinking — see Figure 7-4. Technological solutions to environmental problems shift dramatically away from end-of-the-pipe solutions towards product and process substitutions¹⁸ — see Figure 7-5. Industry adopts a strong proactive approach to its environmental protection activities as pollution prevention becomes the new guiding objective. Legal actions which were employed since 1971 are no longer observed. Public Relations begins to take a growing role in industry activities. And, environmental groups receive increasingly positive coverage as they are now the subject of attention to their alliances in industry and government efforts.

¹⁸ Unfortunately, the coding sequence analyzing the types and motivating factors for technological development was not entirely successful. In the *Oil & Gas Journal*, the coding for the types of innovation did not reflect any kind of end-of-pipe versus source reduction shift. The oil industry has never had a choice on whether to look further into the process for pollution solutions. Even the earliest requirements of the Clean Air Act mandated product alterations in the form of fuel reformulations. Results for *Chemical Week* were successful in uncovering the types of technological solutions, however, the motivations behind

FIGURE 7-4
International Focus of Articles

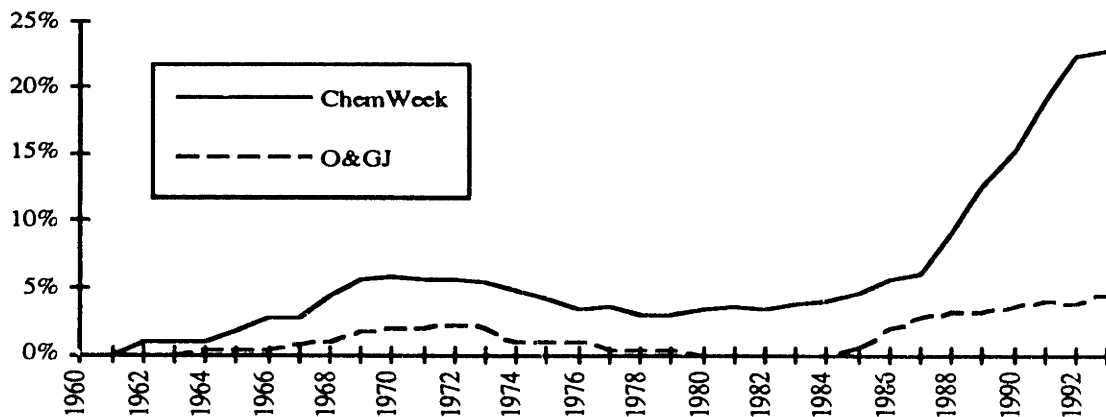
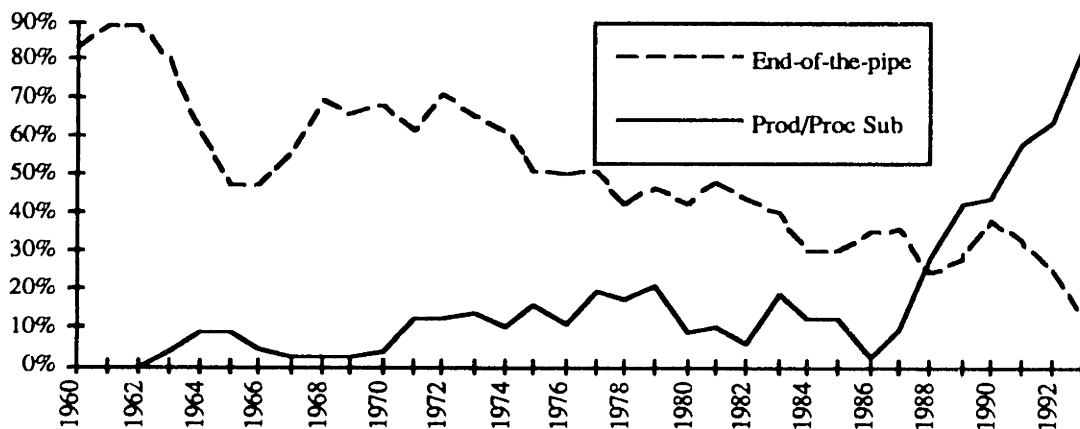


FIGURE 7-5
Focus of Technology Articles — *Chemical Week*



There are several events that take place at this time that could claim responsibility for such a dramatic shift. Dunlap identifies the causes for the concurrent shift in public opinion as "an endless array of newsworthy events — Bhopal, Chernobyl, frequent chemical spills, hazardous ocean beaches, oil spills, rainforest destruction, and filled up waste sites — that receive tremendous media attention" (1991: 303). Buttel, Hawkins & Power cite the global warming debate

technological development in both journals were very difficult to identify and therefore revealed no usable data.

for providing a shot in the arm for "an environmental movement that had enjoyed few victories during the decade" (1990: 61). From 1988 to 1990, membership in environmental groups grew at a rate equal to that of the entire 1980s (Gale Research, 1993).

Within the journal, the Exxon Valdez disaster, global warming, the CMA's Responsible Care program and several new legislative initiatives — the Clean Air Act Amendments (CAA), the Pollution Prosecution Act, the Oil Pollution Act, and the Pollution Prevention Act — dominate attention. Of these, the Clean Air Act Amendments and Responsible Care are the central focus. In responding to the CAA, cautious optimism remains. In November 1990, *"Green line equals bottom line — The Clean Air Act equals efficiency. Everything you hear about the 'costs' of complying with CAA is probably wrong. Companies first try to deny existence of tough problems, then they try to get someone else to pay for it, then reluctantly they finally change to survive. Wiser competitors will rush to exploit the Green Revolution. Change will come from bottom line restructuring, not CEO vision."* This represents the beginning of a shift in the defining factors of corporate environmentalism to include the integration of economics.

In 1990, the Coalition of Environmentally Responsible Economies (CERES) introduces an owner's movement that again expands the institutional field. By encouraging institutional investors of major corporations to propose resolutions for the adoption of the environmental "Valdez" principles, companies acknowledge another actor in the institutional field.

And, in what represents the industry's most aggressive proactive effort, the CMA's Responsible Care program explodes as an issue in 1991. Two entire issues are devoted to its coverage in each of the years 1991, 1992 and 1993. Furthermore, industry seems much more thick skinned. Criticism from outside stakeholders of Responsible Care is seen as opportunity to improve rather than a

cause for counter reaction. In 1993, demonstrating strikingly proactive posture, the industry actively pursues debate on such emerging and controversial issues as Environmental Racism and Chlorine Phase-out.

By the end of 1993, attention to the environment has reached unprecedented levels. Articles focusing on customers and eco-labeling programs were just emerging, giving cause to perceive them as the next institutional member. The definitions of corporate environmentalism have also been expanded to include economic considerations. Recycling and Water Treatment have shifted from environmental issues to mainstream chemical industry market niches. The industry appears to have returned to a strategic posture of self-control and pro-active management that it held in the early 1960s. A July 1992 editorial reflects the technological optimism of three decades before, *"For its own sake, the chemical industry needs to emphasize its role in using its huge technological and scientific base to provide a better future."*

The Oil Industry (1988-1990). Although 1988 begins for the oil industry with a focus on the same physical, political and business events as for the chemical industry, the relative weights given each issue and the perspective with which they are viewed is quite different. The Exxon Valdez disaster garners a tremendous amount of attention. And, in contrast to the articles surrounding previous spills, these do not question the validity of environmental claims but rather focus on the broad impact the accident will have on the industry. In April 1989, *"Exxon Valdez disaster leaves industry with much to repair. For Exxon, embarrassment. For industry, the biggest setback since the 1969 Santa Barbara spill. Industry, not just Exxon, will pay for the spill."* Articles call attention to the slow response of Exxon and the potential effects this action could have on the entire industry.

Proactive environmental management grows as a serious industry movement. In April 1990, an editorial promotes industry efforts at "*Winning the environmental lead.*" In December, an editorial touts the "*good lessons from a bad year*" citing the April launch of the API STEP program, and in a May 1991 article, the API's President calls "*the environment the top issue for US industry.*" Environmentalists begin to emerge as potential partners for alliances in scientific and policy development while the Valdez principles introduces pressure from owners and investors. Likewise, the industry is showing signs of seeing the issue on more global terms — see Figure 7-4.

7.6. Stage 5 (1990-present): ADAPTATION.

The Oil Industry is Again the Problem. Growing public and political pressure over global warming, the Clean Air Act and the Exxon Valdez disaster puts the oil industry into a defensive position. Although still more outwardly focused than before, the industry demonstrates more guarded optimism than that of chemicals. Economic, political and technical realities set in which taint the drive for environmental leadership. From a 1990 peak, attention declines steadily through 1993. Concern focuses on the economic burden of both the Clean Air Act Amendments and the potential costs of global warming initiatives, setting the industry back into an adaptive posture much like that of stage 2.

Industry related articles show a drop in their previously pro-active focus on management issues and market opportunities — see table 7-6 — and environmental strategy — see table 7-4. Likewise, the article focus of government action shifts to one of perceiving heightened levels of regulatory

enforcement¹⁹ — see table 7-8. The article focus in *Chemweek* shows no similar increase. Another perspective change occurs with respect to the behavior of the government. Although government coverage in both journals has previously focused on regulatory development, beginning in 1988 and increasing through this fifth stage of development, articles in *O&GJ* begin to see a new role of technological research for the government — see table 7-9. The focus of this research is principally the study of global warming.

TABLE 7-8
Journal Article Means: Government Enforcement
(Standard Deviation in Parentheses)
 Percentage Figure is the Percentage of Total Government Articles for that Stage

Oil & Gas Journal

| GOVT. ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Enforcement | 0.82 (2.71) 6% | 1.62 (2.40) 5% | 0.71 (0.76) 6% | 0.67 (0.58) 3% | 3.50 (2.08) 18% |

Chemical Week

| GOVT. ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|--------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Enforcement | 2.09 (2.39) 20% | 6.77 (3.63) 21% | 3.86 (2.19) 11% | 5.50 (3.62) 12% |

¹⁹ The data show that, at this time, EPA enforcement increased only in respect to criminal indictments. That increase occurred in 1992 — see figure 6-18. Figures 6-11A and 6-11B show no increase in EPA administrative actions or civil referrals, and figure D-22 reveals no increase in EPA legal cases against the oil industry or the chemical industry.

TABLE 7-9

Journal Article Means: Government Regulatory Development and Research
(Standard Deviation in Parentheses)

Percentage Figure is the Percentage of Total Government Articles for that Stage

Oil & Gas Journal

| GOVT. ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1990 | Stage 5: 1990-1993 |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Regulatory Development | 9.09 (10.04) 71% | 21.85 (7.50) 72% | 9.43 (4.54) 76% | 13.33 (6.43) 68% | 10.25 (5.44) 54% |
| Research | 0.82 (1.17) 6% | 1.46 (1.71) 5% | 0.29 (0.49) 2% | 3.00 (2.65) 15% | 4.00 (0.82) 21% |

Chemical Week

| GOVT. ACTION | Stage 1: 1960-1970 | Stage 2: 1970-1982 | Stage 3: 1982-1988 | Stage 4: 1988-1993 |
|------------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| Regulatory Development | 4.82 (3.09) 47% | 19.54 (6.49) 61% | 25.86 (5.24) 70% | 32.00 (9.25) 67% |
| Research | 0.64 (0.81) 6% | 2.46 (2.50) 8% | 2.43 (1.90) 7% | 2.17 (1.83) 5% |

This concern is reflected through a thirty year peak in environmental editorials which, on the one hand, attack global warming as "*alarmist*", "*politics of sacrifice obscuring science*", and "*offering great potential for error.*" And, on the other hand, attack the CAA's mandate for oxygenated fuels as "*a response to an air pollution crisis that exists nowhere outside of L.A. and the collective imagination of an oversold citizenry.*"

By the end of 1993, the level of industry attention to the environment is rapidly approaching the low levels of the late 1980s. An internal focus on oil industry actions dominates the coverage with almost 70 percent of the articles focused on industry actions (compared to roughly 50 percent for *Chemweek*). The issue has become one of tempering environmental objectives with economic realities rather than being seen as an opportunity. Articles argue for caution, citing the need for a strong economy before an environment can be achieved.

7.7. Discussion: Linking Corporate Strategy and the Institutional Field.

The initial proposition of this dissertation was that shifts in corporate environmental strategy should occur, not necessarily with shifts in costs, but with shifts in the makeup or power balances of the institutional field. The preceding data reveals this correlation to be partially true. In reviewing environmental expenditure data, growth in costs has been crudely linear — see figures 1-1, 1-2A and 1-2B. However, the data reveals a growth pattern in both corporate attention and corporate strategy that is stepped in form. Each step in attention and strategy coincides with a shift in the makeup and power balances of the institutional field. This correlation was found to be consistently true for all but the fifth stage of the oil industry's strategic evolution. There was no detected institutional change that would account for the drop in attention and a return to a defensive posture that marked this final stage.

This may not, however, be inconsistent with the initial assumptions of this dissertation. While economic costs are considered to be a secondary variable, they are, nonetheless considered to be influential. And in the case of the oil industry in the late 1980s, it would appear that economic considerations are an over-riding concern. First, the US average well head price for crude oil had been on a rocky decline since the early 1980s such that by 1993, the well head price (in constant 1970 dollars) was roughly equivalent to the price in 1970 (Mack, Norman, Rudnitsky & Tanzer, 1994) — see figure 4-4. This price decline is directly related to declining industry profits which hit an all time low in 1986, and after a difficult rebound, took another drop after 1990 (US Council of Economic Advisors, 1994) — see figures 4-5A and 4-5B.

Adding to these economic difficulties, there have been some technological issues that stifled the environmental optimism of the late 1980s. First, the potential promise of the API's STEP program is not as great as that of the CMA's Responsible Care program. In the first place, the STEP program is a voluntary set of objectives whereas the CMA program is a mandatory set of guiding principles. In the second place, the possibilities for pollution prevention within the petroleum industry may be more limited than those for the chemical industry. Oil companies cannot significantly change their raw material — crude oil — nor can they significantly change their product — gasoline and oil fractions. They cannot even significantly change the dominant processes used in crude refining. As these are the three primary options for pollution prevention, opportunities become limited.

Coupling these technological and economic limitations presents a significant hindrance to the environmental forces exerted on the industry by the institutional field. This does not mean, however, that the (environmental) institutional field is not influential, but merely that the pressures of other institutional fields in which the firm also exists (i.e. technological, economic) may, at this time, be stronger. As discussed in section 3.4, firms exist within multiple fields. The focal firm interacts with these multiple fields with differentiated attention. But, as the environmental field merges with other more mainstream fields, we would expect a merging of the interests that each imposes on the firm. Environmentalism gets infused into more mainstream operating decisions as the field becomes subsumed within the new composite field that emerges.

However, there is a temporal aspect to this merging effect. The transition will be gradual, becoming an incremental process of social change. Newly established codes of environmental conduct will foster new forms of

environmental beliefs which, in turn, will create new forms of conduct, with each step establishing the permanence of the merging process. If interrupted by competing institutional demands before the institutionalization process has had time to take hold, environmental values can be prematurely reversed or even eliminated. This can be observed most easily in the event of a breakdown. Given the oil industry's response to its downward economic trends, it would appear that environmentalism has not yet been integrated into the economic considerations of the industry.

Contrasting the Chemical and Petroleum Industries. Beyond the temporal limitations of institutional merging, it would also be prudent to consider what differences in assessing the permanence (or lack thereof) of institutional change. As previously discussed, there are technological differences such that: (a) opportunities for pollution minimization are greater in the chemical industry than they are for the petroleum industry; and (b) the industry is much more focused on issues related to air pollution and is therefore, affected to a greater degree by the prominent environmental issue of the late 1980s and early 1990s which include greenhouse gas emissions, ozone depletion and acid rain. Given this sensitivity to air pollution problems, the Clean Air Act of 1990 has driven environmental capital costs up by over 300% since 1990 — see figure 4-10. Although this increase merely brings industry costs to levels that matches what the chemical industry has long been spending, the sudden jump has caused serious turmoil within the industry cost structures.

Aside from these inherent differences between the industries, there have also been some significant strategic differences detected by the trade journal analysis. First, the coverage in *Oil & Gas Journal* has been much more inwardly focused than that of *Chemical Week*. Coverage of industry related articles in

O&GJ averaged 62 percent throughout the study and reaching 72 percent by 1993. This contrasts the *Chemweek* average of 48 percent throughout the study and 51 percent by 1993. Coverage of the various media and coverage of external events has also been much more diverse in the chemical journal than it was in the oil journal (see Appendix E for an overview of event and issue coverage in the two trade journals). All of this leads to a conclusion that the interests of the oil industry are more narrowly and internally defined than those of the chemical industry. The industry seeks to seclude itself from the environmental issue and those which support it.

Looking at the evolution of environmental strategy supports such a hypothesis as the oil industry has been consistently behind the chemical industry in responding to external events and developing progressive strategies. For example, where the chemical industry became aware in the second stage that regulatory costs were becoming an area of serious concern, the oil industry did not react until the third stage — see table 7-3. This was in spite of the fact that actual environmental costs were rising at similar rates to similar levels — see figures 1-2A and 1-2B. Second, where the chemical industry began to consider environmental strategies for dealing with environmental affairs in the third stage, the oil industry again lagged until the fourth stage to respond — see table 7-4. Third, by the fourth stage, the chemical industry had developed an appreciation for the importance of public relations in managing its external field — see table 7-7. Yet, the oil industry paid no particular attention to the issue at all.

An important aspect of this industry development is the influence of institutional leaders. How each industry's dominant player behaves should give clues as to the posture reflected in the rest of the industry. In the chemical industry analysis, Dow Chemical emerged as the most powerful institutional

actor, having been cited more than any other company in the trade journal and named in the most number of environmental lawsuits (see Appendix E for a full analysis of the relative influence of the various institutional actors). The same analysis for the oil industry reveals Exxon to be the most influential institutional actor. The standards by which these two companies conduct their environmental affairs are stark and the resulting industry standards are, to some degree, a reflection of that starkness. Where Dow Chemical has been active in developing progressive environmental practices such as environmental stewardship and community advisory panels, Exxon has been responsible for, not only one of the worst environmental disasters to befall the industry, but for a general condemnation on the political and social levels for its reluctance to respond expeditiously to the accident. The resultant civil and criminal lawsuits as well as the administrative response (i.e. OPA 90), have created a negative burden for all of the industry. Conversely, Dow's efforts both individually and through its creation of the CMA's Responsible Care have created a positive image and posture that has helped propel the chemical industry into its continued environmental progressiveness.

Granted, these industry characterizations are based on the analysis of only one trade journal per industry and therefore, are subject to some degree of uncertainty. Yet, the correlation between the macro-measurements (i.e. media focus, overall attention levels) taken from this study with both with each other and corroborating evidence (i.e. EPA data, case law data) suggests some degree of reliability in the conclusions they infer. As a further critique of these analyses, it cannot be stated that industry strategy is homogenous or that the industry makeup is monolithic. The firm, as well as the field in which it exists is multidimensional. What this study uncovers may be better described as a "dominant conception" of industry strategy rather than a universally accepted

one. Deviations from these conclusions are surely possible and, as the next chapter shows, do exist.

Cooperation and Pro-action versus Co-optation. Throughout this study of the evolution of environmental strategy, the terms: integration, adaptation, confrontation, cooperation and pro-action have been used extensively. The first two were chosen over the latter three for headings of the various stages because they are less value based. They have been fully defined in section 7.1. and will not, therefore, be defined here. However, the three latter terms should be discussed in the context of the institutional field and in their relationship to the chosen headings.

The progression from confrontation through cooperation and pro-action connotes a progression from tension and opposition to harmony, self-direction and collaboration. They describe an industry that is increasingly taking control of environmental issues while also developing more open interaction with influential stakeholders. In terms of the technical aspects of environmental affairs, this may be the evolving reality. However, in terms of the social aspects of environmental affairs, that is not entirely clear.

In describing the nature of institutional interaction, it is the motivation behind institutional interaction that guides the choice of terms to define the progressive stages. As institutional actors come into closer contact with each other — as in the case of environmentalists, government and industry — the question becomes how to describe that relationship. The positive skew on the interaction is one of increased collaboration through an easing of tensions. The critical skew on this interaction is one of increased attempts to co-opt opposing institutional actors so as to minimize the extent to which you must change yourself. In reality, it would be naive not to believe that both are occurring.

The difference among the terms confrontation — to face in hostility or defiance — cooperation — acting together for a common purpose — and pro-action — to advance or project action — all revolve around various aspects of the merging of goals between constituents, with the latter two representing two levels of the same distinction from the first. Co-optation, means "to convince someone to join one's side". The differences among these terms lie, not in the action, but in the motivation. In the development of strategic alliances between industry and environmental groups, cooperation, pro-action and co-optation can all be occurring simultaneously. Clearly, environmentalists are attempting to develop an environmental awareness within industry through this interaction. And clearly, industry is trying to ease the pressure imposed upon it by environmentalists through this interaction. In each case, the objective is, to a certain degree, co-optation. Each is trying to change the other to match the perspective each presently employs. Yet, this is done through a cooperative effort of initiating action pro-actively.

The central thesis of this dissertation is that the present status of corporate environmental management is explained as the historical product of a negotiation among the internal members of the firm and external members of the institutional field. As a negotiation, each side must change and each side attempts to change the other. The accuracy of using the terms cooperation and pro-action are meant to describe the external posture exhibited by industry. Co-optation is a legitimate perspective of the motivations behind that action, but the outward description remains the same, cooperative and proactive environmental action. The firm may be guided by the objective of controlling and reducing external stakeholder influence as part of an overall strategy of managing a coordinated response to the issue. In the negotiation of the institutional field, co-optation, cooperation, and pro-action are all facets of common strategies.

Part Four: Data and Analysis — Hypothesis Development

"I know of no more encouraging fact than the unquestionable ability of man to elevate his life by a conscious endeavor. It is something to be able to paint a particular picture, or to carve a statue, and so to make a few objects beautiful; but it is far more glorious to carve and paint the very atmosphere and medium through which we look, which morally we can do. To affect the quality of day, that is the highest of arts."

Henry David Thoreau (1854: 74)

Chapter Eight: The Environmental Evolution of the Amoco Corporation

8.1. Introduction

The previous two chapters built a set of hypotheses that describe how (1) the institutional field and (2) the strategy of the chemical and petroleum industries have evolved from 1960 until the present. In the following two chapters, those hypotheses will be developed²⁰ through an examination of (1) the structural and strategic evolution at the Amoco Corporation — Chapter Eight — and (2) the institutional dynamics which took place between Amoco and the environmental investor group CERES from 1988 until the present — Chapter 9.

²⁰ In all fairness, however, it would be inaccurate to argue these chapters to be independent of the those that preceded them. The results of the Amoco research have influenced the development of the previous two chapters, and the results of those two chapters have influenced the evolution depicted here. Regardless of this influence, every attempt has been made to remain open to alternative explanations.

The Amoco Corporation²¹ is a fully integrated international corporation engaged in the exploration, production and transportation of crude oil and natural gas and the manufacture and marketing of petroleum and chemical products. Based in Chicago, Illinois, it is a parent company for three wholly owned subsidiaries: Amoco Production Company (APC), Amoco Oil Company (AOC) and Amoco Chemical Company (ACC). In 1992, the Corporation posted \$28 billion in revenues, as the seventh largest US producer of crude oil, the second largest US producer of natural gas and the eleventh largest company in the United States (based on assets).

Historic trends in environmental capital expenditures at Amoco are similar to those of the rest of the oil industry (see figure 4-5), rising steadily through the 70s and 80s and increasing sharply in 1990 — see figure 8-1²². In a slight deviation, Amoco encountered a brief drop in costs in 1986 as capital spending was temporarily reduced across the entire company due to a sharp decline in oil prices that year (see figure 4-3). According to corporate annual reports, the sharp increase in 1990 reflects "the initial phase of spending to meet the fuel requirements of the Clean Air Act, as well as spending to comply with new regulations affecting air and water emissions and waste handling" (such as the closure of landfills, the RCRA land-ban, and the benzene NESHAPS requirements)²³. By 1992, these costs peaked at a level equal to roughly 20

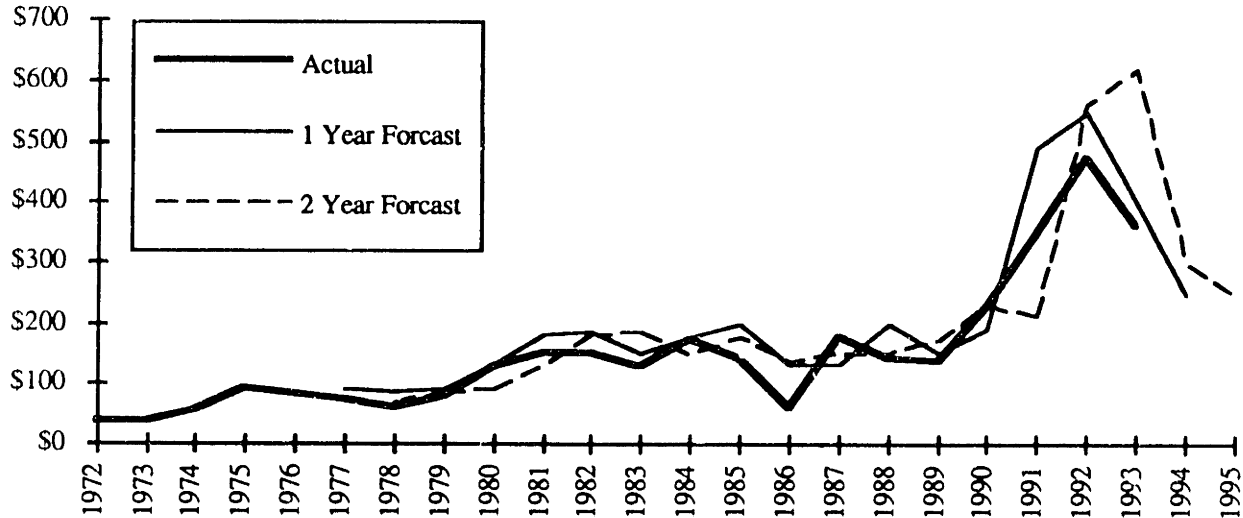
²¹ A brief overview of the Amoco Corporation is provided in Appendix F.

²² Such data must be viewed with caution. A senior manager in the Environmental Health and Safety department explains, "You have to be really careful when looking at [environmental] capital costs. There really is no good means for measuring them. I used to go out and look at a new process and 'assume' that say 30% of that was environmentally related. Or, if we were trying to get financing from state pollution control bonds, we would try to get as much as we could labeled as environmental. I once got a flare labeled as environmental. It was funded at 6% when the going rate was 16%. There is great uncertainty in these kind of numbers." It comes down to what are the criteria used for developing them.

²³ When considering the environmental aspects of Amoco's various operating companies, it is primarily the oil and chemical companies that receive the most concern. Wastes from the production company consist almost exclusively of waste-water from the drilling processes. As the EH&S manager for the production company puts it, "when we produce 1 barrel of oil, we

percent of total capital costs. As noted by the one year and two year forecasts, all costs increases were anticipated.

FIGURE 8-1
Amoco Environmental Capital and Expected Capital Costs (\$ millions)



While trends in environmental capital spending would suggest a steadily increasing concern for environmental affairs with perhaps a sudden surge in 1990, environmental staffing suggests more of a four-stage progression as observed with corporate strategy and the institutional field — see figure 8-2. Beginning as a one man department in 1966, environmental management experienced three discrete growth spurts²⁴: (1) 1970 — up 300 percent from 1 to 3; (2) from 1978-1982 — up 600 percent from 10 to 63; and (3) from 1987-1991 — up 280 percent from 86 to 205. Mean staffing levels (excluding medical in 1993) for the four periods are listed in table 8-1.

produce 99 barrels of water. We're in the water business, we just happen to be able to sell the oil."

²⁴ The size of the organization experienced a sudden increase in 1993, which represented not an increase in personnel, per se, but rather the transfer of the medical department to the EH&S department. The transfer was largely in name and reporting responsibility only as the medical department changed neither in location nor in staffing levels.

FIGURE 8-2
Amoco Environmental Department Staffing:
Corporate and Operating Company Levels

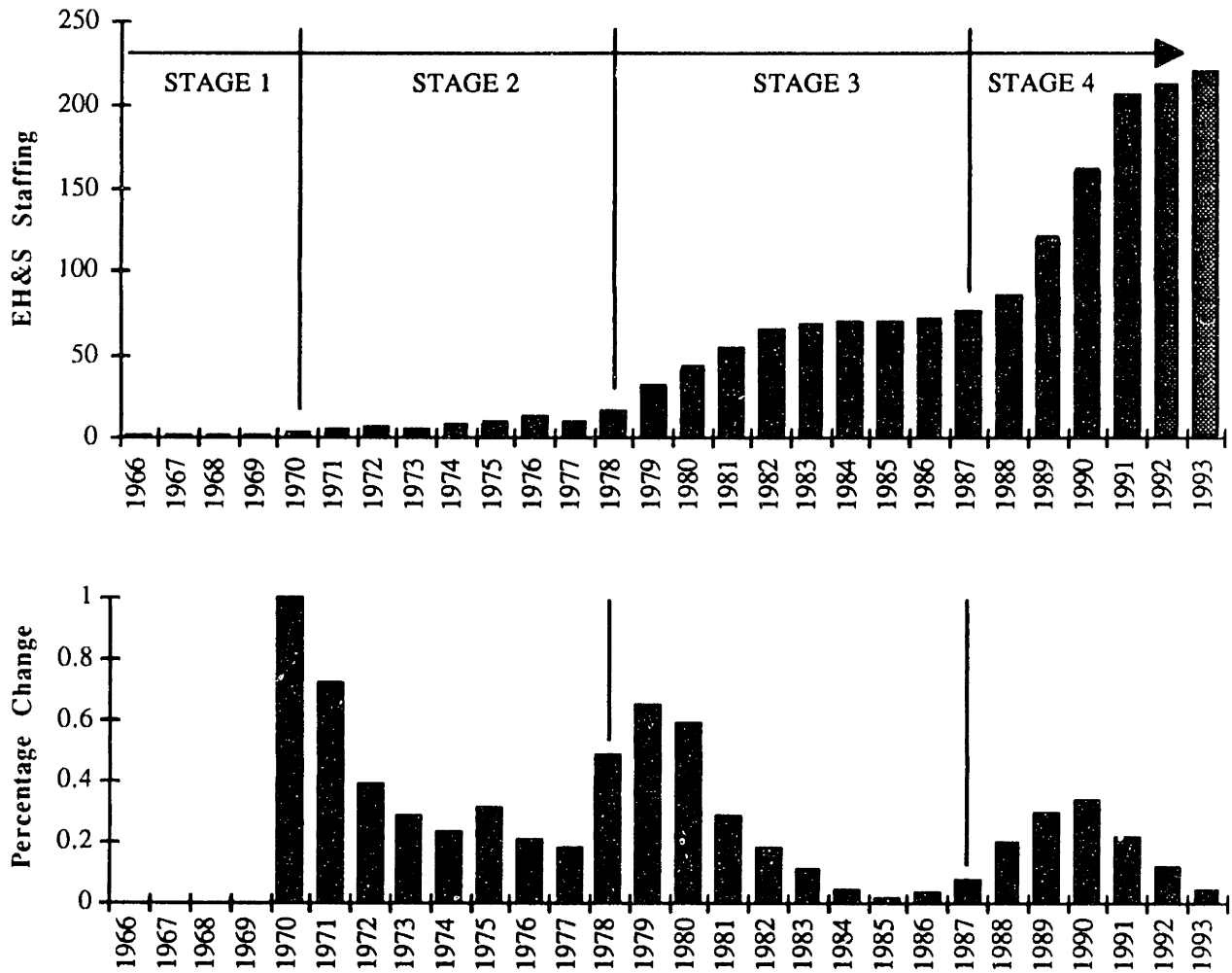


TABLE 8-1
Amoco Environmental Department: Mean Staffing Levels

| | Arithmetic Mean | Standard Deviation |
|--------------------|--------------------|-----------------------|
| STAGE 1: 1966-1970 | 1.20 | 0.45 |
| STAGE 2: 1970-1978 | 7.22 | 3.99 |
| STAGE 3: 1978-1987 | 55.60 | 20.71 |
| STAGE 4: 1987-1993 | 154.36 | 60.95 |

Going far beyond staffing levels however, the evolution of other organizational variables were found to have gone through a similarly timed four stage evolution. This progression included such characteristics as the function, objectives and organizational power of the environmental department, the function and objectives of other internal departments, the boundaries and interaction between the organization and external Actors and the overall focus and level of concern placed on the environment by the company and its employees. Table 8-2 summarizes the characteristics of this evolution.

TABLE 8-2
Stages in the Evolution of Corporate Structure

| Stage | Time Period | Description |
|---------|----------------|--|
| STAGE 1 | 1960 - 1970 | PROBLEM SOLVING. Considered an ancillary aspect of conducting business, it is handled primarily as an operating line function. |
| STAGE 2 | 1970 - 1978 | TECHNICAL COMPLIANCE. Although elevated to a separate corporate department, it remains an ancillary role with low organizational power and focused strictly legal requirements. |
| STAGE 3 | 1978-1987 | MANAGERIAL COMPLIANCE. Moving beyond merely technical responses, managerial structures are developed to achieve end-of-pipe emissions compliance while environmental responsibilities begin to diffuse throughout the organization. |
| STAGE 4 | 1987 - present | PRO-ACTIVE MANAGEMENT. Organizational boundaries blur, allowing direct influence by external interests as the environmental department reaches new levels of organizational power. Environmental considerations began to be pushed back down into the line operations, integrating them into both processes and product decisions. |

8.2. Stage 1 (1960-1970): PROBLEM SOLVING.

Overview. In this, the first stage of Amoco's environmental evolution, environmental management was viewed merely as an ancillary technological problem to be handled on a part-time basis by operations engineers. External pressures were not evident as the company approached the problem as one it could handle itself. The environment was primarily a waste-water issue, focusing on only visible forms of pollution.

Organizational Structure. Corporate environmental management at Amoco saw its first beginnings in 1966 as *Air and Water Conservation*, a one man department within the Manufacturing Department of, what was then, the American Oil Company. In related functions, a Product Safety department had been in existence since 1948 and Industrial Hygiene was handled under the Employee and Public Relations Department.

Organizational Function. Not much written data exists about this period of the corporation's handling of environmental affairs. However, interviews with both senior members of the Environmental, Health and Safety (EH&S) staff and retirees helps to provide an understanding how Amoco handled environmental affairs. One environmental engineer formerly assigned to the Whiting refinery in the 1960s describes a staffing situation where environmental concerns were handled as a secondary responsibility to other more central issues. "At that time, most engineers in sanitary were working on water issues. There was some concern over air issues but the Clean Air Act was not passed until 1970. The plant had 2 to 3 people in environment in the 60s and into the 70s, but their responsibility was usually shared between that and other more operations

oriented responsibilities. The engineering department would supply people on a short term basis as needed." Another engineer formerly at the company's Wood River refinery concurs "At that time [prior to 1970], the larger refineries had maybe one part-timer who did environment. It was maybe in the mid-50s when people were first marked down as 'environmental' types. That original work was in removing phenolics from waste water. The focus was not on health hazards though. It just smelled and looked bad when it got into drinking water."

Furthermore, he points out that environmental concerns garnered little interest from line personnel. "In the 1960s and 1970s there was no buy-in on environmental issues hardly at all from operations. Even between divisions there was a lack of coordination and communication. Everyone ran their own business and did their own thing."

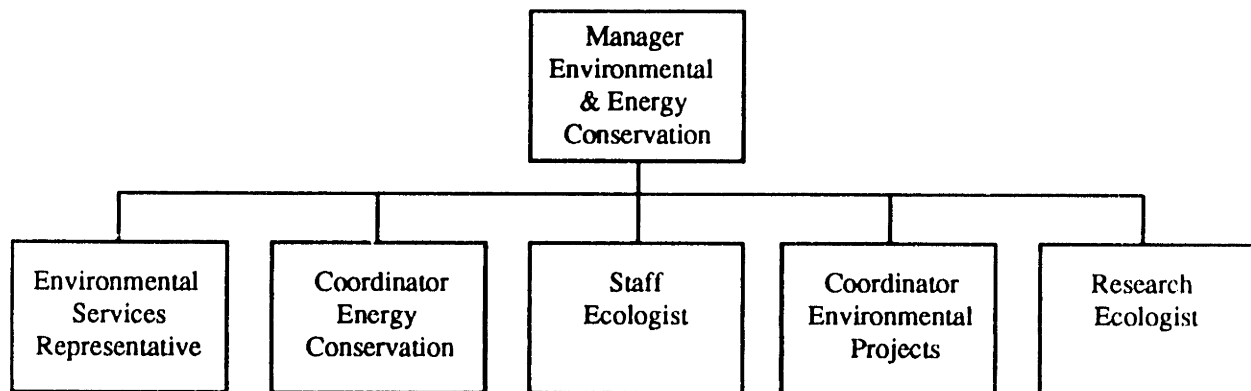
8.3 Stage 2 (1970-1978): TECHNICAL COMPLIANCE.

Overview. In the second stage of Amoco's environmental evolution, environmental management is elevated to a corporate level function as a direct result of the creation of the EPA. Yet, the environmental issue continues to receive only ancillary attention. Regarded as a "necessary evil" and a "cost of doing business", attention is directed strictly at regulatory compliance. All efforts to control pollution appear to be endogenously empowered by the endogenous presence of a regulatory mandate. In this way, it would appear that internal affairs, at this time, were being directed by the government. As such, there is little need for an advanced staff in managing environmental affairs. The department remains low in terms of organizational power, while line-operations pay it scant attention, preferring to keep attention on the primary issue,

producing and refining crude oil products. No one appears aware of the potential levels to which environmentalism would rise in altering operations.

Organizational Structure. In 1970, to respond to the growing national focus exemplified by the creation of the Environmental Protection Agency, environmental affairs was elevated to a corporate level function under the Research and Development department. In 1972, the staff grew to 4 and was renamed *Environmental Conservation*. By 1976, the staff had grown to 6 and was again renamed *Environmental and Energy Conservation*, while moving out of Research and Development to become a stand alone corporate support function. The organization was loosely structured, subdivided by individual specialties rather than individual responsibilities or functions — see figure 8-3.

FIGURE 8-3
Amoco Environmental Department — Simple Organic Structure (1976)
TOTAL STAFF = 8



Organizational Function. Throughout this period, the function of the group was a technical one. Their objective was to assure that Amoco's operating companies had the necessary support to understand and respond to the newly emerging environmental regulations. Since these regulations were prescribed

technology or performance standards, there was little need for a large staff to analyze corporate response. In a posture that could be described less as confrontational and more as resigned acceptance²⁵, the Environmental and Energy Conservation department oversaw the construction of waste-water treatment plants and end-of-the-pipe air emission control units.

Shifting Posture and Power Issues. On the whole, this period was marked by both a low priority placed on the issue and difficulty gaining buy-in from the line operations. According to one former environmental coordinator at the Cooper River plant, "In 1978, environment was not considered any big deal. They weren't cavalier in meeting compliance. That was simply always the stated objective, 'Amoco will be in compliance'. It was easily met. Regulations at that time were straight forward and concerned with only a couple of media." A former manager of the Yorktown refinery recalls, "In the 1970s, no one thought that environment would be a full time job. It wasn't a non-issue. It just wasn't the driving force it is today. It was a compliance kind of thing. A refinery usually had a half time person focused on rules and regulations. . .It started like an adjunct to doing business. It was a necessary evil viewed as an element of doing business, an administrative function just like legal or accounting. It wasn't our main function. It was just something that had to be done. It was viewed as innocuous, not offensive."²⁶

²⁵ Amoco may have initially reacted to new regulations in a slightly different fashion than that of the rest of the industry. Early environmental laws did not simply mean increased regulatory burdens for the corporation. Amoco found that early environmental laws were consistent with existing product lines. In the early 1970s, they were in the enviable position of already offering a lead free gas, Amoco "white gas", which had been offered by the companies for decades. With the advent of lead phase-out standards, Amoco established an early reputation both inside and outside the company as an environmental player.

²⁶ This posture of acceptance differs from the confrontational posture identified for this period in the trade journal analysis. This could be the manifestation of a difference between internal and external strategy. Or, it could represent a company that is not resentful of the growing environmental regulation. These considerations will be discussed at the end of this chapter.

In viewing what empowered the environmental staff to gain line assistance in achieving environmental objectives, it clearly came down to the law. According to one manager, "It was the law that really empowered these people to come in and do what they did. The Corporate mission played into it, but the law was really the empowering force." A former refinery manager adds, "The environmental folks were more looked at as the equivalent of accounting. We didn't like to see them come around since they always had bad news but we knew it wasn't their fault. We used to joke about shooting the messenger but we knew that they had a job to do. They weren't really viewed as an imposition, we just accepted their role as a cost of doing business."

Aside from the legal requirements, managers and line-operators were reluctant to initiate these expensive undertakings. Without the law, efforts may have been non-existent. One manager whose job it was to obtain funding from senior management for refinery waste-water treatment units recalls that his was not an enviable task. "People at that time were reluctant to initiate investments that would raise costs without a payback. It seemed that at that time management was always looking for another plant to close. That made the managers very uneasy about keeping profits up."²⁷

"The first few times going before the board were hard. They would have lots of questions. Our regular planning coordinator wouldn't do it because they weren't money making projects. He didn't want to get that mark on his sole. But, the minute you told them that the law requires it, they'd do it. I don't know

²⁷ He recalls a rumor circulating in the early 70s which he says put a dim light on requesting environmental expenditures from the plant. "It was at the same time as those Civil Rights protests when (Executive Vice President) said something at a Red Crown meeting without really thinking very hard about what came out. He was quoting Governor Wallace and said 'We're going to stand on the courthouse steps and they are going to have to make us do these things.' What he intended to say was that we wouldn't spend money on projects that didn't make sense. However, this filtered down through middle management and they wouldn't ask for any money for environmental projects because they thought that there was no money available. This misinterpretation carried attitudes for nine to ten years."

anyone in Amoco that would deliberately break the law. The oil company Vice President would simply say 'Well, I guess its just a part of doing business' and it was approved. I thought that they would sit and discuss it and then vote but he just said that and decided and moved on to the next item. These were \$1-3 million plants. Later, in the late 70s, the next plant upgrade would be more in the \$20-30 million range."

Getting line-level buy-in on these initiatives was difficult. For example, promotion track careers of those slated for positions such as refinery manager or the executive level would never include EH&S on their career rise. As one former refinery managers explains, "Early on, through the 70s, you needed technical know how to comply with the regulations, but it was really just an adjunct function. If you were a true line operator, it wasn't your cup of tea. It wasn't that they [the environmental staff] were necessarily looked down upon as an EPA pawn. It's just that our business was to make gasoline or lube oil. That's where we put our best people. EH&S just wasn't an important place to go to move ahead. It wasn't a career move. We didn't need to dilute our technical efforts by sending talent over to EH&S. It just doesn't make sense to send the best and the brightest to just figure out how to deal with compliance. It wasn't quite a dumping ground. Our best quality people just weren't put there."

8.4. Stage 3 (1978-1987): MANAGERIAL COMPLIANCE.

Overview. In the third stage of Amoco's environmental evolution, the company begins to develop management structures that will allow it to better achieve regulatory compliance. Rather than looking strictly to government regulations as the guiding example of how they should manage environmental

affairs, the company begins to establish its own parameters for achieving compliance y integrating the goals of those regulations into the functional objectives of EH&S. The environmental department begins to grow in power and influence while other internal functions of the Corporation find environmentalism beginning to change their roles within the organization.

Transition Period. In the late 1970s, the Resource Conservation and Recovery Act (RCRA) and new work-place chemical hazard requirements under the Occupational Safety and Health Administration forced companies to consider toxicity and risk assessments in their environmental affairs. This represented a shift in the focus of environmental protection away from that of an ecological issue towards more of a human health issue. In response, Amoco undertook a two stage consolidation of their environmental functions. Industrial Hygiene and Toxicology were integrated from the medical department in 1979, changing the department title to *Environmental Conservation and Toxicology*, and the Safety department was integrated in 1982, again renaming the department, *Environmental Affair and Safety (EA&S)*. At this point, the department began to take on a significantly expanded role beyond that of the previous 12 years.

The first wake-up call for Amoco to begin to initiate these changes was a surprising forecast of where environmental laws were predicted to be going. Two representatives, one each from the chemical and oil companies were charged by executive management with the task of determining how much environmental regulation would cost the company in the coming decade. One of the representatives recalls, "I think we gave an estimate of about \$500 million over 5 to 10 years. They almost laughed us out of the room. The corporate attorneys actually audited our books after that and made us cut the estimate back. The thing is, if you tell senior management that you are going to spend

alot of money like that, then it has to be covered in the annual report. If it was what they called 'material', you had to put it in the annual report. But, the problem is that you never know what the law was going to cost you." Another environmental director describes the basis for the disbelief, "They said that the US Government would never let things get that bad. In actuality, those guys hit the target."

These estimates prompted Amoco's President to commission a task force in July of 1980 to study the health impact of the company's operations and products. A massive report was completed in April 1982, in which four primary recommendations were produced: (1) existing environmental and industrial hygiene policies should be reexamined and revised where necessary; (2) domestic employee industrial hygiene monitoring should be increased; (3) a chemical inventory should be established to identify the presence of contaminants in the workplace; and (4) the current system of product classification and distribution of material data sheets should be reexamined. By the time the report was released in 1982, many of these recommendations had already been initiated as the department was undergoing significant changes.

This study also reveals a new focus by the company to look beyond environmental regulations for examples of how it should be managing its environmental affairs. Although the executives admit that "benchmarking" has always been a common practice in other areas of the company's affairs, this report, for the first time, benchmarked for environmental management. It included a review of other oil and chemical companies industrial hygiene programs (Shell, Texaco, Monsanto, Union Carbide and Dow), product safety programs (ARCO, Shell, DuPont and Monsanto), chemical inventory (Monsanto, 3M, Dow, Celanese, Allied Signal, Chevron, ARCO and Mobil) and toxicity testing (Mobil, Gulf, Shell and DuPont). Thus, 1982 marked the beginnings of

move away from regulation as the primary determinant of internal environmental affairs and a steadily increasing external focus in directing the department's form and function.

The late 1970s also marked what would be the beginning of a new source of empowerment for environmental affairs. No longer merely a low-level responsibility, senior management was now becoming aware of the full potential scope of environmental regulations. But it was more than the costs that brought about this change.

First, in 1978, Amoco suffered its most significant environmental disaster, the Amoco Cadiz shipwreck off the coast of Brittany in the English Channel. Although there appears to be little evidence of a direct effect of the spill on corporate staffing (beyond the creation of a small spill response group staffed with marine biologists), Amoco executives feel that it called attention to the potential costs of environmental mishaps or accidents both in terms of economics and corporate reputation. According to a corporate attorney who was with the corporation at the time, "The Cadiz affected the reputation of the EH&S people. This was the first time that the EH&S department came into the forefront. They provided advice and technical support to the French Government even after they botched some of the cleanup by digging up the wetlands."

A second driving force in elevating environmental power within the organization was demographics. A newly emerging generation of executives were beginning to see the subtleties and full impact of environmentalism. One senior executive points out "people started popping up like Lawrence Fuller [the present Chairman and CEO] and Lawrie Thomas [the present Vice Chairman] and they did more listening. They were the next generation of executives who ushered in a new era. They understood the new things. They weren't the

dinosaur types who couldn't understand that anything other than pure profit would guide company activity."

However, one EH&S executive is cautious about crediting events or internal management with too much of this transition. He feels that the shift from the second to the third stage coincides with a more broad shift in public and societal opinion. "I don't think the executive transition was the cause for the shift in internal attitudes. It was more driven by external events. Both legislation and public/political pressure. However, it's a kind of chicken and egg thing. It's not necessarily the accidents that have caused it. I don't think that they've really grown in frequency. We have always had the Love Canals and the Times Beaches. But, people's responses to them have changed. This is the real shift taking place here." Consistent with this viewpoint, a corporate attorney recalls that, unlike the more recent Valdez spill, the Cadiz spill was not viewed primarily as an environmental issue. "The lawyers that handled the Cadiz situation were maritime lawyers."

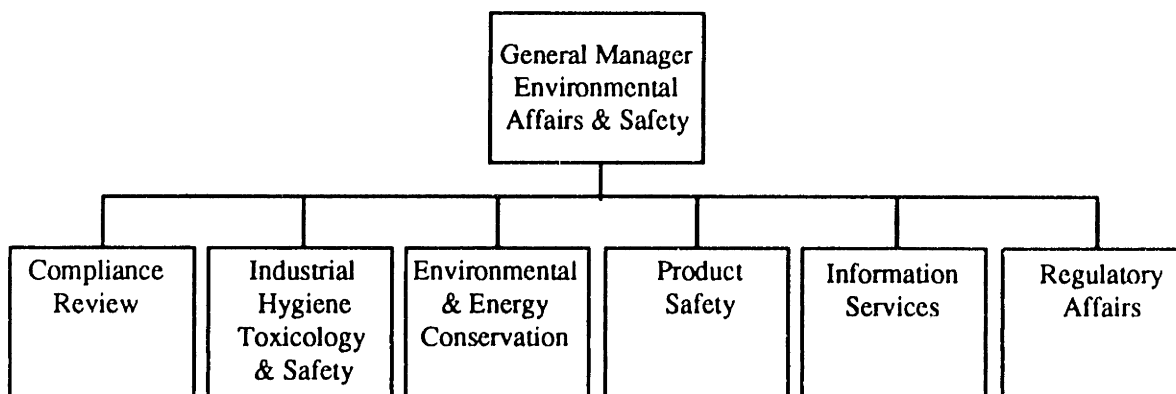
Organizational Structure. Beginning in 1982, the various company EH&S departments were consolidated. However, only the EH&S function at chemicals (ACC) was moved into the corporate structure. Oil (AOC) and production (APC) resisted. Corporate would act as a support function to these operations, while they also retained their own small staffing. The predominant function undertaken by AOC EH&S was waste site remediation, for which a department was created in 1982. ACC, by becoming part of corporate, gained certain functions that they didn't previously have, easing communication and lowering barriers.

According to a former ACC environmental manager, the reasons for this consolidation were that "We wanted to develop uniformity in the environmental

programs within the various operating companies. We were concerned that the three companies were interpreting the regulations differently. Oil had the attitude that they were not going to do anything unless they were forced to do it and chemical had the attitude that they were going to comply with the law. For example, chemical would build a new plant based on the proposed regulations. Oil would wait until the law came out before they would initiate anything. There was too great a difference in philosophies."

With the consolidation in 1982, the corporate environmental department adopted a discipline based structure, less focused on specific media and more focused on internal functions - see figure 8-4. The staff had grown dramatically from a size of six to a size of sixty, in only 4 years. Although this growth involved the transfer of 13 industrial hygienists/toxicologists and 7 safety specialists from the medical department, it also included the addition of 24 professionals. The group was now divided along six major disciplines which included not only the original three departments of Industrial Hygiene; Safety; and, Environmental and Energy Conservation, but also three new functions of Information Services; Regulatory Affairs; and, most significantly Compliance Review.

FIGURE 8-4
Amoco Environmental Department — Discipline Based Structure (1982)
TOTAL STAFF = 61



Organizational Function. These last three departments represented the beginnings of an expansion in the corporation's environmental focus towards more internally directed change. Information Services began the process of collecting and analyzing environmental data not previously measured, but would be critical to generating internal decisions on environmental strategy. Regulatory Affairs began the process of assessing the potential impact of upcoming regulations. And, Compliance Review began the process of conducting internal audits to assure regulatory compliance.

Started as pilot program in 1981, the Compliance Review program was formalized in 1982. Through this program, Amoco was now beginning to assume some sort of internal control for its environmental management function. No longer merely looking to regulatory compliance as the measure of adequate environmental controls, Amoco would now begin to assume some sort of self-control to assure (for its own reasons) that it is complying with the established standards. It appears that the fundamental driving force behind this program was upper management feeling increased direct responsibility for environmental compliance.

Citing a concern that the program was intended to solve, an executive wrote in 1981, "The courts have held that top corporate officers cannot delegate 100 percent of the responsibility for environmental, industrial hygiene and safety compliance to subsidiary management and on to the plant managers. The Court's decisions state that corporate officers have ways of enforcing compliance with regulations and standards. One major problem of a corporate officer's ability to assure compliance is his/her lack of knowledge of actual environmental, industrial hygiene, and safety practices and problems at various locations. However, the Courts have also held that 'deliberate ignorance is no excuse'".

In citing the motivations behind the initiation of the program as being external as well as internal, another senior environmental manager wrote "Environmental and industrial hygiene compliance reviews are now being widely discussed in both industry and government. The purpose of these reviews is to assure upper management of compliance with policies and numerous environmental and industrial hygiene laws and regulations. It is a method for management to obtain a base-line indication of operational practices."

Shifting Posture and Power Issues. Aside from the direct organizational function, 1982 marked the beginnings of new types of coordinating structures, whose goal was to find internally defined mechanisms for protecting the environment while also coordinating those activities throughout the company. In 1982, a new environmental guidance committee, the Health, Safety and Environment Coordination Committee (HSECC) was formed "to respond to the expanding volume of new regulations and enforcement activities by state and federal agencies." For the first time, a central group brought together representatives from law, EA&S, medical and the three operating companies with the objective of developing and implementing new programs related to environmental, health and safety. The Vice Presidents of Supply and Technology, and Employee Relations had oversight responsibilities for the group. Although the council was primarily focused on compliance with regulations, some proactive programs were initiated in this time span. For example, the chemical company began a waste minimization program in 1983 and the oil company followed suit in 1984.

Underscoring this growth in corporate environmental concern was the creation of Amoco's first Environmental, Occupational Health and Safety Policy in 1982. Signifying a new level of executive endorsement, Richard M. Morrow,

President of what was then the Standard Oil Company of Indiana, signed the policy, outlining six company principles focused primarily on regulatory compliance — see figure 8-5. The policy underwent subtle changes in 1986, adding a principle on "building and operating facilities in a manner that protects the health and safety of employees and the community", and later in 1988 augmenting this principle to include the "design" of facilities. These latter two changes were also signed by Mr. Morrow who, by then had become CEO.

From 1982 until 1989, twenty operations specific environmental policies were also developed reflecting the evolving perspectives on what constitutes corporate responsibility towards the environment. They included such areas as spill response, contractor safety, regulatory reporting procedures, asbestos management, real estate acquisitions and technology transfer. Concurrently, throughout the 1980s, Amoco refined the necessary departments to handle the basic media specific aspects of regulatory compliance: groundwater management in 1982, hazardous substances in 1985, Superfund in 1987, waste management in 1988 and air management in 1989.

Just as the Environmental, Health and Safety department had grown in size and influence within the company, environmental responsibilities started to diffuse in the early 1980s to other support and line functions within the organization. Plant managers in both the oil and chemical companies acknowledge that environmental affairs was growing from being simply "a cost of doing business" requiring little special attention in the 1970s to becoming a significant part of their daily responsibilities throughout the 1980s. EH&S responsibilities were removed from the umbrella of the operations departments to become stand alone departments in the refineries in 1982 and in the chemical plants in 1987. Waste minimization efforts in the chemical and oil companies

FIGURE 8-5
Amoco's First Environmental, Occupational Health and Safety Policy (1982)



Standard Oil Company (Indiana)

Environmental, Occupational Health and Safety Policy

Standard Oil Company (Indiana) and its subsidiaries support the goals of achieving and maintaining high standards of environmental quality, product safety, and providing a safe and healthy work place. In accordance with these goals, our corporate policy is:

1. To conduct activities in a manner consistent with appropriate safety, health, and environmental considerations.
2. To market our products and furnish user information on them in a manner consistent with appropriate safety, health, and environmental considerations.
3. To establish and maintain corporate controls, including periodic reviews, to assure that the company's policy is being properly implemented.
4. To work with all levels of government in the furtherance and development of public policies supportive of environmental quality, product safety, and occupational health and safety.
5. To comply with applicable environmental quality, occupational health and safety, and product safety laws and regulations.
6. To safeguard our employees' health through appropriate medical programs.

This policy will be administered by each subsidiary through its line management and by appropriate corporate management.

A handwritten signature in black ink, appearing to read "R. M. Morrow". The signature is written in a cursive, flowing style.

December 14, 1982

began in 1983 and 1984 respectively requiring engineering/EH&S collaboration in determining how best to initiate process adjustments and additions. However, the divisions remained segregated as EH&S was often physically positioned away from the production processes.

One former refinery EH&S manager recalls that environmental managers were gaining in credibility, "Starting in the early 80s, people started to see EH&S as being more useful to operations. There was a little more buy-in. EH&S had to show that there was an important benefit to the company by adopting environmental principles. The role of operations managers were also starting to change at the refinery due to environmentalism. Managers started to have goals such as energy efficiency and NPDES discharge violations added to their traditional Result's Management (APM) goals of output and yield."

External/Institutional Focus — Environmental Groups. Attitudes toward environmental groups also became more explicit at this time. Executives were becoming aware of their presence, however, they were viewed more as an external nuisance than any kind of a positive influence. For example, an internal "environmental bulletin" dated August 3, 1984 warns that "recently, some national environmental organizations have embarked upon a major well-coordinated program to force compliance and payment of restitution by industrial waste-water dischargers. Under the Clean Water Act any citizen may institute a civil action against a discharger for his violation of permit limitations. Groups, such as the National Resources Defense Council and the Sierra Club, have filed scores of lawsuits as well as additional notices of intent to file suits against companies based on alleged violations of the Water Act." Any legal

actions directed towards the plants were to be directed to the corporate legal staff immediately.

8.5. Stage 4 (1987-present): PRO-ACTIVE MANAGEMENT

Overview. In this, the fourth stage of Amoco's environmental evolution, the company adopts a proactive structure and strategy for dealing with environmental affairs. Responsibilities for dealing with the issue diffuse throughout the organization while the environmental department finds its status and power elevated to new levels within the Corporation. Corporate officials begin to acknowledge the legitimacy of external stakeholders in directing internal operations. And this set of external stakeholders had evolved well beyond that of competitor firms and the government to include environmental groups, trade associations and institutional investors. Internal operating decisions were now becoming increasingly influenced by external interests. Cooperative alliances with these groups flourish as the company searches for input on how best to manage its environmental affairs. The investor group CERES precipitates some significant organizational shifts while risk assessment grows as an internal concern.

Transition Period. Signs of a more self-directed and proactive shift began to emerge in the late 1980s, effectively setting the stage for the fourth stage of Amoco's evolution. In 1987, the General Manager of Environmental Affairs and Safety was promoted to the newly created position of EA&S Vice President, thus bringing environmental concerns into direct contact with Board level decision-making. In 1988, the company's 10-K report altered the language describing its

motivations in managing environmental affairs from straight regulatory compliance to "a pro-active approach to environmental management which aggressively addresses increasingly complex and diverse environmental challenges."

In 1988, for the first time, the Chairman of the Board, Richard Morrow discussed the importance of environmental management in that year's first issue of the company magazine, *Span*. In an article entitled "Industry and Environment Can be Compatible", he discusses the implications of the SARA Title III requirements and how they will spur public discourse on corporate environmental practices. He presents this as an opportunity for illuminating Amoco's good environmental reputation and stresses the potential benefits of using these reporting requirements to further that reputation.

In October 1988, a senior legal counsel writes a memo to the corporate general counsel discussing the importance of "Creating and Nurturing an Environmental Ethic at Amoco." As an opportunity to reduce compliance costs, and operate in a manner consistent with appropriate environmental principles, he suggests instituting an environmental ethic throughout the company with top down leadership and financial rewards and recognition. In this letter is a first time acknowledgment of the depth to which environmentalism represents a shift in the basic tenets by which the organization operates.

Organizational Structure. In terms of staffing, 1987 saw the beginnings of the third major growth in the environmental function at Amoco. In part due to a consolidation of environmental efforts from the operating companies to the corporate level in 1989, the department saw a rapid rise in personnel that would continue through 1991 — see figure 8-2. Even though this increase was accomplished, in part, through the transfer of personnel from other departments,

adjusted figures for operating expenses still show an overall increase in 1990 — see figure 8-6.²⁸

FIGURE 8-6
Amoco Environmental Department Operating Expenses (\$000)

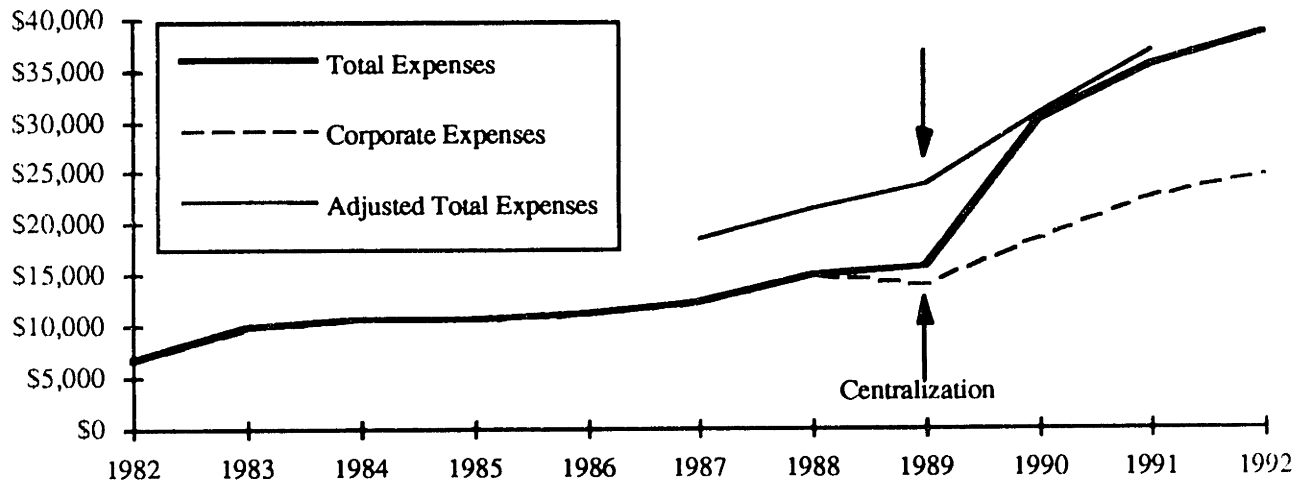


Figure 8-7 shows the organizational results of centralization as AOC, ACC and APC EH&S departments are consolidated (temporarily) under the corporate umbrella. By 1992, the department was renamed *Environmental, Health and Safety (EH&S)* as the medical department was integrated. However, at the same time, the operating company EH&S departments were decentralized from the corporate level and reassigned reporting responsibilities directly to the operating company presidents - see figure 8-8. This was enacted in concert with the decentralization of other support functions in an attempt to both reduce

²⁸ The heavy solid line represents the total EH&S operating expenses at the corporate offices. In 1989, with the consolidation of the operating company EH&S departments (primarily oil and production), total corporate operating expenses increase dramatically (heavy solid line) while the separate expenses for the corporate function (dotted line) continue at the same trajectory. The light solid line represents the adjusted total expenses which includes operating expenses within the operating companies both before and after consolidation. This normalized line shows that, regardless of the consolidation efforts, EH&S operating expenditures and therefore the staff increased.

corporate level operating costs and integrate support functions into the operating levels.

FIGURE 8-7
Amoco Environmental Department — Operating Company Structure (1990)
TOTAL STAFF = 161
(AC=92, APC=18, AOC=33, ACC=18)

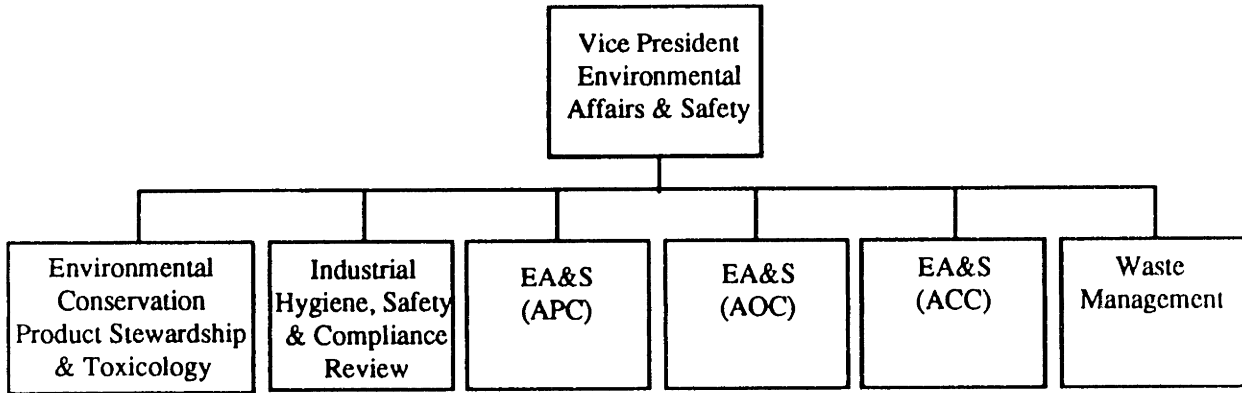
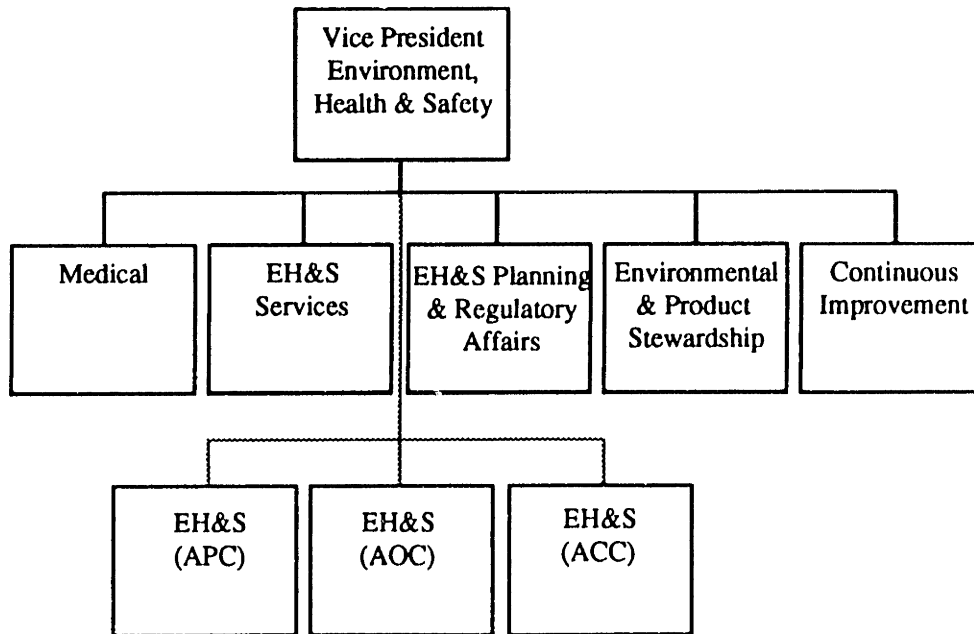


FIGURE 8-8
Amoco Environmental Department — Decentralized Operating Company Structure (1994)
TOTAL STAFF = 303
(AC=132, APC=27, AOC=38, ACC=23, Medical=83)



Organizational Function. The functions of the EH&S department evolved steadily through this organizational restructuring, focusing less on functions that respond directly to regulatory requirements and more on internally motivated initiatives. In 1990, Product Safety continued to expand, encompassing more than the regulatory requirements for safety labels to consider more internally driven objectives of product responsibility.²⁹ Regulatory Affairs continued to expand, promoting more lobbying efforts and creating a department focused specifically on state regulatory developments. EH&S Training was created to help spread the newly emerging environmental ethic throughout the organization. And by 1993, a dedicated department for Continuous Improvement was formed, its sole objective being that of initiating cultural change within the corporation.

But, the two new programs which most significantly represent the organizational shift towards proactive environmental management were Program and Process Review, and Crisis Management. Program and Process Review was a significant departure from its predecessor, the Compliance Review program which, established in 1981, focused on assuring regulatory compliance of a randomly selected set of facilities. Although modified over the years to include a loose qualitative risk approach (thereby subjecting refineries, with their inherently high risk profile, to be inspected more frequently than chemical plants) and in 1988 to include international facilities, the newly devised Program and Process Review presented a much more sophisticated and internally directed auditing effort. The program was designed to select sites for inspection based on a quantitative risk basis. Sites are assigned a weighted risk factor based not only

²⁹ Eventually, the department was renamed Product Stewardship, consistent with the terminology of the Responsible Care program.

on regulatory and economic factors but also environmental considerations. Factors include: facility size, number of permits, location, presence of sensitive receptors, toxicity of raw materials and products, and past performance. High risk sites (as determined internally) were more rigorously inspected. Recommendations from these inspections are based on both performance criteria (regulatory and company technical requirements) and goal criteria (management systems, company and trade group objectives). Amoco executives feel that this represents a more "systems" oriented approach to compliance review.

According to one senior manager involved in the program redesign, "The shift from Compliance Review to Program and Process Review represents the evolution we have gone through. The first was focused on making sure we were in compliance. The second is focused on checking to see if we have the systems in place to manage our corporate responsibility. In the 70s, it was compliance with a minimal staff, in the 80s it was awareness, and in the 90s it is management of issues."

The second program, Crisis Management, was initiated in 1989 in direct response to the Exxon Valdez disaster (March 1989) which caused Amoco, and most other oil companies, to take a careful look at how well prepared they were to handle a major incident. Or, put more directly in a speech by an EH&S executive to the EH&S Board Committee, the program was a response to "the public's view that environmental and safety issues should be a top priority for government and industry, and that steps should be taken to reduce exposure to such risks." Amoco hired a contractor to review and make recommendations on developing and maintaining a program for responding to these kinds of sudden emergencies³⁰.

³⁰ This external focus on environmental events represented an additional mechanism by which the company had become proactive. Rather than waiting for the government or other external stakeholders to call attention to the event, Amoco was pro-actively responding. In another

The resulting program calls for a "seamless web" of responsibilities for responding to the many facets of an environmental disaster: government relations, major media coverage, shareholder communications and internal issues such as effects on other operations and assurance that adequate response resources are being allocated to quickly resolve the incident. Designated Amoco personnel from the board level to the line operating staff are required to participate in ongoing drill and exercise programs for assuring that the system was intact.

Going further, in an effort to assure that the program is thoroughly proactive, "all of our response plans are developed from a proactive point of view (i.e. to provide for the anticipation and management of issues) as called for in the policy statement. To support this, we require that plans for at least the initial response, to be an over-response (i.e. to be sure we have the capability to back up the 'get ahead and stay ahead' attitude that we want underlying all of our crisis and emergency management efforts" (according to the EH&S Board Committee presentation).

Going beyond these direct organizational efforts at proactive management, Amoco also developed new committees and support functions that moved far beyond the simple regulatory compliance functions established in the 1980s, pursuing its newly stated goal of environmental leadership. In 1988, the Waste Management Committee adopted a formal charter as a functional subcommittee of the Health Safety and Environment Committee to investigate ways to reduce the amount of solid and hazardous waste produced at Amoco facilities. In 1989, a new Environmental Affairs and Safety Management

example, in 1991, a train derailment on the Sacramento River initiated an internal review of all rail transport operations.

Committee was established to find better ways to manage EA&S under the new operating company structure.

In 1990, the company continued to expand the international environmental focus started by the Compliance Review program in 1988. A task force was initiated by the Board of Directors to define the operating standards the company would use "with respect to health, safety and the environment in those parts of the world where such standards do not exist or where they are so minimal as to be unacceptable." Since that time, fourteen "international standards of care" have been written in eight categories: environment; risk management; product stewardship; occupational exposure; protective equipment; medical; safety; and vehicle safety; which establish common environmental practices in every country in which Amoco operates. Amoco executives feel that this gives the corporation advantages not only in marketing its services with foreign governments, but also in avoiding potential liabilities should regulations be developed after foreign operations begin. They also believe that it helps to improve employee self esteem and community goodwill in those locations. In a March 3, 1993 letter to one of the board members, the EH&S Vice President stresses the new opportunities being created in being viewed as a preferred partner by communities and foreign countries. Furthermore, he feels that "if Amoco's workforce knows that we care about them as individuals, additional benefits will be derived in terms of performance, ownership and employee pride."³¹

In 1991, Amoco elevated environmental concerns to the Director level by establishing a board level Environmental, Health and Safety committee. Internal memos acknowledge external as well as internal motivations beyond that of

³¹ The letter goes on to cite Amoco's lead in this area based on a bench-marking exercise of Exxon and Conoco.

regulatory compliance for the formation of the Board of Directors Environment, Health and Safety Committee. "Environmental concerns are gaining increasing support from the public and the political institutions. This support is evidenced in many ways including several resolutions from Amoco shareholders, recent public opinion polls and comments by both Republican and Democratic pollsters, and more recently by the efforts of the Council for Environmentally Responsible Economies (CERES) to enlist investors who control more than \$100 billion to support only those companies that subscribe to a list of principles of environmental protection. Fundamentally, this means that instead of the use of government command and control types of influence, we can expect people to act more directly on Amoco by way of shareholders and customers."

Concurrent with the formation of the board level EH&S Committee in 1991, the EH&S policy also underwent a fundamental shift from a compliance oriented document towards a pro-active one, pledging the corporation to commit to environmental leadership — see figure 8-9. Representing a new level of corporate commitment, this policy statement was signed not only by the CEO, but also by four members of the Board of Directors, presidents of each of the three operating companies, and the Vice Presidents of Human Resources, Government Relations, Technology, General Counsel and Environmental Affairs and Safety.

Not only does this new committee and EH&S policy reflect an increasing level of executive importance placed on the environment, but it also reflects a shift within the management culture as to who has a legitimate voice in directing corporate change. According to a 1991 task force report recommending a greater advocacy role for the corporation, "from the perspective of the oil industry, one of the most important global environmental issues to emerge in the 80s was the claim that global warming can result from the burning of fossil fuels. . .To

accommodate societal demands a significant effort must be made to improve Amoco's relationship with the various publics and the regulators." This proposal reflects a growing acknowledgment that the external institutional field has become extremely diverse in terms of environmental interests and that the goals of these diverse interests must be, at the very least, considered and, at times, integrated into internal decision making processes. Of particular note is the influence exerted upon Amoco by (1) investors, (2) environmental groups, (3) other corporate actors, and (4) the government.

External/Institutional Influence — Investors. The effects of CERES on the evolution and structure of Amoco, although downplayed by company executives, is admittedly influential. According to one senior EH&S manager, the process of creating a board level committee had already begun, but CERES precipitated the response, "We were already looking at what other companies were doing. But, we didn't want to be caught by a shareholder proxy forcing us to do it. So, for a lot of industries, Amoco included, it was a defensive maneuver to counteract CERES." The committee, as part of its first responsibilities, was given the full power by the Board of Directors to decide whether or not the Corporation would become a signatory to the CERES/Valdez Principles.

Likewise, in a May 30, 1991 letter to the CEO, responding to his suggestion of "developing some 'Amoco Principles' that we could adopt rather than negotiating on the Valdez Principles," the EH&S Vice President points out that an internal set of principles would be preferable and that he has "recently undertaken a process to redraft Amoco's Health, Safety and Environmental Policy so that it is consistent with Amoco's Mission, Vision and Values³² in tone and content."

³² The "Mission, Vision and Values", developed in 1990, is a set of goals covering a wide range of leadership objectives across the entire company. One is a declaration of Environment, Health

FIGURE 8-9
Amoco's Revised Environmental, Occupational Health and Safety Policy (1991)



Environmental, Occupational Health and Safety Policy

Amoco Corporation and its operating companies pledge to protect the environment and the health and safety of employees, the users of our products and the communities in which we operate. As a worldwide integrated petroleum and chemical company, we recognize the continuing challenge of fulfilling this pledge while accomplishing our other corporate goals. Each of us share this responsibility to ensure our long term success. To achieve our goals, we will:

- Commit to leadership by operating and growing our business in compliance with legal requirements and Amoco's environmental, health and safety operating standards which may be more stringent.
- Safeguard our employees' health by promoting an accident free workplace, minimizing exposure to hazardous substances, and providing preventive health care systems.
- Promote safe handling, use and disposal of our products by acquiring and communicating information and educating our employees and customers.
- Minimize the environmental impact of our operations by promoting pollution prevention and environmental conservation.
- Anticipate, evaluate and manage risks by maintaining crisis management programs that emphasize prevention and effective emergency preparedness, response and recovery plans.
- Commit to continuous improvement by monitoring compliance with regulations and our internal standards and by striving for performance which compares favorably with industry leaders.
- Earn the public trust by communicating openly about our policies, programs and performance and advocating sound laws and regulations.

[Handwritten signatures and names]
James E. Flynn, James M. Smith, Lawrence D. Thomas, W. J. Rennie, W. A. O'Keefe, Walter R. Stanton
September 24, 1991

and Safety objectives stating that Amoco "will maintain a leadership position in the protection of the environment, the health and safety of our employees, contractors, the users of our products, and the communities in which we operate."

External/Institutional Influence — Environmental Groups. In a significant shift, Amoco perspectives towards other external interests began to change dramatically during this stage. In an April 22, 1988 speech at the Senior Management Meeting, the ACC environmental affairs manager first acknowledged that the driving forces behind contemporary corporate environmental management were shifting, "The relative importance of industry's key stakeholders in terms of our response on health, safety and environmental issue has shifted. Within the traditional group listed, our efforts have primarily focused on employees and compliance with governmental agencies. But now, customers and downstream users are demanding a much greater expenditure on our part. In addition, a relatively new group of stakeholders, primarily from the public sector, are now making demands on industry in a more organized and powerful way than ever before. Effectively addressing these groups is essential to the success of our business." She explicitly cites the role of SARA Title III in empowering external stakeholders in moving the environmental issue "out of the workplace and it is in the customer and community arenas where it is giving us the most difficulty." She uses these developments as a rationale for more outreach to public and private interests and for more proactive internal programs.

This acknowledgment of growing external influence appears to be particularly directed towards environmental groups. In an October 9, 1990 memo to one of the Board members, the EH&S Vice President suggests that Amoco "must" begin to work more closely with (only some) environmentalists, "there are environmentalists, really conservationists, that we can and must work with in order to obtain the permission of society to do the things we need to do. .

. I would prefer not to brawl at all with the fringe because there is no benefit, but I feel we have no choice but to work closely with those we can."

An EH&S executive explains how he sees the changing institutional landscape, "Even Greenpeace — we don't look at what they do as being entirely ethical — but all those people have had an impact on the dialogue and we've realized that we have to have a dialogue with them. That's why we joined the Global Tomorrow Commission. It gave us an opportunity to discuss environmental issues with them. It has been a useful form of dialogue."

The dialogue he describes represents an outreach effort unprecedented in Amoco's history. For the first time, Amoco was establishing direct relations with environmentalists. In 1991, Amoco joined with six other companies to fund the World Resources Institute's Total Cost Accounting Project to assess better internal data collection and analysis practices for identifying environmental costs. As one EH&S manager put it "we discovered the potential for such an alliance when we realized that they were seeking some of the same things that traditional environmental groups were also seeking — environmental programs that get the most effective results". Such an awareness of common goals has lead Amoco to also open dialogue with the Environmental Defense Fund, the Natural Resources Defense Council and the Environmental Law Institute to create alliances for promoting more flexible regulatory programs. The benefits that these groups offer Amoco is established relationships within certain key circles in Washington, an associated knowledge of how to influence change in environmental policy, and the ability to generate added credibility to the effort. The benefits that Amoco brings to the environmental groups is technical know-how and a cooperative industry posture. By acknowledging their common goals, these unlikely allies are finding that they can do together what they could not do alone.

In the late 1980s, Amoco also began to pro-actively seek out the perspectives of environmental groups primarily through two forums that bring together industry and environmental group representatives for common dialogue: the Keystone Center and the Global Tomorrow Coalition. Although formed in 1978 and 1981 respectively, Amoco's shift of focus beyond the company borders only created the impetus to join these groups in 1988 and 1991 respectively.

External/Institutional Influence — Industry. This outreach effort was not restricted to environmental groups. In a September 5, 1991 memo to the EA&S Management Council, an EH&S manager stresses that if Amoco is to become a truly global company, "then we must move beyond our traditional trade associations [API and CMA]. The benefits of joining other types of organizations are bench-marking and understanding how other industry sectors measure their environmental health and safety performance."

Towards this end, Amoco's began developing industry specific alliances with their membership in six prominent programs. The first two involve single industry efforts. In 1989, Amoco Chemical Company joined the CMA's Responsible Care Program, a set of 10 guiding environmental principles which were accepted as a condition of membership by all of the CMA's 180 members. And in 1990, the Amoco Oil and Production Companies joined the API's counterpart program, Strategies for Today's Environmental Partnership Program (STEP). Since adherence to these principles is not a condition of membership, this program is considered to have less of an impact than CMA's program. However, Amoco as a Corporation appears to have adopted principles from both programs.

The next two industry programs represent a cross-industry focus. In 1992, Amoco joined the Global Environmental Management Initiative (GEMI) which, by 1993, included 24 Fortune 500 companies from a variety of industries in its membership (including 2 from the petroleum industry and 6 from the chemical industry). The GEMI program outlines tools and measurement systems to enhance the effectiveness of corporate attempts to integrate environmental management into its production processes. In 1993, Amoco also helped launch the Public Environmental Reporting Initiative (PERI), a voluntary effort adopted by 10 Fortune 500 companies (including 2 from the petroleum industry and 2 from the chemical industry) to promote the practice and define the format for reporting corporate environmental policies, practices and performance to the public.

Finally, the more recent industry programs stretched Amoco's focus towards international environmental affairs. In 1991, Amoco endorsed the International Chamber of Commerce (ICC) Charter for Sustainable Development. And in 1993, Amoco joined both the World Environment Center (WEC) and the US Council on International Business (USCIB). WEC is a non-advocacy organization whose focus is to strengthen industry-related environmental practices by establishing partnerships among industry, international governments and international environmental organizations. USCIB is an advocacy organization that advances the global interest of American business by coordinating and taking the lead on international environment, product registration and labeling and worker health issues that go along with developments in international law and trade practices. Through membership in these groups, it is Amoco's hope to have advance insights into international environmental developments and possibly gain a voice in their formation.

Bench-marking also continues through this time-period as Amoco participates in a series of industry information exchanges: A 1988 survey conducted by Conoco of the environmental function and structure within 26 major oil and chemical companies; A 1990 survey conducted by Chevron of how 13 companies structure themselves to deal with Superfund; A 1992 survey conducted by Arthur D. Little of the waste management programs and practices of 13 companies (Mobil, Amoco, Chevron, Texaco, Union Carbide, DuPont, Monsanto, Dow, 3M, GE, Ford and P&G); And finally, a 1993 joint project among Amoco, BP Oil, Enron, Exxon USA, Philips Petroleum, Shell USA and Sun focusing on: structure of EH&S, degree of centralization, connection with other parts of the organization, reliance on third parties to supplement staff, EH&S policy, strategic EH&S planning, and performance measurements.

Aside from these ad-hoc efforts at bench-marking, an internal competitor analysis program focusing on environmental performance was initiated in 1992, (in concert with bench-marking efforts taking place throughout the company). However, in contrast to previous environmental benchmarking activities dating back to 1982, this new program focused on not only oil³³ and chemical³⁴ companies, but also non-competitors such as AT&T and General Electric.

But environmental bench-marking, still in its infancy, has its problems and ambiguities (one executive describes it as "driving by the rear view mirror"). As one analyst explains "The problem with environmental bench-marking is that it is difficult to normalize these factors to a dollar figure. What management wants is for us to try to measure the dollar impact being avoided by expending EH&S costs. Ideally, what we would like is to be able to do a cost benefit curve and see the intersection where costs equal benefits and stop there. But the environment

³³ Such as ARCO, Chevron, Mobil, Occidental, Shell, BP, Exxon, Sun, Texaco, and Unocal.

³⁴ Such as Dow, DuPont, Eastman-Kodak, Goodrich, Monsanto, Quantum, and Rohm & Haas.

can't be thought of that way. There aren't direct economic trade offs. The nature of the business is that you could have a disaster at any minute and the costs will shoot through the roof. We've been trying to figure out what is the proper stance to take with respect to the environment. We believe that if you are successful you stay in business. If you stay in business long enough, you will have an accident. So, given that it will occur, what kind of a reputation do you want to have when it does. Do you want to be on CNN touting your greenness the night before your tanker crashes? I think we've already decided that the answer to that is no."

Clearly this view has significant merit. In describing who he thinks is the environmental leader, a senior environmental manager cites environmental accidents as a clear factor, "Dow Chemical is far and away the environmental leader. They had to survive the damage of the Napalm and Agent Orange experiences. They learned to do certain things well and set the standard. They set the pace by which others have to move. No one wants to be the laggard. If you are first, you've learned and established yourself. It will cost followers more to meet your standard and when they get there, you've moved ahead. They control their own destiny. You don't want the public to see you as a laggard."³⁵

External/Institutional Influence — Government. This focus on investors, environmental groups and other industry members addresses only three parts of a three part phenomena. In 1990, Amoco also joined EPA's voluntary Green-Lights Program, pledging to install energy efficient lighting technologies in its facilities wherever profitable. And in 1991, Amoco became a charter signatory to

³⁵ His observation calls attention to both: (1) Dow Chemical being the environmental leader which concurs with the trade journal and federal case law data; and (2) the industry-wide institutional effects of environmental initiatives by individual companies. Such unilateral efforts appear to "up-the-ante" to which all institutional members must follow.

the voluntary U.S. EPA Industrial Toxics Emissions Reduction Program, commonly referred to as the 33/50 program³⁶. As a result of this program, Amoco has reduced emissions of 17 priority chemicals by 33 percent through mid-1992 and is presently making changes to achieve the further 50 percent reduction by 1995.

Implicit Institutional Effects. All of these initiatives suggest an explicit blurring of the boundaries between Amoco and investors, environmental groups, the government and other industry members. However, there are other more subtle mechanisms by which this had occurred. Chief among these can be seen in the job histories of the employees within the EH&S department. Of the 300 people working within the EH&S department in 1994, more than half (167) have work experience outside the company. Of those with experience outside the company, 23 percent (38) have worked within the EH&S department of a competitor firm, 15 percent (25) have worked for an environmental consultant and 12 percent (21) have worked for a government environmental agency. Therefore, of the total EH&S staff, 28 percent bring prior experience and perspectives on environmental management from sources outside the company. This will have the effect of pushing the company towards common structures and strategies.³⁷

Directing External/Institutional Change. The preceding examples describe how the boundaries of the company are becoming blurred,

³⁶ One enticement that EPA used to gain the participation of companies such as Amoco was peer pressure. A national media campaign was developed in which member companies would be publicly recognized. Such efforts intended to help gain legitimacy for companies that participate and call unwanted attention to those that don't, again creating institutional pressure for involvement.

³⁷ It would be interesting to assess how many employees are members of environmental groups and therefore bring further (more extreme?) external perspectives into the organization.

accommodating interests from outside the company such that internal perspectives become increasingly infused with external ideas. However, Amoco has demonstrated that it is not subservient to the interests of the institutional field. As a powerful member of that field, the company can also change how it is formed and the perspectives, values and norms that it embodies. External interaction has been used to re-direct influence in the opposite direction. The most dramatic effort of this type has been a partnership with the Environmental Protection Agency to study pollution reduction possibilities at Amoco's Yorktown refinery in 1990. To add credibility to the effort, the environmental research group, Resources for the Future, was commissioned for external peer review. The idea that an oil company would allow both a regulating agency and an environmental group access to one of its major refineries was a bold step. Many inside the firm (and inside the industry) speculated that this would open Amoco to increased enforcement and activist scrutiny. Despite these fears, Amoco executives feel vindicated that the study successfully showed tremendous opportunities for more cost effective solutions to environmental problems than were specified in the new Clean Air Act.

Through the Yorktown project, Amoco showed both the government and themselves that greater regulatory flexibility will allow them opportunities for greater emissions reduction while at the same time reducing costs. Specifically, they could achieve the same level of emission reductions as the Clean Air Act required, but at one quarter of the cost (\$10 million versus \$40 million), if they were allowed to choose where the money should be spent. This could be done by enlisting the help of process engineering in finding more creative solutions to environmental goals. Rather than responding to EPA dictated technology and performance standards (which, themselves, are based on "Best Available Technology" standards) the EH&S Vice President believes that "if you give this

company a mark on the wall and tell them to go for it, I have no doubt as to their capability to achieve it." A former refinery manager agrees, "When we push for more flexible options, I'm taking a lot on faith. I have to believe that we have engineers who know our processes a lot better than some 25 year old (EPA) engineer in Cincinnati or at Research Triangle Park."

In terms of direct benefit, the Yorktown project would appear to have been unsuccessful. However, company executives are comfortable with the objective of changing attitudes within the broad group of firms which can affect their external environment. Explains a senior corporate lobbyist, "In direct terms, Yorktown was a failure. It created no benefit for the plant itself. We gained nothing economically. We still had to comply with the regulations that were coming about. Other companies were and are saying we were crazy for doing that project. Other plants within Amoco don't want to do this kind of project again. They just don't have the budget for doing this kind of a study. . . But overall, we would not at all consider it a failure. The PR benefits alone raise the integrity of Amoco and that is quantifiable."

But, the individual benefits of such a program are limited. He acknowledges a joint ownership of the problem much like the *n*-player prisoner's dilemma discussed in section 3.5, proposition 2. "We are still an oil company and we still have to live with the sins of our brothers. We were doing fine until Exxon spilled all that oil. Then we were painted with the same brush as them, now we have OPA-90. In this business, your environmental integrity is based on your lack of problems with the other members of your industry." He stresses that with the Yorktown effort, "Now its time to bring in other players. We had to prove to other stakeholders that this was worth fighting but we don't have the clout to stop something in Washington. Anything we did alone could be stopped by Exxon or a group of other companies." Toward that end, in 1992 the

Yorktown project has evolved into the Environmental Innovations Program (EIP), a direct advocacy program focused on gaining greater acceptance of more flexible regulatory mechanisms by gaining both industry and government support. However, convincing your own company to try something new³⁸ and developing data to support your position proved a much more obtainable task when compared to changing the opinions of industry and government. States the founder of the EIP program "Finding out what everyone wants is very difficult. What essentially it boils down to is that we've spent 25 years perfecting the command and control response. It's hard to get people to switch from what they know best."

Shifting Posture and Power Issues. Within the organization, EH&S is finding its status raised into the upper ranks of the corporation not only through its promotion to upper level positions, but also by upwardly mobile managers who are starting to pass through EH&S positions on their way up the ladder. Two upper level refinery managers have recently moved into the EH&S department, one continuing on to become General Manager of crude oil operations for the Pipeline Company. Clearly, his stint in EH&S did not hinder his career advancement and may have helped it. One executive believes that this kind of career development is inevitable for two reasons: (1) environmental insights are becoming increasingly important at the upper levels and (2) "You merely have to do a statistical test. In the past there simply weren't many

³⁸ According to the lead manager for the Yorktown project, "This project required no Board approval. As (the President of the oil company) said, 'by the time I found out, we were already pregnant.' We merely presented it and they said go ahead. This was quite surprising given that we were in a cost containment mode. The project was the responsibility of (the Chief Counsel), (Vice President, EH&S) and (Vice President, Refining) and cost \$2.3 million, of which Amoco paid 70 percent and the EPA paid 30 percent.

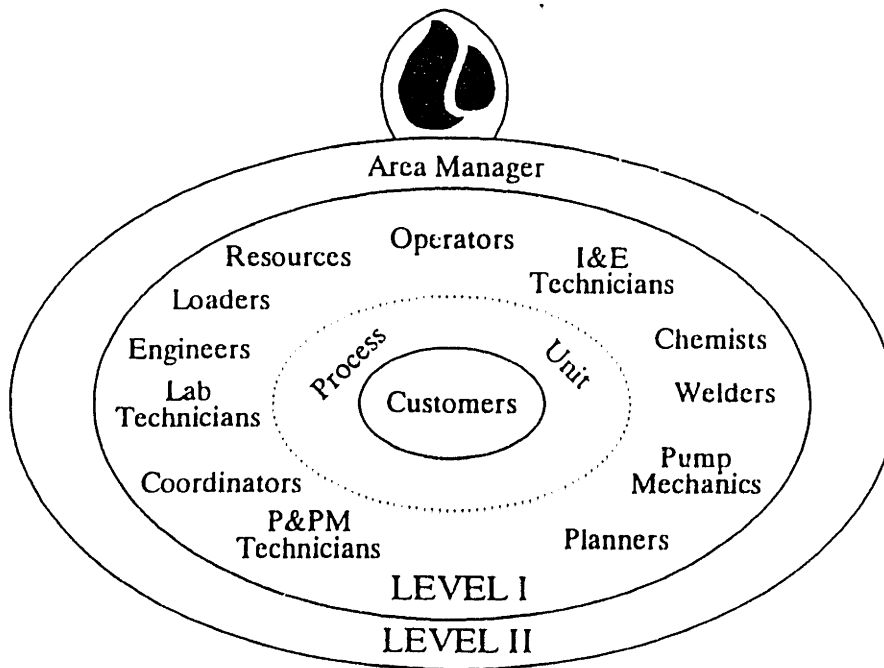
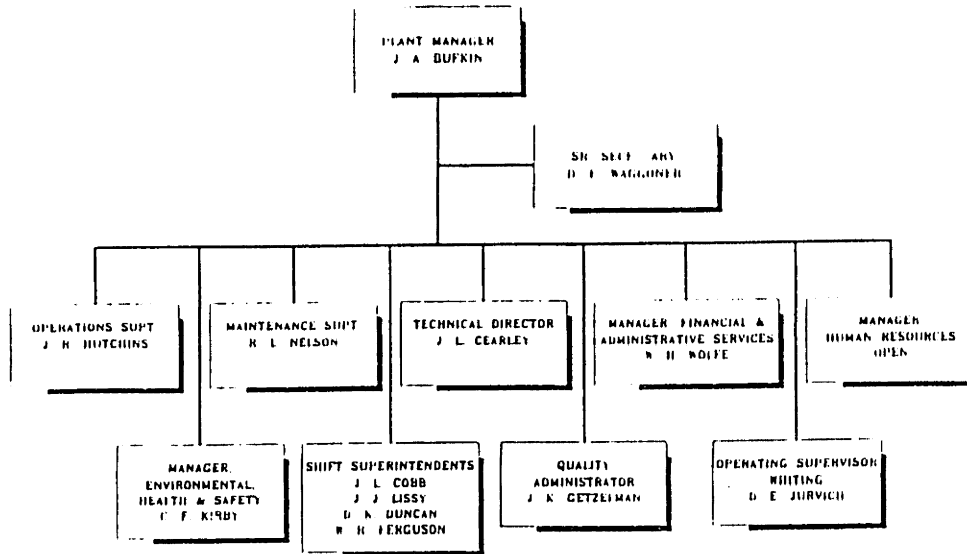
environmental jobs for people to move through. Now that the department has grown, people start to float in. It's kind of a chicken and egg kind of thing."

This is also seen as a way to integrate operating perspectives into EH&S and, when transfers occur in the opposite direction, helps to integrate environmental concerns into operations. Just as the boundaries of the organization have expanded outward, so too have they expanded inward. The move, however, remains a tough sell in many parts of the company. One chemical plant manager explains "I think that today, it's very beneficial, particularly at a young age, to get EH&S background and then rotate back into the line. We are always trying to get people to do that. Some line people are reluctant however because they think EH&S is a dead end. We're trying to change that."

So fundamental is this kind of change that he feels he must completely breakdown the organization and completely rebuild it. "We are in the middle of a complete reorganization that will eliminate the traditional hierarchy. We decided that you have to completely reorganize to get cultural change. The biggest obstacle was middle management. That level will be eliminated. It took alot of guts for the plant manager to do this. We're trying to change the way people think. Sometimes when an organization is so resistant to change what you need is an atom bomb to make it happen. Right now we have a definite time line when positions will be eliminated."

Describing the new structure — see figure 8-8 —, "With a team-based environment and open communication, each person will be aware of their environmental responsibilities. They won't know the regulations. For that, a person on the management team will be consulted. But, these people will know enough to ask. That way we will deal with such problems first rather than after

FIGURE 8-10
Original and New Type of Chemical Plant Organizational Structure



where we have to spend a whole lot of time extricating ourselves from the EPA after the fact like we do now."

On the broader corporate level, attention began to be directed at tying pay to Environmental, Health and Safety performance in 1991. After conducting a survey of eight companies (Allied Signal, BP, Chevron, Exxon Chemical, DuPont, Mobil, Monsanto and Unocal), the EH&S Vice President decided in a July 24, 1991 memo that, "If you look at those companies where performance is clearly better than ours, for example DuPont in the area of safety, they include environmental, health and safety objectives in their measures of performance. therefore, I believe it is something we have to learn to do correctly."

Regardless of pay structures, environmentalism is diffusing. Associated internal functions are finding their roles and responsibilities transformed as environmentalism integrates into the organization. For example, Public and Government Affairs has seen its environmental efforts grow from a small part of its responsibilities in the early 1970s to occupying 40 to 50 percent of its time today. Human resources has also adopted environmental responsibilities as the Corporation as a whole has seen an increasing need to hire top EH&S personnel. In 1992, Amoco assigned a human resources representative directly to the EH&S department. And, the legal staff has felt the impact. While it has always been involved in environmental matters, the legal liabilities associated with underground storage tanks (property transfer and state and federal cleanup laws) has resulted in the addition of 3 lawyers since 1991 whose sole responsibility it is to handle Amoco's property contamination claims.

At the plant level, by the early 1990s, some environmental positions at the refineries were moved out of the main offices and stationed at the process units themselves. At one chemical plant, the EH&S manager stated that "we have such

a good relationship with engineering that you really can't tell us apart." That can be attributed in part to the growing environmental responsibility at the plant level and in part to the increasing practice within that particular plant to recruit EH&S engineers from the process engineering department.

Even in defining their product, environmentalism has altered definitions of quality. Amoco's advertising representative D'Arcy, Masius, Benton and Bowles believes that the public is beginning to perceive environmental benefits as synonymous with quality. Such an association will force the integration of environmental leadership into standard advertising programs.

8.6. The Future of EA&S at Amoco.

The trade journal analysis of industry strategy in chapter seven depicts an oil industry that has become defensive in its posture towards environmentalism. Although it remains open to the input and influence of a wider group of external stakeholders, the industry appears to view the issue as moving beyond reasonable expectations, particularly as the industry faces serious economic difficulties. Yet, Amoco in 1993 appears to be continuing its development of proactive environmental strategies. How long that posture will last is not entirely certain. The economic hard times that are affecting the industry are also affecting Amoco.

So much so that on March 11, 1994, the Amoco Corporation Strategic Planning Committee sent a letter to all employees stating: "Just a couple of months ago, we closed the books on a fairly good year. Our net income exceeded \$1.8 billion. Our return on capital employed was second best among the majors and we were the only company among the majors to have revenue that was actually greater in 1993 than in 1992. Yet, despite this profitable performance, the

financial markets regarded our stock with indifference. While some of our competitors rewarded their investors with gains of 25 to 30 percent, we failed to match even the Dow Jones Average. All of us should find this troubling." As a result of this development, the Planning Committee felt that "it has become evident that we must change our organizational structure in a fundamental way to accelerate our progress. . .It is clear that the restructuring will involve the elimination of a substantial portion of our cost structure, which will result in a significant transfer of people and a net loss of jobs throughout the corporation."

How EA&S will fair in such a staff reduction is not clear. Whether it will follow a similarly declining trend as that observed in industry attention remains to be seen. What is clear is that the process begun in 1992 will continue with environmental responsibilities being pushed further down to the operating level. The objective is a reduction in the corporate level support function. This objective appears to align with another the objective of the EIP Program. With the increasingly oppressive state of environmental regulation , executives are looking to that program as a way, not to dig in and oppose the changing external environment, but as an opportunity to change it such that they can gain competitive advantage.

According to one senior EA&S manager "All I see is the complete frustration in the 1990s with the pure political nature of environmental regulations. There is no scientific economic or even environmental reason for some of this stuff. We've come to the point where we're saying 'this is crazy, we've got to do something different'. It's a matter of growing environmental awareness. Maybe the Clean Air Act was the lightning rod." A former refinery engineer concurs, "I used to think that there would be an end to all this regulation. But, every time I say what's left to regulate, then we find something.

Look at carpooling issues. How far will this go? Before we're done, I wouldn't be surprised if the oil industry will be subsidizing highway projects."

Finally, a senior legal counsel adds, "I would divide Amoco's posture into two stages. One 'when we could afford it' and the other 'when we couldn't'. That split came around 1989. As concern for the costs of environment start to escalate, our posture towards dealing with it changes too. Look at the price of oil. Back in the early years, we were awash with money. It was easy to say we'll comply with whatever laws came down the pike. But now with profits getting cut back, the concern for the expenditures for environmental matters — expenditures that have no return — grows."

Coupling the imperative of the industry's economic situation with the flexible goals sought by the EIP Program suggests that a cutback in the EA&S department is imminent. Yet, this cutback would likely be undertaken with a concurrent shift of environmental responsibilities into core operating functions. In fact, signs of the need for a cutback are already becoming evident. According to a July 30, 1991 AOC Environmental and Safety Organizational Study³⁹, an overlap of job functions exists between EA&S, refinery staff groups and the line, each group interpreting the regulations separately and developing training materials and programs⁴⁰.

Executives acknowledge that such a transfer of responsibilities would mean a reduction in the need for the EA&S function. "They would become more of a support function like human resources or accounting", says one executive.

³⁹ Based on internal reviews and a survey of the EH&S structure and functions of five companies (DuPont, Dow, Chevron Oil Company, Shell Oil Company, and Exxon Oil Company).

⁴⁰ According to a recent internal Amoco study, not only are the 303 members of the corporate and operating company EH&S departments working on environmental issues, but an additional 413 (117 for oil, 137 for production and 158 for chemicals) employees are performing this task in the field. The true number of employees dealing with environmental affairs on a part-time basis or as an associated part of their day-to-day operations would be difficult if not impossible to measure.

Building on this analogy, another executive sees fundamental changes, "we are trying to build this idea as part of the framework and overall requirement of doing business. For example, engineers have become more astute businessmen. Does this mean that we should get rid of accountants. Likewise, we've all become novice lawyers in this era of litigation. But we shouldn't get rid of the legal staff. Now everyone is getting to understand environmentalism. But, it will never go away as a support function. You will always need it as a support function . Even as it becomes more and more understood throughout the organization you will always need it as support."

But such a prediction is clearly a long way off. For the short term, the need for a compliance oriented EA&S function would continue be a necessity while command and control regulations persist. According to EA&S Vice President "Compliance and pro-action are conflicting and contradictions but they can co-exist at least for the short run." Adds another executive "The two approaches can't be segregated. They must understand each other's perspectives. That's critical and imperative. They must be two parts of the same department." It would seem that the creation of this dual purpose EA&S department coupled with a diffusion of environmental responsibilities down towards the operating level will be the next step for Amoco's EA&S department.

Driving that evolution will be continued pressure from the institutional field as it today exists and new kinds of pressure from the field as it continues to evolve. The characteristics and trajectory of that evolution is clear to Amoco's Vice President. "In the last ten years, environment has been driven by an owner's movement placing pressure on companies for greater environmental performance. . . I believe that the next ten years will be driven by customers. Just look at what is happening in Europe with things like the green seals program."

8.7. Discussion: Linking Amoco's Structure and Strategy and the Institutional Field.

The environmental evolution at Amoco reveals new insights into the structural component of institutional dynamics, while also revealing added insights into the evolution of corporate strategy. One important aspect of strategy that it calls attention to is the ability of the firm to act in ways that differ in either timing or in substance from the common conceptions of behavior within the institutional field.

Amoco's evolution was observed to have progressed through an evolution that in part mimics that of both the the oil and the chemical industries, while at the same time demonstrating characteristics that are unique to both. In the first case, the timing of Amoco's environmental evolution preceded that of the institutional field in one case by four years and in another by two years. It would appear that Amoco is leading the institutional field in its development of environmental management practices. The evidence for such a conclusion is multiple.

In 1970, Amoco found that its existing product line was compatible and even gained in its competitiveness by the introduction of the Clean Air Act in 1971. Lead free Amoco white gas had been on the market for many years before the government mandated it. As a result, through its "get-the-lead-out" program, Amoco found itself supporting rather than opposing the increasing controls. This alignment of environmental standards and the competitive nature of the company's products continues today as clear Amoco Ultimate gasoline is one of the few gasoline products to enjoy a price premium for quality. As the customer

continues to perceive that environmentally sensitive products equate to high-quality products, the market for that product should increase.

This lack of a confrontational posture towards environmental demands being placed on the company has been exhibited throughout its history. In the 1970s, when the rest of the industry was observed to have become confrontational with newly developed regulations, Amoco responded with what could be better described as resigned acceptance. Throughout this period, executives stressed that the goal was always regulatory compliance. Such a posture at that time was not as universally accepted as one might expect today. To invest in capital improvements that some believed tomorrow would no longer be necessary was somewhat of a gamble. According to William Ruckelshaus, EPA's first administrator, "Some American industrialists believed that environmentalism was a fad, a lot of nonsense that would go away if they just hunkered down, fought, and publicly confronted [the EPA]" (US EPA, 1993: 14).

In the 1980s, Amoco's strategic differences with the rest of the oil industry appear to have been further supported by its increased involvement with chemical industry initiatives. Even though Amoco is primarily an oil company, the institutional field by which it was most influenced seems to have been that of the more progressive chemical industry. In 1982, when the environmental functions of the operating companies were consolidated in an effort to bring oil environmental practices up to speed with chemical environmental standards, only the chemical company cooperated. Oil and production resisted. As a result, the corporate EH&S function was influenced to a greater degree by chemical industry concerns, perspectives and norms. The company's progressive environmental posture and its continued departmental growth may be the result of this biased chemical industry influence.

But, the effects of this kind of development may be a mixed blessing. The benefits of being an early adopter of environmental practices may help a firm react quickly to perceived changes in the institutional environment, thereby creating a standard to which others must follow. As Tolbert and Zucker (1983) observed, these early adopters develop structural changes that can be identified as signifying an organizational acceptance that the change was necessary for efficient organizational performance. In their study of civil service reform, they went on to observe that late adopters of institutional demands do not seem to be following such imperatives, and thus may simply be mimicking early adopter actions without integrating the underlying values and norms that support the shift.

In times of breakdown, such as the economic difficulties of the late 1980s, these late adopters will abandon the weakly supported institutional structures while early adopters will find the structures integrated into the overall structure to a level not easily extracted. Here is where the positive versus negative effects of being an early mover lie. Returning to the argument discussed in sections 3.4 and 7.8, firms exist within multiple institutional fields. The focal firm interacts with these multiple fields with differentiated attention. In some of these fields, the firm may be an early mover, in others a late adopter. The balance necessary to respond to each in the correct proportion presents challenging possibilities. With all fields in steady flux, each changing in its makeup and its relative influence on organizational operations, the firm must be mindful of which field it must devote its attention to at a particular time. If one field changes dramatically requiring an organizational response, the firm must respond or it must alter one of its other positions within another field so that response becomes no longer necessary. Clearly, the first option presents less of a risk than the second.

To bring the discussion out of the theoretical and into the practical, Amoco has found itself within an institutional field that has changed dramatically. Economic trends are driving down profits and the organization is straining with an imminent restructuring. In the face of this change, other oil firms have decreased the level of attention placed on environmentalism and adopted confrontational postures. As concluded in chapter seven, it would seem that the merging of economic and environmental institutional fields had been pre-empted. Yet, Amoco appears to be continuing its efforts to merge the values and norms of these two fields. By doing so, it appears to be pursuing a path more consistent with the chemical industry to which it seems to be have a closer environmental affiliation. The risk in such a strategy is that it is attempting to change the environmental institutional field so as to dissipate the effects of the economic institutional field. Surely, the no-response option is not a possibility. There is a gamble being played here. If Amoco succeeds, it will create a shift within the environmental institutional field which will create uncertainty for other institutional actors. Amoco feels that it can gain advantage in such an uncertain environment. Whether they can substantially succeed in their efforts to change the field and their ability to respond more effectively than their competitors is the ultimate question. Being an early adopter has helped them maintain a path that others seem to be abandoning. Now it will remain to see whether that path is one that will prove a short-cut to increased profits.

Chapter Nine: The Dynamics of Institutional Negotiation Between Amoco and CERES.

9.1. Introduction

As further development of the hypotheses presented in Part Three, this chapter shifts the unit of analysis from longitudinal trend analysis to the observation of a particular event within that evolution. Directing its attention towards the institutional dynamics taking place between a group of organizations within the fourth stage of the institutional evolution previously discussed, this discussion reveals the complexities of the institutional negotiation that takes place and the evolution of all components of this process: the firm, the institutional field and environmental interests.

Specifically, stage four is marked by the emergence of the new institutional interest, investors, and in particular the emergence of the

environmental investor group, CERES. CERES was as much a reflection of the changes going on within the institutional field that allowed its empowerment, as it was a change agent, whose presence recreated the institutional makeup by which firms developed their strategy and structure. Its emergence was precipitated by a sudden environmental event, namely the Exxon Valdez oil spill. Once a member of the field, the negotiation process by which they engaged industry and, in the context of this dissertation, the Amoco Corporation reveals how the entire social system in which the firm exists is altered from this institutional restructuring and subsequent tendency towards convergence. In an example that provides a clean summary of the ideas of this dissertation, this chapter develops an analysis of the reciprocal interplay and evolution among the field, the firm and environmental interests.

9.2. The Origins of CERES.

The idea for CERES, the Council of Environmentally Responsible Economies, began to form in June of 1988 with the Social Investment Forum⁴¹. The concept was to develop criteria by which investors could judge the adequacy of a corporation's environmental practices so as to direct resources and capital towards those that demonstrate responsible behavior. CERES was as much the product of the social environment as it then existed as it was an original idea.

Neither the idea of social investing nor the idea of environmental investing was a new concept in 1988. The Sullivan Principles, aimed at using investor resolutions to convince companies to discontinue operations and cut ties (such as licensing and franchise agreements) with South Africa, had been in existence since 1977. So too were the McBride Principles, designed to convince

⁴¹ Which itself, formed in the early part of the century around peace issues.

companies through investor resolutions to endorse a non-discrimination code aimed at creating equal opportunity for Catholics in Northern Ireland.

The idea of using environmental concerns to guide investor decisions emerged in the mid-1980s. Investors, interested in capitalizing on the growing opportunities created by environmental protection, spurred the creation of several environmental investment funds, including those run by Oppenhiemer Global, Fidelity, Freedom, Merrill Lynch, New Alternative, Progressive and SFT. While most of these funds were designed to capture the growth potential of companies providing waste services, such as Waste Management Incorporated, some acted as social investment funds, attempting to direct capital and resources towards those companies that demonstrated responsible behavior.

The emergence of CERES was a reflection of this social environment. The situation in South Africa was just beginning to show signs of resolving itself, thus freeing up a great deal of social investor energy, and the issue of the environment was beginning to explode. What was really necessary to solidify the idea and bring it to fruition was a precipitating event. That occurred on March 24, 1989, when the Exxon Valdez oil tanker ran aground on Bligh Reef off Prince William Sound, spilling 10.8 million gallons of crude oil from the Alaska's North Slope. In actuality, it was not the specific characteristics of the spill that caused the CERES response. It was both the timing and the social context in which the incident occurred. According to Joan Bavaria, one of CERES' founders⁴², "Valdez was really a matter of convenience. It was a tragedy that moved a cause. Environment as an investor issue really started up in 1981. It was in the early part of 1988 that things really heated up when we had Bhopal, dirty beaches, and the big media press. . . We were really a reflection of changes going on within

⁴² And President of Franklin Research and Development Company, a social investment firm based in Boston.

the environment." In essence, the Valdez acted as a catalyst, not creating institutional change, but rather speeding the process of change that was already in motion.

CERES formed as a coalition between socially responsible investors (SRI) and the environmental movement. According to one of the earliest mission statements, this collaboration was made possible when the objectives of each group were noted to have converged over the course of time. "In the most narrow sense, SRI advisors are concerned that environmentally unsound practices will undermine the economic health of corporations, and therefore reduce the risk-adjusted return of investments in that firm. Simultaneously, environmental groups are looking for ways to convince corporations of the necessity of environmentally sound behavior."

Present at its first meeting on April 14, 1989 were representatives from: the Sierra Club, the Audubon Society, Environmental Economics, the National Wildlife Federation, World Resources Institute, the Global Tomorrow Coalition, First American Financial Co-Operative, Hambricht and Quist and the Social Investment Forum Board. Later meetings would also include representatives from the US Public Interest Research Groups (PIRG), the United Nations Environment Program, the United Nations Center on Transnational Corporations, the New York City Comptroller's Office, the Council of Economic Priorities, McKinsey and Company, Commonwealth Capital Partners, OPIC and the Industrial Union Department of the AFL-CIO⁴³.

According to the minutes from that meeting, the mission of CERES would be "to coordinate an investment response to the environmental crisis from the private sector." The founding goals were to "guide the allocation of capital,

⁴³ According to CERES, the investment groups they represent control more than \$150 billion in invested assets.

influence corporate behavior, and create public support for environmentally sound policies." Its methods would be that of "a resource center. Its job is to gather data, bring different people together with the goal of deciding upon strategies and catalyzing joint action, then act as a clearing house for the skills and information required to make those actions succeed."

The role and capabilities of the organization seemed clear to its founders. Just as the Exxon Valdez acted as a catalyst for its formation, not causing but hastening it, so too was CERES a catalyst in the evolution of institutional thought. It would not create change where change was not already happening. The key to making that change would be creating coalitions with a diverse group of institutional constituents. An early internal memo states that, "Because the SRI community knows that its major impact is as a catalyst and model, CERES will always seek to reach out and link up with potential allies and seize every opportunity for public education."

The first step was to create a set of corporate environmental principles. However, reaching consensus with such a disparate group proved difficult. According to Bavaria, "The environmental groups helped us put together the principles in the summer of 1989. Getting these groups to align was very difficult. For example, the World Wildlife Federation membership overlaps about 75 percent with the National Rifle Association. This kept them from agreeing on certain restriction on resource use that other groups such as Sierra were pushing. There was no business input in the original design. At the original drafting there was no way we could have gotten the environmentalists and industry at the same table."

On September 7, 1989, CERES publicly announced the Valdez Principles, a set of ten guidelines for environmentally responsible behavior. In a presentation at MIT in 1991, CERES project director boiled the principles down to their

essence. "The number one issue is disclosure. We want a standardized way of letting investment managers know about environmental aspects of the business. If you look at a company's financial sheets you know that they will be the same for a big company as well as a small company, allowing easy comparison. We want that here. The Chairman of Price Waterhouse once said that 'environmental accounting is what financial accounting was 100 years ago.'"

Media coverage of the principle's announcement was extensive. It included the *New York Times*, CNN, FNN, *LA Times*, *San Francisco Chronicle*, *Fortune*, National Public Radio and *Business Week*, among others. Over 200 requests for copies of the principles were received immediately after the first press conference, prompting CERES to hire a professional public relations specialist to handle media relations.

On November 16, 1989, CERES presented the principles to seven corporations whom they had thought were exceptionally good in the area of environmental controls, most notably, Polaroid and H.B. Fuller. Many were upset at not having been provided an earlier opportunity for input. According to Bavaria, "Interestingly enough, some companies that we thought would be allies were offended. 'Who are you to tell us what to do.'" According to internal records, "We [CERES] had intense dialogue with two or three who thought the principles were a really good idea and want to work with us in developing them." CERES hoped these companies would help "find pitfalls and unfair clauses but will make sure that we retain the integrity, or toughness of the principles." The group was intending to develop a strong and firm set of principles that would set standards throughout industry.

A second meeting to gather corporate feedback was held on December 7, 1989 and was attended by thirty-two people representing all fifteen corporations invited. According to the minutes from that meeting, it became clear to CERES

that corporate response was strong. They had heard from over sixty companies thus far, "particularly in the chemical, manufacturing and extractive industries" and it was "clear that a great deal of discussion is going on between companies about how to respond." Companies seemed to be responding as a group, in reaction to an initiative that was supported as a group.

In December 1989, the first series of letters went out to potential signatories. The legal counsels of 3,000 companies were contacted, asking them to become signatories, including all *Fortune* 500 companies. According to Bavaria, "after drafting, we originally wanted to target companies, find companies that we thought were cutting edge. Companies that we thought would accept. However, after the first announcement, we were inundated with press calls. We lost the ability to target since we were consumed with handling the press."

Aside from the blanket mailing, investor initiated resolutions were also being proposed for a select number of upcoming corporate shareholder meetings in the Spring. These seemed to be targeted strongly at the chemical and petroleum industries. Of the forty-three environmentally related environmental resolutions in the Spring of 1990, twenty-three were initiatives to sign the Valdez Principles. Of those twenty-three resolutions, seven were directed at chemical⁴⁴ companies and nine were directed at oil companies⁴⁵. Most of the sponsors of these resolutions were religious groups working through the New York based, Interfaith Center on Corporate Responsibility. However, three large pension funds — the New York City Retirement Systems, the California Public Employee's Retirement System and the California State Teacher's Retirement System — also came out in favor of the principles. Figure 9-1 depicts the trends

⁴⁴ Allied Signal, Dow, DuPont, Eastman Kodak, Ethyl, Imperial and Union Carbide.

⁴⁵ Amoco, ARCO, Chevron, Exxon, Mobil, Occidental, Philips, Sun and Texaco.

in investor initiated Valdez resolutions. As can be seen, after an initial peak in 1991, the level of investor pressure remained steady over time. However, the form of that pressure would change, succumbing to the pressures of the institutional field which it was trying to change.

FIGURE 9-1
Investor Initiated Valdez Resolutions



(Source: IRRRC (1989-1994))

9.3. The Response and Evolution of Amoco.

Amoco, as did all oil companies, closely monitored the activities of CERES early. The first record found in Amoco files was the September 10, 1989 *New York Times* article which effectively introduced the Valdez Principles to the country. As Amoco executives began to analyze their significance, they also watched carefully as industry representatives began to respond. On September 25, Dow Chemical issued a press release responding to the Valdez Principles, complementing the program but pointing out its alignment and overlap with the CMA's Responsible Care program. On December 13, 1989, the American

Petroleum Institute (API) presented the initial results of the Quality Performance Standards Task Force which was developing the STEP Program. As possible models for the program, the Valdez Principles were included with a review of EPA's Corporate Excellence in Environmental Protection and the CMA's Responsible Care Program.

On December 14, Amoco received its first contact from CERES. A letter sent to the CEO, Richard Morrow, invited the Amoco Corporation to become a "founding signatory" of the Valdez Principles. Almost immediately, Amoco showed internal sensitivity to the very name of the initiative. In a December 29 memo, the EH&S Vice President wrote "because of the very negative connotation of 'Valdez' we prefer to refer to this effort as the CERES principles." In recommending against signing, the memo goes on to argue, "I believe we would be wise to do something very proactive and try to 'sell our view', rather than wait until the heat is turned up."

Amoco executives resisted the idea of signing on to external corporate practices which they felt were equivalent to turning over corporate governance to a third party. They also felt that they were redundant with other programs of which they were a member. As one EH&S executive put it, "With so many programs out there that were vying for our endorsement, [the EH&S Vice President] adopted the attitude that 'you can't be Catholic and Protestant at the same time.' [The President] felt very strongly that we should never let a third party have control over company operations."

In a January 24, 1990 letter from Morrow to Joan Bavaria, Co-Chair of CERES, Amoco declined the offer stating "Amoco Corporation, while unequivocally committed to progress in protecting the environment, is not prepared at this time to either accept or reject the 'Valdez Principles' in their entirety. Thus, we choose to decline to become a signatory of the Principles at

this time. Nevertheless, we do concur wholeheartedly with the underlying objectives and spirit of the Principles and with the commitment of the CERES project, coalition members and investors for a sound, continuing business policy on environmental issues."

Along with the request to become a signatory, letters were also received from nine religious investment groups⁴⁶ proposing a Valdez proxy statement at the upcoming shareholder meeting in the Spring of 1990. Amoco executives negotiated with these groups and, in return for their agreement to withdraw the resolution, agreed to publish an environmental progress report within six months of the annual meeting⁴⁷. The company decided to use the fall, 1990 issue of the corporation magazine, *Span*, for this purpose. Nicknamed the "green-span", the issue outlined Amoco's position on the Valdez Principles and provided reporting data for shareholders.

This would be the first of several Amoco's actions resulting from the emergence of CERES. Consistent with item number nine of the principles, CEO Richard Morrow also recommended that a board level EH&S Committee be formed. In a January 3, 1990 memo, he cited his reasons as, "increasing public and political support for environmental concerns, as evidenced by resolutions from Amoco shareholders, public opinion polls, comments by both Republican and Democratic politicians, and efforts by CERES to enlist investors". Later, in the memo, he addresses what he sees as a significant change in the external forces pressuring for corporate environmental action, "Fundamentally, this means that instead of command and control, we can expect direct shareholder

⁴⁶ The Evangelical Lutheran Church of America, the Sisters of Charity of Saint Elizabeth, the Oblate Conference, the United Methodist Church (World Division), the Mount Saint Vincent Mother House, the Pension Fund of the Christian Church, the Christian Brothers Investment Services, the Loretto Community, and the United Methodist Church (Women's Division).

⁴⁷ In fact, of the twenty-three resolutions regarding the Valdez Principles initiated that year, ten were withdrawn due to such responses by the target companies.

and customer action." After its formation, the first responsibility of the committee was to consider whether Amoco should become a signatory of the Valdez Principles.

According to one senior EH&S manager, CERES precipitated, but did not create this action. The process of creating a board level committee had already begun, "we were already looking at what other companies were doing⁴⁸. But, we didn't want to be caught by a shareholder proxy forcing us to do it. So, for a lot of industries, Amoco included, it was a defensive maneuver to counteract CERES."

Meanwhile, CERES shareholder resolution efforts continued. On December 6, 1990, internal Amoco records note that two environmental resolutions had been submitted for consideration at the April 23, 1991 annual meeting: the Valdez Principles and a Friends of the Earth toxic chemical reduction proposal. Amoco viewed these as an "undesirable and unwarranted intrusion into Corporate affairs." Both the Sierra Club and the Wilderness Society applied direct pressure, their Presidents personally requesting that Amoco sign the principles. However, Amoco executives remained firm.

In a December 17 memo, Amoco management laid out three fundamental reasons for rejecting the Valdez Principles: (1) In response to the ninth CERES principle that "one board member be qualified to represent environmental issues", the board felt that "reserving directorships for individuals with a narrow agenda and single-issue constituency is contrary to fundamental notions of good corporate governance"; (2) In response to the seventh CERES principle that the company "take responsibility for harm we cause to the environment by making

⁴⁸ Industry appears to have been very carefully watching the actions of others at this time. For example, on February 28, 1990, a concerned fax from Unocal's director of environmental affairs asks if the attached article is true. The Vice President for EH&S assures him that despite what the article says, Amoco will not sign the Valdez Principles.

every effort to fully restore the environment and compensate persons adversely affected", the board felt that agreement might open the company up to increased legal liability. "Many of the principles could be used as evidence of a standard of legal responsibility against which the corporation's conduct is to be measured"; And (3) In response to the tenth CERES principle for self-auditing and eventual independent auditing over which CERES would establish procedures, the board felt that "the role which CERES appears to be carving out for itself would be that of special interest overseer, inquisitor and judge."

Summing up this position, Amoco's Associate General Counsel wrote in a *Wake Forest Law Review* article, "The Valdez Principles represent a well intentioned attempt to speed corporate progress by motivating companies to move beyond mere compliance by the voluntary adoption of environmental 'stretch' goals. However, the lack of specific guidance for decision making, the requirement that companies commit to compliance without specific requirements, and CERES' self-appointed role as standard setter and judge, all combine to create policy and legal issues which make adoption a difficult and risky decision for companies and frustrate the ultimate achievement of the Principle's goals" (Carpency, 1991: 37).

Fundamentally, Amoco executives remained unconvinced of the need for an external set of generic principles or the advisability of putting accountability in the hands of a self-appointed group. A formal board resolution is drafted not to sign the Valdez Principles and Amoco petitioned the Security and Exchange Commission (SEC) to have both the Valdez Principles and the Friends of the Earth resolutions excluded from the upcoming proxy statement. On March 19,

1991, the SEC rejected the companies arguments and the resolutions remained on the agenda.⁴⁹

In the April 23, 1991 annual shareholder's meeting, the Valdez Principles received an 8.6 percent supporting vote from Amoco shareholders. According to SEC rules, if a resolution receives 3 percent of the vote, it is to remain on the subsequent year's ballot. If it receives 6 percent, it remains on the subsequent two year's ballots. Therefore, the resolution was guaranteed to be recalled at the 1992 shareholders meeting. Executives grew concerned that actual shareholder support may have been greater than the endorsing votes reveal. When the number of abstentions are included, the Amoco vote could actually exceed 20 percent. This was well within the range that Amoco observed of other companies for that year — see table 9-1.

TABLE 9-1
1991 Shareholder Voting Results on Valdez Principles

| <u>Company</u> | <u>Percentage of Shares Voting</u> | | |
|-------------------|------------------------------------|----------------|----------------|
| | <u>For</u> | <u>Against</u> | <u>Abstain</u> |
| Amoco | 8.6 | 91.4 | 12.6 |
| Exxon | 6.3 | 93.7 | 20.4 |
| Occidental | 14.9 | 85.1 | 10.0 |
| Mobil | 8.3 | 91.7 | 6.5 |
| American Cyanamid | 12.0 | 88.0 | 8.7 |
| Dow Chemical | 6.4 | 93.6 | 13.0 |
| General Electric | 7.3 | 92.7 | 9.6 |
| General Motors | 9.0 | 91.0 | 15.8 |
| McDonalds | 9.4 | 90.6 | 8.2 |
| Waste Management | 9.5 | 90.5 | 9.2 |

⁴⁹ That year, two oil companies, Texaco and Chevron were successful in getting the SEC to rule in their favor and allow them to exclude the Valdez Principles. Texaco argued that its Valdez resolution was "moot" because it had hired the consultant, AD Little Co., to conduct an outside audit of its environmental policies. Chevron argued that it was asking shareholders to endorse its own comparable corporate environmental policy (which eventually received 98.3 percent of the shares voting). Amoco became aware of these defense strategies, but too late for this year's SEC ruling. Internal memos take special note of these as possible strategies for next year, if needed.

Seemingly spurred on by the CERES movement, Amoco began the process of incorporating the pro-active language of the Valdez Principles into its Health, Safety and Environmental Policy. Responding to the CEO's earlier suggestion of "developing some 'Amoco Principles' that we could adopt rather than negotiating on the Valdez Principles," the EH&S Vice President pointed out, in a May 30, 1991 letter, that an internal set of principles would be preferable and that he has "recently undertaken a process to redraft Amoco's Health, Safety and Environmental Policy so that it is consistent with Amoco's Mission, Vision and Values⁵⁰ in tone and content." As a result, the EH&S policy also underwent a fundamental shift from a compliance oriented document towards a pro-active one, pledging the corporation to commit to environmental leadership — see figure 8-9.

When asked if CERES caused the formation of the new environmental policy, one EH&S executive answers, "Yes and no. They influenced their redraft but, previous to that, we had spent a lot of time looking at other companies policies. There was a directional shift within industry at that time. It was greater in the chemical industry than in the oil industry. It started with the CMA's CAER program which really started pushing companies towards community responsibility and the idea that they were responsible for the well being of their neighboring communities. This, coupled with the Canadian Chemical Manufacturer's Association program, was the genesis of the CMA Responsible Care program. So, in a sense, CERES precipitated a movement within industry.

⁵⁰ The "Mission, Vision and Values", developed in 1990, is a set of goals covering a wide range of leadership objectives across the entire company. One is a declaration of Environment, Health and Safety objectives stating that Amoco "will maintain a leadership position in the protection of the environment, the health and safety of our employees, contractors, the users of our products, and the communities in which we operate."

But, for Amoco, it was more a look at how other companies were moving. We were just looking around trying to decide what to do. Amoco does a lot of that."

Late in 1991, Amoco executives met separately with representatives of both the Friends of the Earth and CERES to discuss the objectives of their investor initiatives. As a result of the first meeting, Friend of the Earth issued a press release on February 14, 1992 announcing their withdrawal of the proposal while complementing Amoco on their "practices and forthrightness on the issues." In the second meeting, Amoco executives were able to convince representatives of CERES, IRRC and the proposers that their environmental progress was such that warranted a lack of a need for external oversight. On February 13, they withdrew the shareholder proposal to sign the Valdez Principles, for which Amoco agreed to meet periodically to exchange views while also agreeing to public accountability of their initiatives.

In the end, Amoco initiated three internal changes that appear to have been precipitated by the pressure exerted by CERES: the "green-span" environmental report, the EH&S Board committee, and the redraft of the EH&S policy. In dealing directly with the external source of the pressure, Amoco had opted for strategies that involved either avoidance or neutralization of CERES' efforts. However, late in 1991, that focus changed.

9.4. The Origins of VERI.

In October 1991, representatives of Amoco and IBM met at a conference sponsored by the Evangelical Lutheran Church of Germany and the United States (the US branch is a major player in CERES). Over a conversation at lunch, Joan Bavaria indicated that CERES would continue to push for increased disclosure as a separate effort from the pressure for the Valdez Principles. In

turn, IBM and Amoco representatives discussed meeting with CERES to develop environmental reporting standards. Concedes Bavaria, "We had nothing promising happening so we got talked into it. IBM saw themselves as statesmen but they wouldn't do things alone. They wanted four or five companies to join them. We brought additional players to the table. We never conceded that this was an alternative. We said this was a good first step."

In January 1992, representatives from IBM, Amoco and CERES met to discuss a new public reporting initiative. According to one of the Amoco executives involved, CERES agreed to two things during the process of that meeting, "One, that its members would refrain from shareholder propositions against participating companies; and two, that these negotiations would be considered as a means of appeasing the CERES interests." This was the basis upon which Amoco, IBM and CERES began to develop an alternative to the Valdez Principles for public disclosure of environmental data.

In the Fall of 1992, Amoco reached a decision point. Explains one of those working on the project, "We wanted at least ten companies on board [with the development of reporting standards] and we wanted it to have a broad base of support among a wide variety of companies. We wanted big corporations, heavy hitters behind it. The group of firms should be broad based, representing multiple industries. We wanted it to have credibility, something that other companies would look at seriously and want to join. This should not be viewed as just one or two companies doing it. The environmentalists would not likely accept it." As for targeting specific firms, the official continued "We really did a big sales job on Bristol-Myers who were in for a very short time but they pulled out. It just wasn't in their culture. We also wanted P&G in it, since they recruited us for GEMI. But if you look at how they do things, they don't want any attention on their plants only on their products."

With the condition of additional players understood, on November 19, 1992, the EA&S Management Committee agreed that it would be a good idea to join the CERES public reporting initiative. By December, the effort had broad support from both industry representatives and public interest groups. Dubbed the Voluntary Environmental Report Initiative, or VERI (to avoid confusion with the CERES Valdez initiative) the effort had gained support from four companies: Amoco, IBM, AT&T and Bristol-Myers Squibb. Also considering to join were BP, Dow, Rockwell International, 3M and United Technologies. CERES agreed to help develop the reporting requirements and act as a clearinghouse for the information once compiled. They would not evaluate or analyze the reports.

Amoco's rationale for joining such an initiative seemed predicated on both diverting investor pressure and preempting possible government action. If the latter objective proved unattainable, participation in VERI would likely gain them a voice in efforts to set government standards. According to a December 2, 1992 memo: "there are significant benefits to sponsorship. There is growing pressure for increased public reporting of environmental performance. The debate is focused on the scope and structure of disclosure and whether it should be voluntary or government mandated. Amoco, through its participation in the development of the report format, has influenced the structure of voluntary public disclosure of environmental policies and performance. Sponsors of the program will have a seat at the table in the forthcoming debate, particularly on the issue of government involvement." As an added benefit, the memo goes on to argue that sponsorship should discourage the filing of a shareholder resolution concerning support of the Valdez Principles. According to the memo, CERES "plan(s) to issue guidelines to its members recommending against filing shareholder resolutions on the Valdez Principles if corporations file the Corporate Environmental Report."

9.5. The Impact of the Sun Oil Company.

While negotiating over VERI, CERES was also negotiating with Sun to become the first *Fortune* 50 signatory of the Valdez Principles. According to Bavaria, "we had two tracks going simultaneously - VERI and Sun. We saw them as both viable." In February 1993, the Sun Oil Company "endorsed" the CERES Principles. Amoco executives were informed of the decision directly by Robert Campbell, Chairman of Sun who wrote an explanatory letter to Lawrence Fuller, the new CEO of Amoco. An internal Amoco memo was quick to point out that "during negotiations between Sun and CERES, Sun was able to obtain two important concessions from CERES. First, the CERES by-laws would change the language from Valdez Principles to CERES Principles. Second, Sun's agreement [to endorse, not sign] is a statement of intent. A goal towards which they would work recognizing the realities of Sun's business."

When asked if Sun's decision created pressure for Amoco to drop the VERI reporting initiative and endorse the Valdez Principles as well, one of the Amoco executive involved in the negotiations dismisses the thought. "Sun did not set the standard with CERES. They don't have any technical advantage over the rest of the industry. Dow has technical power that gave them an edge [in starting the Responsible Care Program]. This is, in part, a public relations game but you must have substance behind your deeds.⁵¹" Aware of the public relations component of their move, Sun had viewed this as a race with VERI. According to Bavaria, "Sun suggested that we drop VERI and focus on them. VERI would have diffused the attention given Sun for signing."

⁵¹ Elaborating on Dow's abilities, the executive adds "Monsanto is doing alot of good work but isn't selling it well. Neither are we. If Dow had done the Yorktown project, they would have had their PR program in full gear."

For Amoco executives, this nearly destroyed the VERI reporting initiative as CERES' credibility appeared to have now been legitimated. As one executive saw it, "A minority faction within CERES got cocky. They felt that since they had a *Fortune* 50 company on board, they didn't need to negotiate anymore. Even though this was a minority position, it threatened to break CERES apart, so they moved in that direction. Hard-liners in CERES announced two changes in their position: (1) All bets were off about refraining from proxy statements with companies negotiating on public reporting; and (2) these negotiations were now viewed as a step towards adoption of CERES. As they put it, 'This [VERI] is a Ford. CERES is a Cadillac.'"

In March 1993, a meeting of possible VERI signatories was held at IBM's offices in New York. An Amoco official present at that meeting recalls, "A group of the companies were uncomfortable from the beginning and this didn't help any. Many had problems with some of the data requirements. Some wanted to start from scratch. The whole thing almost fell apart. Amoco and IBM maintained that they would go ahead regardless of the other companies actions. Dow and DuPont said yes. Monsanto and Olin left. BP was forced to leave because their Detroit office knew about it but their London office did not."

9.6. The Emergence of PERI.

Amoco and IBM officials resolved to contain the hemorrhage and retain interest among the remaining companies. A May 25, 1993 memo acknowledging success, stated that "Amoco and at least nine other companies ended formal discussions with CERES concerning standardized environmental reporting, agreeing instead to develop their own reporting standards." Citing the implications of losing CERES involvement, the memo warned, "CERES

proponents chose not to introduce resolutions at all but one of these ten companies this year, mainly because of their support for standardized environmental reporting. However, since discussions have ended, the ten companies (including Amoco) could become targets of CERES shareholder resolutions next year. The ten companies, Amoco, Dow, BP⁵², Polaroid, IBM, Northern Telecom, United Technologies, Philips, Rockwell and DuPont, have agreed to proceed without CERES, and a formal announcement is expected soon."

At this point, the VERI program was renamed the Public Environmental Reporting Initiative, or PERI. Officially launched on May 26, 1993, with the help of a newly hired public relations firm, letters were sent out to the senior environmental officers⁵³ of over 150 North American corporations and trade associations. The Keystone Center agreed to act as facilitator, increasing support for the initiative with a broader group of stakeholders including environmental organizations and socially responsible investor groups.

Internally, Amoco felt that the PERI effort should put Amoco in a leadership position which could be turned into a business advantage. According to a July 13, 1993 presentation to the Health, Safety and Environment Coordinating Committee, "public environmental reports are important vehicles for increasing the public's perception of a company's social responsibility. Investor fund managers specializing in responsible or 'green' companies are similarly influenced by open reporting. A leader in this arena can not only reap the benefits arising from a satisfied public and 'green' investors but can also put considerable pressure to catch up on the competition."

⁵² An EH&S executive notes that once BP informed all the necessary officials who were previously left out of the loop, BP was able to rejoin the initiative. In fact, after rejoining, BP began to work as a facilitator for introducing a PERI project in Europe.

⁵³ As opposed to legal counsels which were contacted initially by CERES.

In the face of a possible shareholder proposal that Amoco endorse the CERES principles, the EA&S Management Committee decided on December 28, 1993 that, "Amoco's program meets the spirit of the CERES principles. However, past SEC decisions in 1991 were reportedly based on the presence or lack of an auditing procedure, which Amoco (now) does have." In December, Amoco petitioned the SEC to agree to the omission of the proposal based on their prior "substantial implementation" of the CERES principles. In January of 1994, the SEC agreed with Amoco's request, based on four significant improvements since March of 1991: (1) PERI reporting; (2) Improvements in operational and management programs such as crisis management and waste minimization; (3) Changes in the internal auditing function (program and process review); and, (4) Cooperative government programs such as Yorktown (see chapter 8), the 33/50 program and EPA risk management stakeholder meetings.

In February 1994, the first PERI report was completed. It is expected that PERI Europe will evolve soon. Amoco, Dow, BP, IBM, Northern Telecom, Phillips, Polaroid and Rockwell are the member companies with European operations,

9.7. The Evolution of CERES.

Throughout this process of negotiation, it wasn't only Amoco and the other industry members against which shareholder resolutions were proposed that evolved in strategy and structure. CERES was also evolving in their perspectives and their goals. This evolution can be seen both in the evolution of the Valdez/CERES Principles — see Appendix G for the full text of each revision — and the language used by CERES officials to describe their objectives and methods.

In the early stages of forming the Valdez Principles, internal documents in 1989 stated that, "It is not our intention to enter into negotiations to bend the Principles so any company can sign." In essence, CERES was intending to convince companies to sign the principles first, and then rate and publish their environmental status based on third party environmental audits. The companies would then, it was expected, be enticed to improve their environmental performance based on deadlines set by CERES. According to a 1990 statement by CERES project director David Sand, "Corporations will voluntarily sign the principles and then work with CERES and others in defining and refining standards of applicability" (Sand, 1990: 33). However, that position began to waiver as CERES found its tactics to be unsuccessful and its legitimacy being called into question (Zack, 1992). Moving away from the strict non-negotiable position, CERES began to negotiate with companies in order to bring in large signatories, principally Sun, GM and Polaroid.

The language and the name of the principles had evolved as well. The first revision occurred on April 28, 1992 — see table 9-2. The amended version no longer called for the creation of a board level environmental committee, the appointment of an environmentalist director (principle number nine) or the goal of creating an independent environmental auditing procedure (principle number ten). References to the greenhouse effect, the ozone layer, acid rain and smog were removed (principle number 1). Where original versions called for companies to "minimize" environmental, health and safety risks, they were amended to call for firms to "strive to minimize" those risks (principle number five). The language in principle number seven (environmental restoration) was softened by adding that, "to the extent feasible" we will redress damage to the environment. And finally, a disclaimer was added, explicitly stating that signing these principles in no way constituted a legally bound commitment.

According to an interviews with founder Joan Bavaria in 1992, "we added the disclaimer to make [the principles] more non-binding" (Zack, 1992: 58). In another interview she added "we're trying to make it clear that we are not out to micro-manage companies. CERES is not going to get into corporate governance matters" (Cogan, 1992: 57).

TABLE 9-2
Excerpts from the Original (1989) and Amended (1992) Valdez Principles

| <u>Original Valdez Principles</u> | <u>Amended Valdez Principles</u> |
|---|--|
| <p>1. Protection of the Biosphere: We will minimize and seek to eliminate release of pollutants causing damage to the air, water, or earth or its inhabitants. Safeguard habitats in rivers, lakes, wetlands, coastal zones and oceans <u>and minimize contributing to the greenhouse effect, depletion of the ozone layer, acid rain, or smog.</u></p> <p>5. Risk Reduction: We will minimize environmental health and safety risks to employees and communities in which we operate by employing safe technologies and operating procedures and by being constantly prepared for emergencies.</p> <p>7. Environmental Restoration: We will take responsibility for harm we cause tot he environment by making every effort to fully resort the environment and compensate persons adversely affected.</p> | <p>1. Protection of the Biosphere: We will reduce and make continual progress toward eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants. We will safeguard all habitat affected by our operations and will protect open spaces and wilderness, while preserving biodiversity.⁵⁴</p> <p>5. Risk Reduction: We will <u>strive to minimize</u> the environmental, health, and safety risks to our employees and the communities in which we operate through safe technologies, facilities, and operating procedures, and by being prepared for emergencies.</p> <p>7. Environmental Restoration: We will promptly and responsibly correct conditions we have caused that endanger health, safety, or the environment. <u>To the extent feasible,</u> we will redress injuries we have caused to persons or damage we have caused to the environment and will restore the environment.</p> |

⁵⁴ This section on biodiversity was not added but moved from principle number 2 in the original version.

9. Management Commitment: We will commit management resources to implement these Principles, to monitor and report on implementation, and to sustain a process to ensure that the board and CEO are kept informed of, and are fully responsible for, environmental matters. Establish a committee of the board with responsibility for environmental matters. Have one board member qualified to represent environmental interests.

9. Management Commitment: We will implement these principles and sustain a process that ensures that the Board of Directors and Chief Executive Officers are fully informed about pertinent environmental uses and are fully responsible for environmental policy. In selecting our Board of Directors, we will consider demonstrated environmental commitment as a factor.

10. Audits and Reports: We will conduct and make public and annual self-evaluation of progress in implementing these principles and in complying with all applicable laws and regulations throughout worldwide operations. Work toward timely creation of independent environmental audit procedures completed annually and made available to the public.

10. Audits and Reports: We will conduct an annual self-evaluation of our progress in implementing these principles. We will support the timely creation of generally accepted environmental audit procedure. We will annually complete the CERES Report, which will be made available to the public.

Disclaimer: These principles establish an environmental ethic with criteria by which investors and others can assess the environmental performance of companies. Companies that sign these Principles pledge to go voluntarily beyond the requirements of the law. These Principles are not intended to create new legal liabilities, expand existing rights or obligations, waive legal defenses, or otherwise affect the legal position of any signatory company, and are not intended to be used against a signatory in any legal proceeding for any purpose.

The second revision came later, when Sun endorsed the principles in February 1993. In this next form there were two significant administrative changes. First, the CERES by-laws would change the name of the principles from Valdez to CERES Principles. Second, Sun's agreement was to endorse, not sign the principles, making them a statement of intent, rather than a rigid set of directives. As an endorsement, the agreement would be described more as reciprocal recognition. Sun would recognize the CERES principles as being complementary to its own, and in return, CERES would recognize that Sun's principles contain fundamental environmental values by which business decisions should be conducted. Following Sun's "endorsement", all subsequent investor resolutions proposed that companies "endorse" the CERES Principles. "Signing" the principles was no longer requested of any company in 1994.

Some specific language changes in the principles occurred as well — see table 9-3. In the first principle (protection of the biosphere) the original (amended) document stated that "we will reduce and make continual progress towards eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants." This would appear to include the pollutants that are released when Sun's gasoline is burned. The Sun version stated that "we will reduce our overall emissions to the environment (air, water and land) with special emphasis on toxic substances". In principle number three (reduction and disposal of wastes), the Sun version added the caveat that waste disposal will be conducted "in accordance with regulatory standards." In a deviation from the pro-active spirit of the earlier versions, this statement merely pledges Sun to obey the law. Finally, bowing to the limitations of an oil company signing principles that state as a goal, sustainable development⁵⁵, principle number four (energy conservation) is amended to state that sustainability will be considered only "in selecting new energy sources."

In an interview with the *New York Times*, Sun's Chairman Robert Campbell admitted, "This is not a commitment to go out of the petrochemical business or the fuels business." He added in the article, that he did not foresee major changes in company operations (Wald, 1993).

⁵⁵ The very nature of extracting, refining, marketing and finally burning fossil fuels is non-sustainable by definition.

TABLE 9-3

Excerpts from the Amended (1992) and Sun Endorsed (1993) CERES Principles

Amended Valdez Principles

Sun Endorsed CERES Principles

1. Protection of the Biosphere: We will reduce and make continual progress toward eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants. We will safeguard all habitat affected by our operations and will protect open spaces and wilderness, while preserving biodiversity.

3. Reduction and Disposal of Wastes: We will reduce, and where possible eliminate, waste through source reduction and recycling. All waste will be handled and disposed of through safe and responsible methods.

4. Energy Conservation: We will conserve energy and improve the energy efficiency of our internal operations and of the goods and services we sell. We will make every effort to use environmentally safe and sustainable energy sources.

1. Protection of the Biosphere: We will reduce our overall emissions to the environment (air, water and land) with special emphasis on toxic substances. We will pay special attention to the protection of the surrounding environment at present facilities and when planning for new facilities or operations.

3. Reduction and Disposal of Wastes: We will continue to reduce and where possible eliminate waste through the use of source reduction, recycle/reuse treatment techniques. The handling and disposal of all waste will be conducted in a safe and responsible fashion in accordance with regulatory standards.

4. Energy Conservation: We will conserve energy through careful selection of raw materials and energy sources and through cost effective improvements in our operations, including technological improvements in new energy-consuming processes. Environmental protection and sustainability will be considered in selecting new energy sources.

The evolution of the content of the Principles and the method by which they were presented suggests a process of convergence in strategies and objectives between CERES and industry representatives. By developing new sets of principles and amending certain associated requirements, CERES moved more towards the commonly held perspectives within the institutional field. Through this process of institutional convergence, CERES increased its ability to engage in direct influence of industry behavior, but in the process reduced its divergence in goals from those they are attempting to change. The lines between CERES and those within the institutional field began to blur as negotiation occurred in both directions as to the proper standard by which each would act.

In describing the process, Bavaria explains, "We've learned to understand the language barriers and the perspective issues. We have conceded on certain points but we've tried to be adjustable. Throughout, we have made a major effort to retain our integrity. We understand better that we are not a legislative body. What we're after is culture change and forging relationships. Our goal is not to become an institution but to be part of the process. CERES is not a certification program. It's value is the formation of relationships."

While admitting a certain convergence, Bavaria retains an appreciation of the importance of remaining in opposition, "We are trying to keep the tension between environmentalists and industry. We think this is a healthy tension that yields productive changes. That is how we are trying to operate. We are trying to walk the line between working together with companies but at the same time retaining the right to protest if they do something we don't like."

9.6. Discussion: Linking Organizational Interaction and Institutional Change.

As of this date, neither Amoco nor many other major companies⁵⁶, have signed (or endorsed) the Valdez (or CERES) Principles. Yet, the presence of CERES has had a dramatic effect on the state of the institutional field, its associated perspectives on proper corporate behavior and therefore, the strategy and structure of its member firms. According to the Vice President of EH&S for Amoco "I don't deny that CERES was an important event. It got ours and other's attention." Although he feels that "It is not correct that our [EH&S policy] principles were in response [to CERES]", he adds that "CERES was part of a lot of other things going on outside. CERES represented a piece of what was

⁵⁶ General Motors and Polaroid have recently joined Sun in endorsing the CERES Principles.

fundamentally going on which was owners of corporations trying to effect change in corporate governance of environmental issues."

While many other companies may dispute the impact of CERES on their own operations, there seem to be several movements within industry redefining legitimate corporate environmental management along the lines which CERES advocated. For example, since the introduction of the Valdez Principles, many major oil and chemical companies (although not signing on) have followed one of the principles and appointed environmentalists to their executive boards (Cahill & Engleman, 1993) — see table 9-4.

TABLE 9-4
Environmentalists on the Board

| <u>Company</u> | <u>Environmental Director</u> | <u>Affiliation</u> |
|------------------|-------------------------------|--|
| Ashland Oil Inc. | Patrick Noonan | President, Conservation Fund |
| ARCO | Frank Boren | Conservation Fellow, World Wildlife/Conservation Fund |
| Chevron | Bruce Smart | Senior Counselor, World Resources Institute |
| DuPont | William Reilly | Former Administrator, EPA |
| Exxon | John Steele | Senior Scientist, Woods Hole Oceanographic Institute |
| Monsanto | William Ruckelshaus | Former Administrator, EPA |
| Union Carbide | Russell Train | Chairman, World Wildlife; Former Administrator, EPA |

(Source: Cahill & Engelman, 1993)

Similarly, many more have established board level committees on environmental, health and safety matters: as of the middle of 1992, well over one-third of the *Fortune* 100 companies' boards of directors had either a public policy committee or an environmental, health and safety committee (Cahill & Engleman, 1993). Specific examples include: Amoco, ARCO, Dow, DuPont, Occidental, Union Carbide and Hoescht Celanese (Cahill & Engelman, 1993).

Finally, the number of companies preparing public environmental disclosure reports has risen dramatically since 1990 (Touche Ross Tohmatsu, 1993).

CERES was influential in bringing about these changes, but they were also representative of changes occurring more broadly within the institutional field. Other influences such as the Business Council for Sustainable Development and the World Industry Council for the Environment were instrumental in furthering the change in institutional perspectives. But the emergence of groups like these are not independent of the effects of each other and the social setting in which they exist. It was the shift in this social setting which provided CERES with its influential power and it was CERES influential power that furthered the social shift. As such, the organization acted as a catalyst, not creating social change, but hastening it. They did not make something happen that could not have happened otherwise. They fostered a process which was already in motion.

Part Five: Summary and Conclusions

"The earth is to be seen neither as an ecosystem to be preserved unchanged nor as a quarry for selfish and short-range economic reasons, but as a garden to be cultivated for the development of its own potentialities of the human adventure. The goal of the relationship is not the status quo, but the emergence of a new phenomena and new values. Millennia of experience show that by entering into a symbiotic relationship with nature, humankind can invent and generate futures not predictable from the deterministic order of things, and thus can engage in a continuous process of creation"

Rene Dubos (1976: 462)

Chapter Ten: Summary and Conclusions

10.1. Conclusions

In an article entitled "Reflections on the Corporation as a Social Invention" William Meckling and Michael Jensen argue that "the corporation cannot be socially (or otherwise) responsible! However we end up defining it, the notion of 'being responsible' is a normative concept relevant only to human beings. A corporation can no more be responsible than a lump of coal" (Meckling & Jensen, 1990: 24). They continue by arguing that the efforts of advocates for social responsibility are thinly veiled attempts to gain control of the governance structures of the firm. As they see it, "The viability of the corporation as an organizational form depends on the cost of doing business as a corporation" and that "government policies which impose costs on firms who do business as a

corporation will discourage the use of that organizational form. (Meckling & Jensen, 1990: 22).

This dissertation does not dispute the dynamics which they describe. External constraints on organizational form have always been a reality of organizational life. The organizational forms which the industrial enterprise considers viable are not the result of an entirely internal efficiency driven process. They are the result of a composite of social influence. This exogenous pressure comes from, not only government policies, but also from a variety of influential stakeholders. However, this dissertation does differ with their conclusions. It is more than just the organizational forms which are exogenously defined. Internal norms, perspectives and values are all the result of external influence from the institutional field. Moving away from the term "social responsibility" (which is a vague term with subjectively defined moral undertones), firms have values which are imbedded within the underlying beliefs of their corporate culture (Morgan, 1986; Schein, 1985, 1990). Whether that corporate culture is built on the values of high quality or low cost production or the values of a safe workplace or clean environment, values are infused into the underlying system of beliefs which guide organizational action and structure.

Firms have never operated within a social vacuum. All economic behavior is fundamentally a social interaction. The behavior of the corporate organization is directly influenced by the institutional field in which it operates. How that institutional field measures corporate performance and success is a reflection of who makes up the field's constituency and what are the established institutional perspectives that they share. Where Meckling and Jensen see the only legitimate actor in determining such aspects of organizational life as the firm's stockholders, institutional arguments acknowledge that the list is much

larger. The government, other powerful firms, trade associations, environmental groups, employee groups, community groups, insurers, and investors all determine the structural and strategic viability of the industrial enterprise.

Even the most basic aspects of economic behavior are, in some part, an institutionalized set of actions established over time. For example, White (1981) argues that producer/consumer interaction boils down to institutionalized social behavior. "Production markets have two sides", he writes, "producers are a fully connected clique transacting with buyers as a separate aggregated clique. Each producer is a distinctive firm with a distinctive product. Each side continually monitors reactions of the other through the medium of a joint social construction, the schedule of terms of trade. Each producer is guided in choice of volume by the tangible outcomes of other producers — not by speculation on hypothetical reactions of buyers to actions. Each producer acts purely on self-interest based on observed actions of others, summarized through a feedback process" (White 1981: 517).

Through self-interest, each firm acts in a way it believes is autonomously directed and unique. Yet, given that this action is based upon a careful analysis of the actions of those whom executives consider to be legitimate examples, while at the same time executives of those other firms are doing the same thing, individual action becomes normalized. Each "autonomous" action becomes derived from the same set of information and perspectives, whereby the field effectively dictates the form of the successful organization.

White's depiction of producer action underscores the explanation of the corporate environmental transformation presented in this dissertation. Firms engage in actions designed to protect the environment based on the demands and the examples of others, namely the constituents of the institutional field. However, as in all social settings, the institutional field is not fixed. Its makeup and power

balances is in an unsteady flux. As the field changes, so too does the organizational response of the organization. Therefore, to understand how and why a firm behaves as it does with respect to environmental protection, one must expand the unit of analysis beyond the individual firm and understand the power balances and makeup of the firm's institutional field. It is here where the source of both internal and external power supporting environmental management will be found.

10.2. Summary.

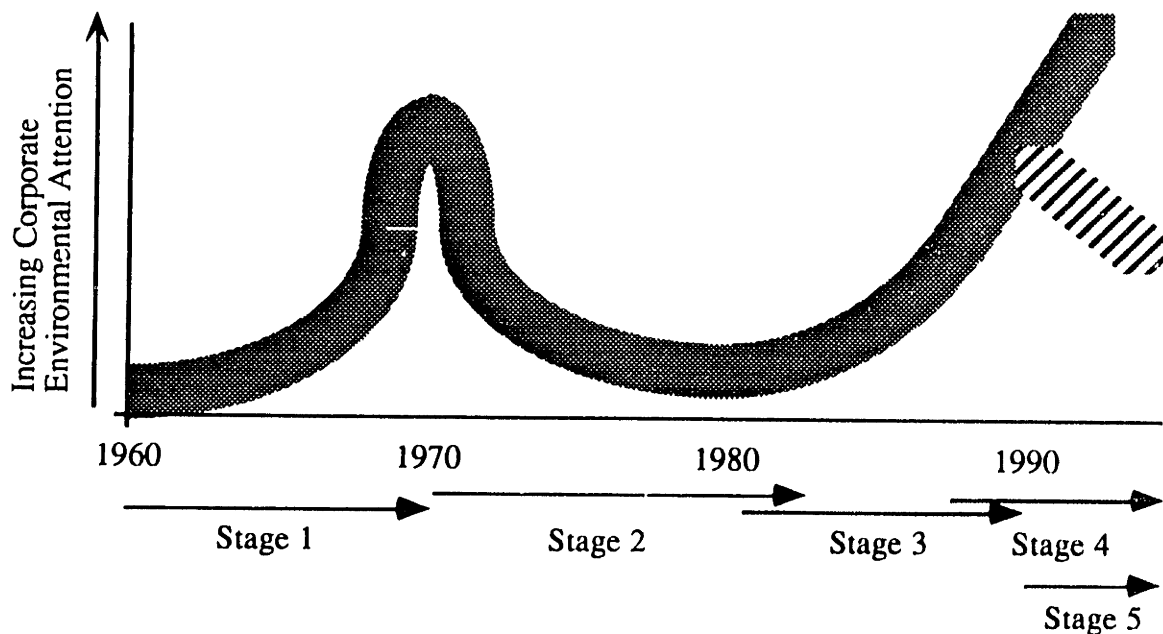
The institutional field was found to have evolved through four stages (chapter 6). Concurrently, corporate strategy was found to have gone through a similarly timed evolution (chapter 7). Through the analysis of a single firm, organizational structure was also found to have evolved in this staged progression (chapter 8). This evolutionary synchronization and the overlap of particular events, institutional actors and institutional perspectives suggests a dependent relationship among the variables⁵⁷. By looking deeper into the institutional dynamics of a particular stage, the interrelationship among these variables are revealed, allowing a more definitive assessment of their linkages (chapter 9). By piecing this data together, the four stage institutional evolution can be depicted along several dimensions.

First, throughout this evolutionary process, industrial firms have encountered ebbs and flows in the level of attention it has applied to the environmental issue. Figure 10-1 depicts trends in the level of environmental attention demonstrated within industry. With the exception of a slight temporal

⁵⁷ Institutional analysis lends itself to an inherent difficulty in doing causal analysis, "particularly when the interface between the micro and macro-orders is complicated" (Galaskiewicz, 1991: 310).

delay⁵⁸, it bears striking resemblance to trends in public concern for the environment observed by Dunlap (1991). Although, the oil industry entered a fifth stage in 1990, that the chemical industry has yet to reach, it would be likely to expect that this will eventually happen. Given the limitations of both the percentage of space within the journal available to be devoted to environmentalism, and the percentage of space within the institutional framework for focusing on the environment, eventually the level of attention that the industry pays to the environment will again decline (as in the early 1970s).

FIGURE 10-1
Trends in Corporate Attention to Environmental Issues

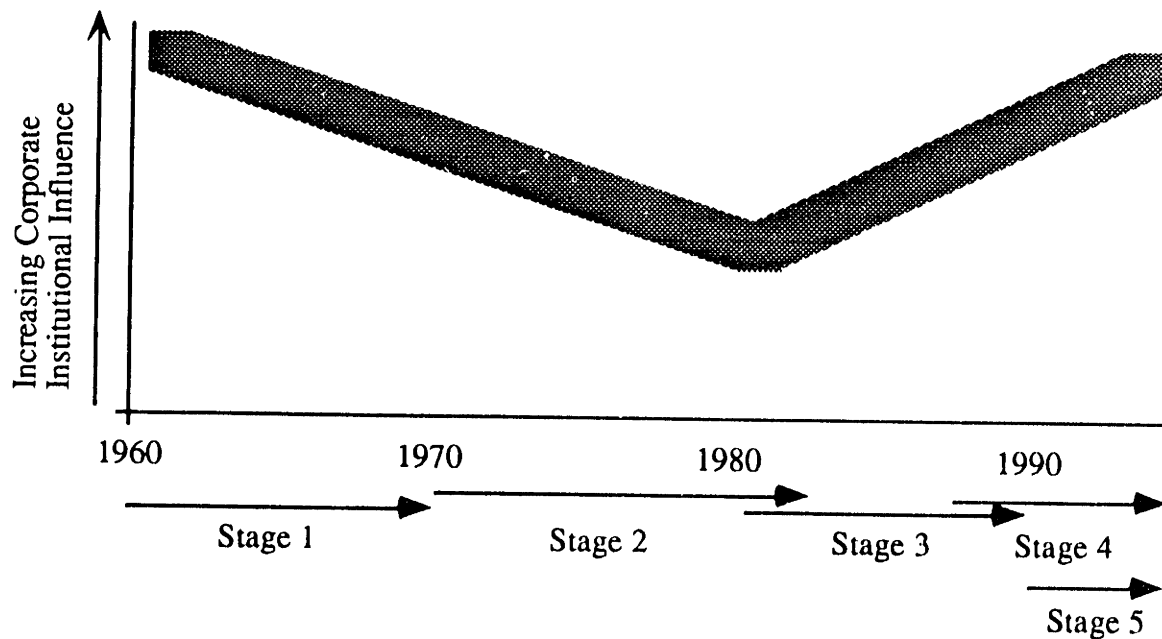


On another level, depicting the evolution of trends in industry institutional influence, figure 10-2 shows how a significant structural break

⁵⁸ Public interest peaked in 1970 with the first Earth Day (April, 1970), while oil industry concern peaked in late 1970 with the enactment of the Clean Air Act (December, 1971) and chemical industry concern peaked in late 1971 with the passage of the Clean Water Act.

occurs around 1982. Industry began the evolution in 1960 with dominant control over its actions with respect to the environment. This power steadily eroded through the 1960s and 1970s until it reached its minimum around 1982, coinciding with the tenure of Ann Burford Gorsuch and efforts by the Reagan administration to de-federalize the government. It was at this point that the level to which environmentalism had become institutionalized as a strong value within the social, political and economic structures of both society as a whole and the corporate institutional field in particular was exposed. However, Gorsuch's attempts to disable the EPA and her subsequent removal from office for those actions, did not make this shift happen. It merely hastened its arrival, acting as a catalyst for social and institutional change. From this point forth, industry began to increasingly gain control over its institutional field.

FIGURE 10-2
Trends in Institutional Influence Controlled by Industry



With respect to corporate management, this structural break in 1982 represents a breaking point where industry began to accept environmental management as a legitimate corporate concern. It can be depicted in two ways. First, it represents a shift from adaptation to integration of institutional demands (Lorange, Gordon & Smith, 1976). In the former case, prior to 1982, industry did not recognize the legitimacy of the institutional field and attempted to buffer the operating core from its demands. In the latter case, after 1982, industry acknowledged that legitimacy and began to integrate institutional demands into its own structure and strategy.

The 1982 structural break may also be depicted as the resolution of cognitive dissonance. Prior to 1982, the firm (or individuals within the firm) may be described as attempting to resolve a dissonance (Festinger, 1957) between their traditional strategic objectives and the apparent inconsistency they created with new ones that incorporated environmental concerns. This shift in defining legitimate action marks the establishment of a new value, norm or ethic, effectively redefining the concept of production. The resolution of this dissonance was accomplished as increasing numbers of institutional interests join the field of actors pressing for organizational change. If the perspectives of this growing majority of relevant actors are consonant with a behavioral element, then dissonance will be resolved (Festinger, 1957: 17).

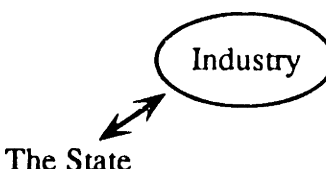
As a social value, institutional perspectives on corporate environmental management have evolved as these new institutional actors have entered the field. In stage 1, the field is made up primarily of industry. As a result, the issue is viewed primarily as a technological issue. When the Environmental Protection Agency enters the field the issue becomes one of regulatory compliance. Employee groups enter the field around 1976 as the issue begins to be viewed in terms of workplace safety and health. And, with the introduction of insurers in

the early 1980s, environmentalism for the firm becomes an issue of risk management. Finally, when investors start to apply pressure for corporate environmental awareness, the issue begins to be seen as an integration of economics and the environment.

Moving beyond these partial evolutionary measures, the progression can be depicted as a concurrent evolution of the institutional field, organizational strategy and organizational structure — see tables 10-1 through 10-5. Supporting propositions 1 and 3, these three institutional variables were found to have been intertwined, evolving in unison through the linkages they share. The dates presented in this evolutionary model should overlap. The shift from one stage to the next is not argued to be precise, but rather occurring over time, first sharply in 1970 and later, more broadly from 1981 to 1983 and 1988 to 1990. Although the depiction in previous chapters shows a discrete temporal shift, this summary will present a more diffuse and gradual transition period.

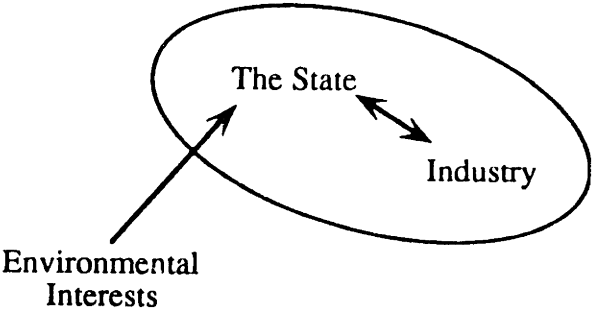
In the first stage (1960-1970), corporate attention to the environment grew steadily until a peak in the early 1970s. The issue appears to have emerged earlier for the chemical industry, due to the publication of *Silent Spring* in 1962 and peak later, due to the passage of the Clean Water Act in 1972. Oil industry attention emerged later in the decade, largely out of response to the Santa Barbara oil spill (1969) and peaked earlier, due to the passage of the Clean Air Act in 1970. Throughout this stage, **industry** exists virtually alone in its institutional field. It is solely responsible for the development of new conceptions for dealing with the issue of environmental protection. As such, industry can be argued to be **integrating** the institutional values and norms related to the environment as they then existed. Environmental management is handled in an ad-hoc fashion by the operating department, which views the issue as an ancillary **problem-solving** responsibility to be handled in isolation from the core operations of the firm.

TABLE 10-1
Synopsis of Institutional Evolution: Stage 1 (1960-1970)

| <u>Institutional Field</u> | <u>Corporate Strategy</u> | <u>Corporate Structure</u> |
|--|--|---|
| <p>THE INDUSTRIAL FIELD Industry Alone Controls the Institutional Field</p> | <p>INTEGRATION of Institutionally Defined Goals — <i>Industry is the Solution.</i></p> | <p>PROBLEM SOLVING. Considered an ancillary aspect of conducting business, it is handled primarily as an operating line function.</p> |
| <p style="text-align: center;"><u>Schematic of Institutional Field</u></p>  <p style="text-align: center;">The State ↔ Industry</p> | | |

In the second stage (1970-1983), attention drops off steadily as the energy crisis displaces the issue as an external driver of corporate strategy. The Environmental Protection Agency enters the field and as the stage progresses, it slowly increases in power until, by the early 1980s, industry perceives itself to be completely dominated by government **regulation**. In response, it adopts an **adaptation** strategy. Corporate structure is designed around shielding the operating core from the effects of the institutional field while internal decisions are guided predominately by regulatory compliance. Throughout this stage, environmental groups emerge as a significant yet external player, not influencing industry directly, but through the government. As it is the government that is dictating proper corporate behavior, industry responds in fashion. Internally, it continues to treat the issue as an ancillary issue although raising it to a new level in the organization corresponding to the elevated level it enjoys in the institutional field. However, the department's role is merely **technical compliance** with environmental statutes. As such, a large and integrated staff is not necessary. The issue remains ancillary to production and operating strategy.

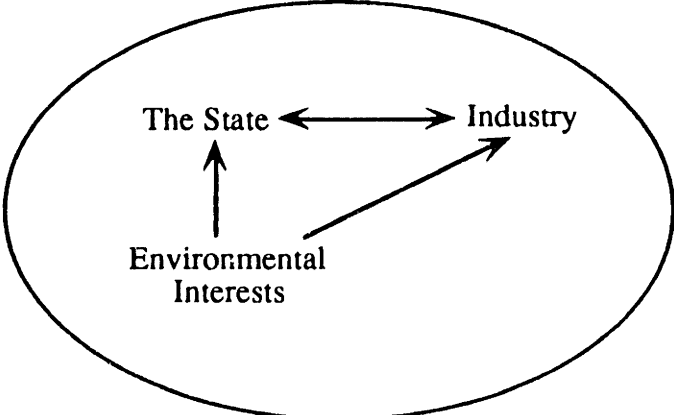
TABLE 10-2
Synopsis of Institutional Evolution: Stage 2 (1970-1983)

| <u>Institutional Field</u> | <u>Corporate Strategy</u> | <u>Corporate Structure</u> |
|--|--|--|
| <p>THE REGULATORY FIELD The State Begins to Dominate the Institutional Field. Industry Influence Declines.</p> | <p>ADAPTATION to Institutionally Defined Goals — <i>Industry is the Problem.</i></p> | <p>TECHNICAL COMPLIANCE. Although elevated to a separate corporate department, it remains an ancillary role with low organizational power and focused strictly legal requirements.</p> |
| <p><u>Schematic of Institutional Field</u></p>  <pre> graph TD subgraph Field [Institutional Field] State[The State] <--> Industry[Industry] end Env[Environmental Interests] --> State </pre> | | |

In the third stage (1981-1990), industry attention begins to grow again. The tenure and resultant expulsion of Ann Burford Gorsuch as the administrator of the EPA reveals both the growing level of importance society had been developing with respect to the environment, and it reveals the growing desire for cooperative solutions within industry. Environmental groups have now entered the field, beginning to influence industry directly, thereby altering the focus of the environmental issue to one of **social responsibility**. Recognizing the need to take more control of the expanding scope of environmental issues, industry adopts a **fragmented integration** strategy, seeking cooperative solutions with the government while continuing to reject the legitimacy of environmental groups.

Through such efforts, industry begins to gain more control within the institutional field. Given the desire to work cooperatively with government and the objective of taking more internally directed control of the environmental issue, industry begins to adopt new organizational structures for managing environmental affairs. The issue, for them, has shifted from merely monitoring external technical compliance measures to developing new organizational structures designed around internally directed **managerial compliance** structures.

TABLE 10-3
Synopsis of Institutional Evolution: Stage 3 (1981-1990)

| <u>Institutional Field</u> | <u>Corporate Strategy</u> | <u>Corporate Structure</u> |
|--|---|--|
| <p>THE SOCIAL FIELD Environmental Interests Enter the Institutional Field. Industry Influence Begins to Rise.</p> | <p>FRAGMENTED INTEGRATION of Institutionally Defined Goals — <i>Industry & Government are the Solution.</i></p> | <p>MANAGERIAL COMPLIANCE. Moving beyond merely technical responses, managerial structures are developed to achieve end-of-pipe emissions compliance while environmental responsibilities begin to diffuse throughout the organization.</p> |
| <p style="text-align: center;"><u>Schematic of Institutional Field</u></p>  | | |

In the fourth and fifth most recent stages (1988-present), the institutional field, for both industries, shifts to a new **strategic** makeup throughout the stage. Spurred on by issues and events such as Bhopal, SARA Title III, the Exxon Valdez, global warming and ozone depletion, it expands to include, not only traditionally environmental interests, such as environmental groups, but also strategic, economic interests, such as investors and insurers. However, the two industries for the first time, split in their response to the issue. Chemical industry attention grows to new levels as it adopts efforts to **integrate** the demands of the now, much broader institutional field into its structures and processes. Oil industry attention and strategy begins to follow a similar fourth stage trend of **integration** but, in 1990, enters a fifth stage — see table 10-5. Attention drop to levels that rival those of stage two and strategy returns to **adaptation**. For both industries, these institutional and strategic shifts trigger new organizational structures which are designed to **pro-actively** integrate the issue of the environment deeper into all aspects of the organizational structure while at the same driving companies to develop more external outreach. Strategic alliances with environmental groups become more prominent and external interests appear to have a more direct link towards directing internal affairs.

TABLE 10-4
Synopsis of Institutional Evolution: Stage 4: (1988-present)

| <u>Institutional Field</u> | <u>Chemical Industry Corporate Strategy</u> | <u>Corporate Structure</u> |
|--|--|---|
| <p>THE STRATEGIC FIELD Economic Interests Enter the Institutional Field. Industry Influence Continues to Rise.</p> | <p>STAGE 4 (1988 - present) INTEGRATION of Institutionally Defined Goals — <i>Industry is Again the Solution.</i></p> <p><u>Oil Industry Corporate Strategy</u></p> <p>STAGE 4 (1988 - 1990) INTEGRATION of Institutionally Defined Goals — <i>Industry is Again the Solution.</i></p> | <p>PRO-ACTIVE MANAGEMENT. Organizational boundaries blur, allowing direct influence by external interests as the environmental department reaches new levels of organizational power. Environmental considerations began to be pushed back down into the line operations, integrating them into both processes and product decisions.</p> |

Schematic of Institutional Field

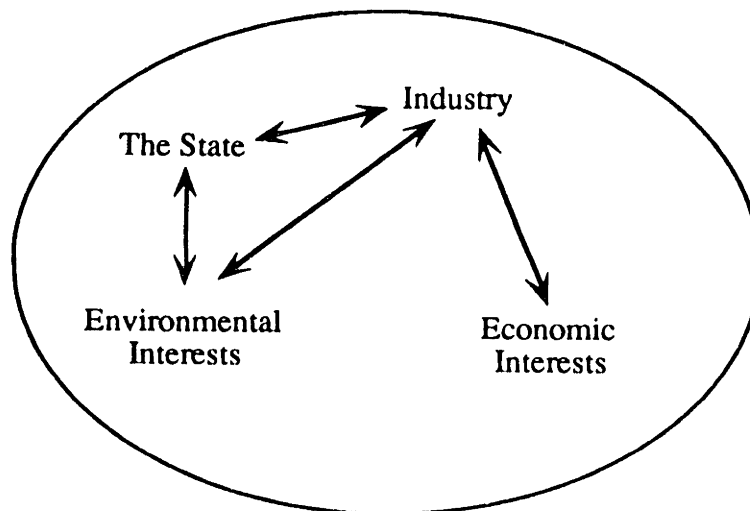


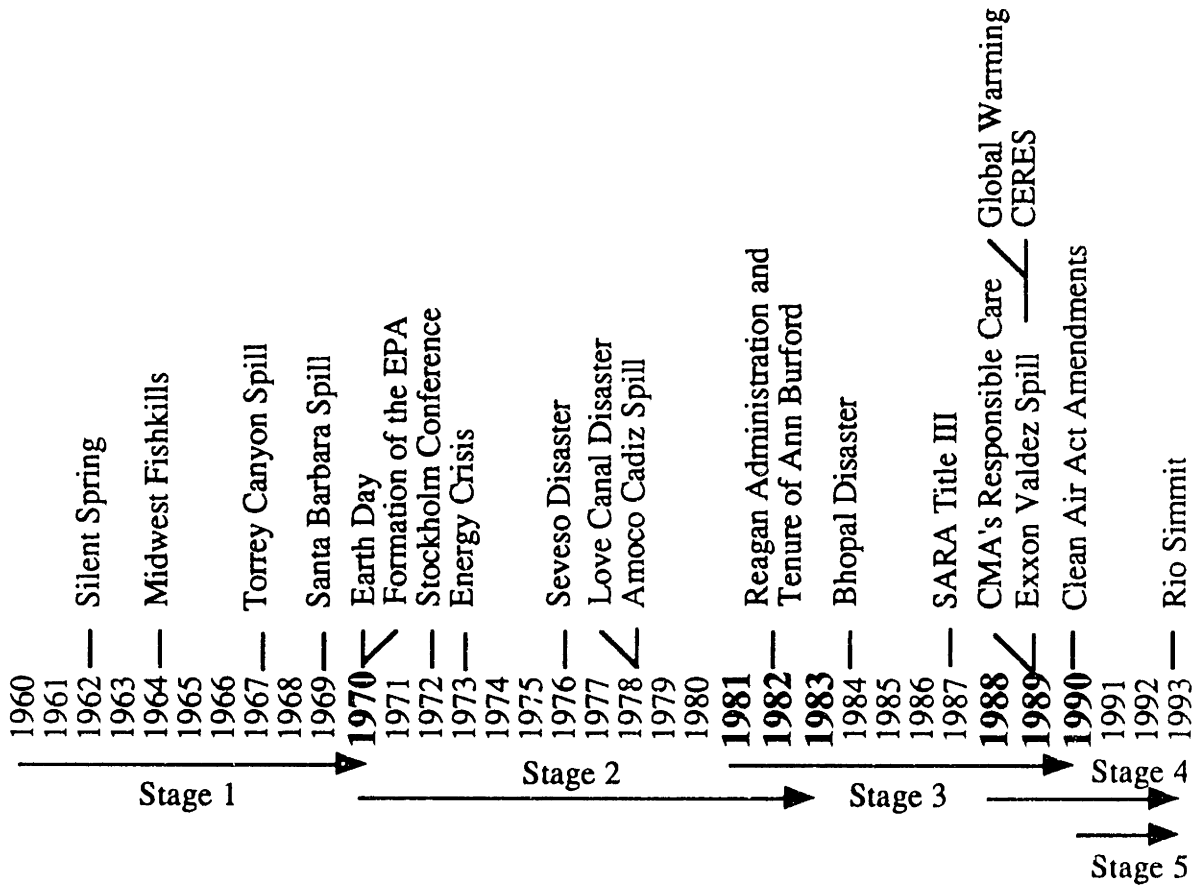
TABLE 10-5
Synopsis of Institutional Evolution: Stage 5: (1990-present)

Oil Industry
Corporate Strategy
STAGE 5 (1990 - present)
ADAPTATION
to Institutionally Defined
Goals — *Industry is Again
the Problem.*

This institutional progression has been pushed along by the emergence of external events. Figure 10-3 provides a timeline of significant issues and events which guided chemical and petroleum industry institutional development and, therefore corporate strategy and structure. While these events have at times been common between industries (i.e. the Energy Crisis and the tenure of Ann Burford Gorsuch) at other times they have not. For example, where the oil industry reacted to the Santa Barbara oil spill of 1969 as the "psychological benchmark of US environmentalism", the chemical industry traces its environmental roots back to the 1962 publication of *Silent Spring* (1962). And in the late-1980s, where the chemical industry was rocked by the Bhopal disaster of 1984, the oil industry soon met a similar fate in the aftermath of the Exxon Valdez disaster of 1989. Some events facilitated institutional change that was already taking place while others initiated new institutional change. For example, the Exxon Valdez spill empowered the emergence and subsequent institutional effects of the investor group CERES, which was itself representative of a wider owners movement that was already occurring. Although, the Valdez spill catalyzed their appearance, it would have likely happened later as the result of another triggering event. Conversely, the global warming debate coupled with the Clean Air Act Amendments and the criticism surrounding the Exxon Valdez disaster initiated a

shift in the strategy of the oil industry, that for the first time diverged from the evolution of the chemical industry. In support of proposition 5, the role that these events play is not one solely of initiating social change, but also catalyzing it.

FIGURE 10-3
Timeline of Critical Events in the Evolution of Corporate Environmental Strategy



Looking at the dynamics by which this evolution takes place (and in support of propositions 1 and 3) it was observed that industry strategy and structure has historically been influenced directly by the emergence and associated perspectives of new institutional interests in the institutional field. For example, the Amoco Corporation responded to the institutional pressures precipitated by the emergence of the investor group by making three significant

changes within its operating structure: external reporting, establishing a board level EH&S committee, and redrafting the corporate EH&S policy.

Yet (in support of proposition 2), organizations can both resist and also direct influence outward to the institutional field. This acknowledges that firms are not at the complete control of their institutional field. Rather, as members of that field, they enjoy a degree of control in deciding how to respond or directing how it is formed. For example, Amoco exhibited an evolution in environmental management that was similar but not identical to that exhibited by the institutional field. And, in responding to CERES, Amoco also created institutional change by assisting in the development of the public reporting initiative, PERI. Thus, in the circularity of social interaction, Amoco's efforts at public reporting were precipitated by the influence by CERES, whose presence was precipitated by the actions of another oil company through the Valdez spill. Amoco's response, in turn, precipitated a broader institutional response from other firms within the institutional field.

This example also illustrates that firms cannot act alone in the implementation of progressive environmental initiatives⁵⁹. Their success depends largely on both the input and the participation of others. In both the PERI and EIP projects, participation by industry representatives as well as environmental groups was found to have been critical to their success and implementation. This underscores the concept that firms are caught in an *n*-players prisoner's dilemma (section 3.5, proposition 2). If one firm unilaterally adopts pro-active environmental practices, it would suffer a negative payback. The actions of a recalcitrant industry would precipitate increasing regulation regardless of the individual firm's advances. If, on the other hand, all firms

⁵⁹ In another example, Amoco is attempting to alter the way in which government and industry view the form and function of environmental regulation through the Yorktown (and EIP) program.

adopt environmentalism in unison with a concerted effort by society to reward such practices, then the payback will be positive for all.

Yet, in providing a thorough explanation of institutional evolution, it is not solely industry members which evolve. As the institutional field evolves, so too do the other members of the field. Chapter 9 presents an observation that CERES also evolved in its perspectives and their goals. This evolution can be seen both in the evolution of the Valdez/CERES Principles as well as the organization's objectives and method. As argued in proposition 4, the characteristics of the evolution suggest a convergence of strategies and objectives with those of industry representatives. By developing new sets of principles and amending certain associated requirements, CERES moved more towards the commonly held perspectives within the institutional field. Through this process of institutional convergence, CERES increased its ability to engage in direct influence of industry behavior by sharing common language and perspectives. But, in the process it reduced its distinction in goals as a change agent. The lines between CERES and others within the institutional field began to blur as the negotiation progressed. Influence was directed in both directions as to the proper standard by which each would act.

By analyzing the structural and strategic implications by which environmentalism has effected the Amoco Corporation, the issue has displayed the characteristics of both a social and technical issue. As a social issue, Amoco has adopted new programs and policies in response to the influence and demands of social interests external to the corporation. Yet, as a technical issue, these programs and policies have altered the basic precepts by which the firm defines its product, processes and strategic objectives. From gasoline reformulation to waste minimization and internal program and process review,

environmentalism has altered the way in which Amoco conducts its business and employs its technology.

As one final observation, the study has revealed the chemical and the petroleum industries to have been similar in their strategic evolution due to commonalities in the evolution of their institutional fields. However, several significant differences were observed. First, there are technological differences such that: (a) opportunities for pollution minimization are greater in the chemical industry than they are for the petroleum industry; and (b) the petroleum industry is much more focused on issues related to air pollution and is therefore, affected to a greater degree by the prominent environmental issue of the late 1980s and early 1990s which include greenhouse gas emissions, ozone depletion and acid rain. Aside from these inherent differences between the industries, there have also been some significant strategic differences detected by the trade journal analysis. First, the coverage in *Oil & Gas Journal* has been much more inwardly focused than that of *Chemical Week*. Coverage of the various media and coverage of external events has also been much more diverse in the chemical journal than it was in the oil journal.

All of this leads to a conclusion that the interests of the oil industry are more narrowly and internally defined than those of the chemical industry. The industry seeks to seclude itself from the environmental issue and those which support it. Looking at the evolution of environmental strategy supports such a hypothesis as the oil industry has been consistently behind the chemical industry in responding to external events and developing progressive strategies. For example, where the chemical industry became aware in the second stage that regulatory costs were becoming an area of serious concern, the oil industry did not react until the third stage. This was in spite of the fact that actual environmental costs were rising at similar rates to similar levels. Second, where

the chemical industry began to consider environmental strategies for dealing with environmental affairs in the third stage, the oil industry again lagged until the fourth stage to respond. And finally, by the fourth stage, the chemical industry had developed an appreciation for the importance of public relations in managing its external field while the oil industry paid no particular attention to the issue at all.

In each of these cases, the chemical industry was more progressive than the oil industry in its awareness of changes within the external environmental field, and subsequently in its development of new strategies for responding to the issue of the environment. So, just as Amoco was found to have more deeply infused values with respect to the environment due to its early adoption of environmental practices, the chemical industry has more deeply infused environmental values than the oil industry, thereby creating the potential to endure periods of pressure to move away from its environmental accomplishments as the oil industry faced in the 1990s.

10.3. Theoretical Implications.

General Theoretical Implications. This account juxtapositions itself between purely cultural, subjectivist accounts and rational choice, structuralist accounts of firm behavior. On the one hand, an industry is not to be viewed as an homogenous collection of organizational actors, each behaving according to a social script designed by the social environment (Granovetter, 1985). And on the other hand, corporate decision-making is not to be viewed as exercising choice from an unlimited range of options. The first attempts to derive social order from values guiding individual persons and the latter places its emphasis on social order emerging from preexisting individuals' efforts to achieve

idiosyncratic wants and desires (White, 1992). Or put more simply, "economics is all about how people make choices; sociology is all about how they don't have any choices to make" (Duesenberry, 1960: 233).

Economic literature has historically treated environmental protection in the context of the well established framework of externalities and market failures. Pollution is the consequence of an absence of prices for certain scarce environmental resources and can be corrected by the introduction of surrogate prices. However, such rational actor models treat the organization and its external environment as separate and distinct. Inter-firm interaction is argued to be driven primarily by competition where the individual firm's actions are strictly focused on increasing efficiency. Deviating from this explanation, this institutional account calls attention to the causal impact of state, societal and cultural pressures, adding them to market forces and resource scarcity as driving corporate action.

The actions of individuals within firms are internally directed but within the context, perspectives and confines of the broader social environment in which it exists. It is this broader field which dictates the range of legitimate action, and in times of great uncertainty, this range can become quite narrow. As environmentalism has represented greatly increasing uncertainty, it is in the institutional field where the focus of attention should be directed.

What we are witnessing with corporate greening is the co-evolution of institutions outside the firm and structures and strategies inside the firm. These may be occurring at different velocities and in slightly different directions, but the explanation goes beyond purely rational actor or institutional models of the firm to call attention to the fact that the firm and its environment are mutually dependent, each able to influence the other. Organizational and institutional values and interests become the result of a negotiation among various actors both

inside and outside the firm. As such, the development of the institutional field is transformed from traditionally static descriptions to more of a political process subject to the constraints of power influences (Fligstein, 1990; Thomas, 1994). Corporate environmentalism must be viewed as representative of a myriad of demands and expectations. It is the product of a collective understanding of what the corporation's responsibilities should be, negotiated among a variety of external and internal actors. Social networks and the influence of the institutional field play a significant role in the formation of individual corporate policies while individual action can impact the final outcome of negotiated expectations.

This account gives greater attention to the effects of the state in the establishment of corporate structures and strategies. Economists have historically taken the structure of the economy and the direction of economic development as given, where states may help clear the way for economic accumulation, and distort, retard, or accelerate the accumulation process but they do not decisively influence the forms of economic organization and coordination of economic activities (Skocpol, 1985). This institutional account, however, suggests that the state and the economy are intertwined, the actions of one affecting the actions of the other to varying degrees. The state is to be viewed as an actor, just as a member firm, albeit a more powerful one. Given the scientific and political uncertainties for managing environmental protection, government is subject to the same institutional forces as industry and environmental groups, and therefore, is capable of being influenced directly by these interests.

Implications for Institutional Theory. This dissertation moves away from the traditional phenomenological focus of institutional investigation on isomorphism. The preceding explanation of institutionalized corporate

environmental action deals more with institutional change as a source of organizational action. Rather than trying to ask why are organizations alike, I align more with traditional theorists in that I do not see organizational homogeneity as a critical requirement for the presence of institutional phenomena. This constant focus on institutional isomorphism has resulted in the concept often becoming a tautology. We define an institutional field when we have observed there to be isomorphism. However, we argue that the isomorphism is caused by the institutional field. Instead, the field should be viewed as having a dominant conception of organizational strategy and structure. The strategy and structure of the firm are influenced by this field, but it is not a necessary conclusion that these characteristics will be identical among all firms.

Also, moving away from a singular view of the firm or the field, this dissertation also considers both aspects of the evolving institutional landscape. The institutional field is conceptualized as a series of shifting power balances as new members enter the field and the concurrent shifts within the organizational structure and strategy are linked in an interactive relationship.

As a contribution to institutional theory, this research develops a working empirical definition for the institutional field based on two key characteristics: (1) the importance of defining a "focal" organization or group of organizations around which to define the field and (2) some sort of structural link or "connectedness" (DiMaggio & Powell, 1983: 149) between the field's membership and that focal unit. How narrowly or how broadly that focal point is defined will determine how narrowly or broadly a set of interconnected institutional members will be observed. The initial definition of one will affect the resultant definition of the other.

Building off this conceptualization is a more complex perspective on the composition of the institutional world. The firm is not homogenous and monolithic, nor is the institutional environment unitary and one-dimensional. The focal firm interacts with a social environment that is made up of multiple fields. It interacts with each through separate functional departments employing differentiated attention. As a result, the concept of the focal firm must, at times, be clarified to consider what part of the firm is being discussed. For example, Fligstein (1990) restricts his view of the firm to executive management.

Continuing along this theoretical track, initially separate and differentiated institutional fields may, at times blend or merge. Each is then reconstructed as they unite and overlap. The perspectives of one begin to infuse into the other and vice versa. This follows with the concepts of institutional isomorphism where the boundaries of organizations through constant interaction begin to blur. Both institutional fields are now changed and reformed as one. In the separate context of each, they have developed individually. However, in the context of both, member organizations have exited from one institutionalization and entered into another institutional form organized around different principles or rules. The old form, in both cases, is left behind and the new form emerges as a composite of the two.

These three contributions to the theory (an empirically discrete field definition, the idea of multiple institutional fields and the concept of the merging of fields), have become an important consideration in this particular research, given the complexity of the institutional dynamics observed. Other studies have viewed the field as fairly static in its makeup and the empirical focus of the focal organization as monolithic. For example, Fligstein (1990) looks at the transformation of executive leadership in American industry as resulting from shifting pressures from the government. DiMaggio (1991) cites the causes for the

spreading acceptance of art museums in American cities in the 1920s and 1930s, as the result of efforts by museum workers to define a profession through assistance and legitimation from foundations, particularly the Carnegie Foundation. Leblebici, Salancik, Copay and King (1991) argue the generation and acceptance of practices and technologies within the American radio broadcasting industry are the result of the actions of influential industrial actors. And Tolbert and Zucker (1983) look to the spread of civil service reforms at the turn of the twentieth century as resulting from the pressure of legal requirements or the examples set by fellow cities.

In each case, the institutional sources of organizational change were static. Whether it was government, professional associations, or fellow organizations, the makeup of the institutional field did not change through the entirety of each study. Secondly, each of these institutional studies have treated the organization as monolithic. Whether looking at the CEO, the adoption of new technology or the spread of a new organizational practice, the focus has regarded the organizational change resulting from institutional pressure as being fixed to one aspect of the organizational structure. Breaking from these limitations, this analysis of corporate greening, first, observes the state of the field to have steadily changed. New members have entered the field thereby shifting the balance of power within the field. Still further, the detected presence of these new actors was not the beginning of their existence. They emerged from other institutional fields in which they originally existed, some of whom had previously interacting with other parts of the organization while others were developing relationships with the organization for the first time. In either case, unlike other studies, it becomes necessary to explain the complexity of multiple organizational fields and the evolution of those fields both individually and in the context of each other. Furthermore, this multi-plexity of the institutional

environment requires an understanding of the complexity of the organizational responses which are then created.

As an expansion to institutional theory, consistent with the work of Fligstein (1990) and Oliver (1991), this account explains a role for agency in a world where cultural and sociological factors shape how organizations address environmental problems. However, going beyond Fligstein's evolutionary account where the environment is controlled by the state, and Oliver's mechanistic account where the firm reacts to an institutional environment which is separate and distinct, this account argues a co-evolution of corporate strategies and institutional beliefs. The shape of the environment is shaped by the response of its players. It evolves through their interaction.

Firms not only can resist the pressures of the institutional field, they may also direct the form of that field. Galaskiewicz (1991) approaches this concept in his analysis of corporate philanthropy in the Minneapolis/St. Paul area. However, where he looks at a sort of peer-pressure based on the social networks of chief executive officers, this dissertation considers the origins of coercive and mimetic isomorphism as a strategic activity. A leading firm may initiate such institutional forces to gain legitimation and strategic benefits for actions undertaken that yield negative benefits if undertaken alone but yield positive benefits if undertaken in unison with the rest of the population. Since institutional theory has largely been applied to non-profit organizations such as schools (Brint and Karabel, 1991) and municipalities (Tolbert and Zucker, 1983) in their attempts to gain greater efficiency, this type of result would not likely be observed since there exists little incentive for these types of firms to force others to follow. However, in the case of corporate greening, where firms may be seeking burden reduction in response to exogenous shocks rather than efficiency maximization in response to market opportunities, institutional forces may be

created as a strategic activity to gain legitimation for reactive responses. As a result, firms have tremendous incentive to coerce others to follow.

Finally, this account considers an influential role for external events in institutional development. Where Fligstein sees the State as the trigger for organizational action in his anti-trust research, this account of corporate environmentalism presents the event as a trigger for institutional negotiation among an evolving membership of the institutional field⁶⁰. Although events can act independently and by surprise, in ways much like an institutional actor, they do not, by themselves, negotiate in the formation of institutional fields. Instead, they empower social actors to negotiate while directing the form and the focus of their strategy. Given the need for social surrogates, they become susceptible to social interpretation. Whether scientific data, a sudden disaster or a political maneuver, social actors are responsible for an interpretation of the event and using that interpretation for negotiating change within the institutional field. Given this component of social interpretation, events can become either reflections of the political balance existing within the institutional field or affect an alteration of that political balance. As such, they can act as "catalysts" in the formation or alteration of the institutional field to align with the interpretation of whomever enjoys the greatest institutional power. Or, they can be used to highlight social breakdowns in the validity of existing institutional structures and beliefs.

⁶⁰ This is a phenomenon not likely uncovered by other institutional research as it is particularly unique to the study of corporate environmentalism.

10.4. Practical Implications.

General. As a first practical contribution of this work, an historical record of corporate environmental attention and strategy is developed. While many journals and politicians are touting the nineties as "the environmental decade", empirical studies which identify the present status of corporate environmental attitudes in the context of their historical trends are sorely lacking. Without such a contextual comparison, it would be difficult to state with any level of certainty that attitudes in this "environmental decade" are any more pronounced than in other decades. This research helps to fill this gap.

Policy-Makers. This account also has specific implications for the managers of several types of organizations. First, this account has implications for the policy-maker. The current discourse on environmental policy, particularly within economic circles, is focused on dismantling the current command-and-control structure of regulation in favor of market incentives that push firms to seek their own economic interests through protecting the environment. This approach does not give proper attention to the institutional dynamics of organizational action. It ignores that the present state of corporate environmental management has been built on the past three decades of institutional evolution, where the emergence of new institutional actors and shifts in the power balances among these interests has driven the evolution of corporate environmental management. Economic costs, although influential are not singularly dominant. They represent only one mechanism by which external interests influence internal change. What is more fundamentally important is who is applying that cost. This concern remains unchanged by market incentive proposals as government remains the source of these new types of costs. New

regulatory policies should move away from a focus on direct, marginal and incremental mechanisms for bringing about individual corporate change and should focus on the broader institutional field to look at both the direct and indirect actions of all the institutional actors in formulating industry-wide change. To change corporate behavior, policy must attempt to change the institutional field in areas such as financial markets and consumer demands. The involvement of these external interests in connection with an alteration of the entire social system goes to the source of all organizational action.

Environmental Groups. Regardless of environmental regulations, environmentalists have had a strong role to play in pressing for institutional change. With traditional economic interests now pressing for similar environmental change, that role is becoming even more visible to corporate decision-makers. As a result, industry has come full-circle in its approach to environmental affairs. Prior to 1970, they integrated the perspectives of the institutional field as it existed at that time, namely themselves. Today, they are again integrating the interests of the institutional field, now with a completely new cast of characters. Even the oil industry, which appears to be withdrawing into its shell in regards to environmentalism is acknowledging the legitimacy of external interests. However, given this new awareness within industry, it is time for environmentalists to ask if they have completed their objectives or whether new objectives must be developed. For, as environmentalists become integrated into the institutional field and their gradual acceptance by industry and government as cooperative working partners allows them a stronger voice in influencing institutional change, the concurrent convergence in structure and strategy they experience will likely cause a loss of relative identity. That identity lies in their differences with these industry and any convergence in tactics will

result in pressures towards convergence in purpose. Evidence suggests that this is already happening. A likely consequence is that they will be viewed by external supporters as being co-opted, thus obscuring their purpose and decreasing membership and contributions. If they are completely co-opted, then have nothing left to say, they will soften their differences and lose their constituency. Their effect on corporate practices will be weakened. Their perspectives, norms and values will be merged with those of industry.

Therefore, new environmental perspectives such as "sustainable development" will not likely emerge from this groups of institutional actors. Such a new perspective must be developed away from the isomorphic pressures of the institutional field, much the same way that the present environmental movement grew in isolation in the 60s and 70s. The new ideology of Sustainable development will need to germinate within a new group of institutional stakeholders that lies in the periphery away from the distractions of the institutional field. From there it can generate the necessary critical mass and strength of convictions so as to create the tension necessary to foster institutional change.

This is not to suggest the present day environmental groups have become ineffective. They have, however, formed a perspective on corporate environmental management that is reflective of the perspectives of others within the field, namely industry and government. In a sense, for these actors the issue has become defined and the task at hand is seeking a solution. If environmentalists are to revitalize themselves and regain their position as a source of new ideology, not simply the source of answers to the existing ideology, then events become critical in re-establishing the former differences in objectives and perspectives between the environmentalist and the industrialist. Events can be interpreted by environmentalists to create these differences and

regain individuality and therefore, constituency. Or, in the extreme case, new issues may even be invented as opportunities arise.

Corporate Decision-Makers. For the business manager who wants to effectively work with these groups, this has several implications. If the firm accommodates environmentalist concerns, they are, in effect, reducing their differences with the environmental group. This will soften the group's stance and weaken its constituency support. They will be forced to either re-interpret or invent a new issue in order to regain their individuality and strengthen their constituency. In essence, the more a firm concedes, the more pressure an environmental group will feel to find a new issue with which to maintain that pressure. Therefore, to manage external interests effectively, attention must be given to maintaining industry/activist differences by maintaining focus on an issue from which they can maintain their constituency. In this way, it may be better to either disagree or present the appearance of disagreeing in order to keep external interests from moving on to new and more extreme issues. For example, CERES can maintain its constituency based on the tension created by industry's reluctance to sign the Valdez Principles. However, in actuality, industry has already adopted many of the goals and objectives set out by the principles. In effect, CERES has already gotten a great deal of what it wanted. But, their attention is retained on the issue of gaining signatories, thereby helping them to keep their constituency and keeping them from moving on to new issues in order to retain their power.

Going beyond the management of environmental groups, this account also has implications for strategic environmental management. While companies are affected by costs, this dissertation argues that they are not the only driver. It is more important to consider who is applying those costs. As a result, firms

have not been evolving in a steady linear trend as environmental cost trends might suggest, but rather in a step-wise trend as institutional evolution would suggest. And, since institutional development affects all firms together (within a particular group), corporate executives may think that they are evolving autonomously when, in fact, they are following the trends of the institutional field. The social networks of the institutional field are like one big soup in which common ideas and initiatives permeate the field and the practices of its members. Whether it is the creation of a pollution prevention/waste minimization program in the early 1980s, or the formation of a board level environmental management committee in the early 1990s, firms are moving in relative unison in both strategy and structure.

Therefore, in forming environmental strategy, no longer can corporate action be considered in an isolated context. Internal change cannot be conducted on an autonomous basis but must consider both the input of the variety of institutional actors in its formulation and must be accompanied in practice by the cooperation of other members in the institutional field. This means that corporate environmental leadership is not a boundless possibility but can only be gained within the bounds defined by the institutional field. To gain control of environmental management, a firm must acknowledge the widening group of influential parties in the interpretation of both external events and what is considered an appropriate corporate response. In this acknowledgment, attempts to change the internal culture of the firm must be accompanied by attempts to change the culture of the broader institutional field in which it exists. They are both inextricably intertwined and dependent.

Finally, in looking to the future for what is expected of corporate environmental management practices, corporate executives should consider what institutional actors can be expected to emerge down the road. Several

candidates are now becoming clear such as (1) a merging of environmental issues and racial equity issues thereby empowering minorities and the poor, and (2) the creation of programs such as the Green Seals Program in Europe which empower consumers. Anticipating the demands of these new institutional actors will yield critical insights into what environmental expectations will be in the future.

Conclusion. In the end, the institutional explanation of corporate environmental behavior is a necessary corollary to arguments presently being developed in the area of industrial ecology (IE) (Lowe, 1993; Allenby & Cooper, 1994). Where IE argues that firms exist within the context of an encompassing physical system for which it must consider the full implications of its actions, institutional explanations argue that firms exist within the context of an encompassing social system for which it must consider the implications of its actions. Both environments must be considered as compatible arguments that address the duality of organizational life, the blending of the social and physical realities of existence. In explaining corporate environmental behavior, acknowledgment of the physical and the social environments become intertwined, with each exerting significant pressure for corporate action. They are neither mutually exclusive nor are they individually complete.

10.5. Opportunities For Future Research.

This dissertation is only the beginning of an analysis of the evolution of corporate environmental strategies. The application of institutional theory to the study of corporate environmental management creates rich opportunities for a wide variety of research. As an initial starting point for expanding this analysis, further study might consider the applicability of this institutional framework

within other industries and other countries. In the case of other industries, it would be interesting to consider those in which new entrants have entered as a consequence of new environmental institutions. Will the presence of these new entrants spur these industries to increased adoption of environmentalism? In the case of other countries, it would be interesting to consider whether there is any similarity between the strategic and institutional evolution detected in these U.S. industries and that of industries in other countries.

Going beyond a test of the framework developed in this thesis, new questions also emerge that offer interesting areas for closer analysis. Presently, I see five areas for immediate research: Organizational Isomorphism, Individual Agency, Strategy, the Role of Events or Crises, and the Role of the State. (1) Organizational Isomorphism: Since social and technical constraints are fairly uniform across single industries, it would be expected to create some level of homogeneity. A broad survey of corporate evolution within a single industry should reveal this clannish behavior and, equally as important, reveal leaders and followers in this development. (2) Individual Agency: If leaders and followers do emerge, it would be of value then to direct specific inquiry into what kind of external or internal change caused that firm to initiate such innovative behavior. Such an avenue of inquiry should uncover interesting facets of the role of power in both moving beyond the common practices of the field and setting an example by which others felt that they must follow. In effect, the question begs, what gives an organization the power to initiate institutional change?⁶¹ (3) Strategy: If firms can act as leaders, then the area of

⁶¹ Dow appears to have it in the chemical industry, yet it is not the largest company by assets or sales. Sun does not have it, although it created a significant ripple in social circles by endorsing the Valdez Principles. Does this power come from Dow's negative experience with Agent Orange and Vietnam as some Amoco Executives suggest? If this were the case, then one would expect Union Carbide to have gained significant institutional power from the Bhopal disaster. There remain many questions to be answered here that have important considerations for both institutional theory and corporate environmental strategy.

environmental strategy offers a rich area for industrial research. For example, the Amoco Corporation entered into a partnership with the EPA to study pollution reduction possibilities at one of its refineries. Based on the results of the study and the resultant relationship developed with the EPA, the company now seeks to gain acceptance for more flexible regulatory schemes. Without rigid standards this will create uncertainty for all firms, yet Amoco believes that they are positioned to gain advantage from such a change.⁶²

(4) The Role of Events or Crises: Beyond proactive strategy, organizational change may also be caused by the presence of sudden catastrophic events. This role should be considered in the context of how they are interpreted by the social environment as it then exists. A longitudinal event analysis should reveal differences between how similar events are interpreted based on the social context in which they emerge, some creating organizational action while others do not.

(5) The Role of the State: Critical to the evolution of a firm's social environment is the role of the State. To date, the EPA has used a variety of mechanisms by which to initiate corporate change: command and control (CWA, CAA), direct corporate intervention (Superfund site management), market incentives (gasoline lead phase-out), and cooperative partner (Green Lights, 33/50). An analysis of the organization effects of these various mechanisms would be an important avenue for evaluating their efficacy.

All of these avenues of study lead to one overarching theory of corporate environmental behavior and the perspectives towards corporate environmentalism in general. In what may be described as "the social construction of corporate environmentalism", firms have been driven through an

⁶² An added wrinkle that makes this story even more interesting is the perceived resistance from Exxon. In developing its environmental strategy, it is widely believed that Exxon prefers prescriptive regulations. The logic goes, that as the industry leader, Exxon can outspend anyone in a spending game. Since prescriptive regulations are inefficient, it could be source of advantage for the company, forcing competitors out of the market.

evolution of strategies and structures as defined by the social relationships between the government, industry and external interests. This evolution has been influenced by the emergence of events and crises, some of which cause institutional change while others do not. An understanding of the dynamics behind all of the components of this internal and external negotiation could form the culmination of a full evaluation of the environmental transformation of American industry.

However, in broader terms, this same statement could be rearranged to say that this analysis offers a model for how corporations behave in all areas, not just environmental management. This research uses environmental management as its focus to uncover deeper motivations for corporate action. If accurate, such an analysis could also be used for understanding how firms behave in areas of marketing, recruiting, finance and operations. Simply put, this research is useful in understanding how firms react in a society that is placing changing demands on how industry conducts its business.

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**Appendix A:
Scope of Westlaw® Database,
and Search Strategy**

WESTLAW® FENV-CS: SCOPE

FEDERAL ENVIRONMENTAL LAW - CASES

XX
Environmental Law databases contain documents that relate to regulation of the natural environment. Included are pollution control, radioactive and toxic waste management, N.E.P.A., and conservation of natural resources.
XX

The FENV-CS database contains documents from the U.S. Supreme Court, Courts of Appeals, District Courts, Bankruptcy Courts, Court of Federal Claims, U.S. Tax Court, Military Courts, and related federal and territorial courts. A document is a case (a decision or order) decided by one of these courts. Related database: ALLFEDS-OLD contains documents reported prior to 1945.

DERIVATION:

This database includes documents released for publication in West Federal Reporters (see below), "quick opinions" (cases available on-line prior to West advance sheets and which do not contain editorial enhancements), and opinions that are not scheduled to be reported by West Publishing Co.

| | COVERAGE BEGINS: |
|---|--------------------|
| Bankruptcy Reporter (West) | 1 B.R. (1979) |
| Court-Martial Reports (Law. Co-op) | 1 C.M.R. (1951) |
| Court of Claims Reports | 102 Ct.Cl. (1945) |
| Court of Customs and Patent Appeals Reports | 32 C.C.P.A. (1945) |
| Federal Claims Reporter | 27 Fed.Cl. (1992) |
| Federal Reporter, 2nd Series (West) | 146 F.2d (1945) |
| Federal Reporter, 3rd Series (West) | 1 F.3d (1993) |
| Federal Rules Decisions (West) | 4 F.R.D. (1945) |
| Federal Supplement (West) | 58 F.Supp. (1945) |
| Military Justice Reporter (West) | 1 M.J. (1975) |
| Reports of the United States Tax Court | 4 T.C. (1945) |
| Supreme Court Reporter (West) | 65 S.Ct. (1945) |
| Tax Court Memorandum Decisions | T.C. Memo. (1954) |
| United States Claims Court Reporter (West) | 1 Cl.Ct. (1982) |
| West's Veterans Appeals Reporter | 1 Vet.App. (1989) |

SOURCE(S):

- (1) U.S. Supreme Court
from 65 S.Ct. (1945) and current within 24 hours of date of decision
- (2) U.S. Courts of Appeals
from 146 F.2d (1945) through quick opinions (also see NOTE 1)

- (3) U.S. Judicial Conference
from 9 F.3d (1993) through quick opinions
- (4) Former Temporary Emergency Court of Appeals
from 462 F.2d (inception, 1972) through abolition 993 F.2d (1993)
- (5) Former U.S. Court of Customs and Patent Appeals
from 146 F.2d (1945) through abolition 691 F.2d (1982), including
decisions from the U.S. Court of Customs and Patent Appeals
Reports (Customs) from 32 C.C.P.A. (1945) through abolition 69
C.C.P.A. (1982)
- (6) Former U.S. Emergency Court of Appeals
from 146 F.2d (1945) through abolition 299 F.2d (1961)
- (7) U.S. Court of Federal Claims
from 27 Fed.Cl. (1992) through quick opinions
- (8) Former U.S. Court of Claims
from 58 F.Supp. (1945) through 181 F.Supp. (1960), continuing
in 276 F.2d (1960) through abolition 690 F.2d (1982), and from 102
Ct.Cl. (1945) through abolition 231 Ct.Cl. (1982)
- (9) Former U.S. Claims Court
from 1 Cl.Ct. (1982) through 26 Cl.Ct. (1992) (see NOTE2)
- (10) U.S. District Courts
from 58 F.Supp. (1945), 4 F.R.D. (1945) and 1 B.R. (1979) through
quick opinions (also see NOTE1)
- (11) U.S. Territories
 - (a) N. Mariana Islands -- U.S. District Court,
Northern Mariana Islands, from 525 F.Supp. (1981) through
quick opinions and including opinions not scheduled to be
published by West and from the Supreme Court of the
Commonwealth of the Northern Mariana Islands from the
reorganization of the court in 1989 through quick opinions
 - (b) Guam -- U.S. District Court of Guam, Appellate Division, full
coverage from 1983 with selected coverage prior to 1983; U.S.
District Court of Guam, from 97 F.Supp. (1951) through quick
opinions
- (12) U.S. Bankruptcy Courts, including Bankruptcy Appellate Panels from 1
B.R. (1979) through quick opinions
- (13) U.S. Court of International Trade
from 505 F.Supp. (inception, 1980) through quick opinions
- (14) Judicial Panel on Multidistrict Litigation
from 295 F.Supp. (inception, 1968) through quick opinions
- (15) Special Court, Regional Rail Reorganization Act of 1973
from 382 F.Supp. (inception, 1974) through quick opinions
- (16) U.S. Court of Veterans Appeals,
from 1 Vet.App. (inception 1989) through quick opinions
- (17) Former U.S. Customs Court
from 135 F.Supp. (1954) through abolition 509 F.Supp. (1980)

- (18) U.S. Tax Court
from 54 T.C. (inception, 1969) through the most recently released cases
- (19) Former Tax Court of the United States
from 4 T.C. (1945) through abolition 53 T.C. (1969)
- (20) U.S. Court of Military Appeals
from 1 C.M.R. (inception, 1951) through 50 C.M.R. (1975) and continuing in 1 M.J. (1975) through quick opinions
- (21) Air Force Court of Military Review
from 1 C.M.R. (inception, 1951) through 50 C.M.R. (1975) and continuing in 1 M.J. (1975) through quick opinions
- (22) Army Court of Military Review
from 1 C.M.R. (inception, 1951) through 50 C.M.R. (1975) and continuing in 1 M.J. (1975) through quick opinions
- (23) Coast Guard Court of Military Review
from 1 C.M.R. (inception, 1951) through 50 C.M.R. (1975) and continuing in 1 M.J. (1975) through quick opinions
- (24) Former Navy Court of Military Review
from 1 C.M.R. (inception, 1951) through 50 C.M.R. (1975) and continuing in 1 M.J. (1975) through 10 M.J. (1981)
- (25) Navy-Marine Corps Court of Military Review
from 11 M.J. (1981) through quick opinions

NOTE 1: Additional cases are obtained directly from the U.S. Courts of Appeals and U.S. District Courts for WESTLAW, although they are not scheduled to be reported by West. Some of these unreported cases may appear in topical services monitored for such cases, including those published by The Bureau of National Affairs and Commerce Clearing House.

NOTE 2: On October 29, 1992, the President signed S. 1569, a Bill implementing the recommendations of the Federal Courts Study Committee. In section 902 therein, the United States Claims Court was redesignated as the United States Court of Federal Claims. P.L. No. 102-572. See *Bath Iron Works Corporation v. United States*, 27 Fed. Cl. 114 (1992).

PARALLEL CITATIONS:

Alaska Reports
 American Law Reports (Law. Co-op)
 American Law Reports, Federal (Law. Co-op)
 American Law Reports, 2nd Series (Law. Co-op)
 American Law Reports, 3rd Series (Law. Co-op)
 Court of Claims Reports
 Court of Customs and Patent Appeals Reports
 Court of International Trade Reports
 Environment Reporter Cases (BNA)
 Environmental Law Reporter (ELI)
 Federal Rules Service, 2nd Series (Callaghan)

CITE AS:

Alaska
 A.L.R.
 A.L.R.Fed.
 A.L.R.2d
 A.L.R.3d
 Ct.Cl.
 C.C.P.A.
 C.I.T.
 ERC
 Env't'l L. Rep.
 Fed.R.Serv.2d

| | |
|--|---------------|
| Federal Rules Service, 3rd Series (Callaghan) | Fed.R.Serv.3d |
| United States Court of Appeals Reports (West) | U.S.App.D.C. |
| United States Law Week (BNA) | U.S.L.W. |
| United States Reports | U.S. |
| United States Supreme Court Reports, Lawyers' Edition (Law. Co-op) | L.Ed. |
| United States Supreme Court Reports, Lawyers' Edition, 2nd Series (Law. Co-op) | L.Ed.2d |

Star Paging coverage for the documents in this database includes the bound volumes or advance sheets of the following reporters:

| | | |
|-----------------------------------|--------------------|------------------|
| Bankruptcy Reporter (B.R.) | Vol. 1 - current | (1979 - current) |
| Claims Court Reporter (Cl.Ct.) | Vol. 1 - 26 | (1983 - 1992) |
| Federal Claims Reporter (Fed.Cl.) | Vol. 27 - current | (1992 - current) |
| Federal Reporter (F.2d) | Vol. 146 - 999 | (1945 - 1993) |
| Federal Reporter (F.3d) | Vol. 1 - current | (1993 - current) |
| Federal Rules Decisions (F.R.D.) | Vol. 4 - current | (1945 - current) |
| Federal Supplement (F.Supp.) | Vol. 58 - current | (1945 - current) |
| Military Justice Reporter (M.J.) | Vol. 1 - current | (1975 - current) |
| Supreme Court Reporter (S.Ct.) | Vol. 65 - current | (1945 - current) |
| United States Reports (U.S.) | Vol. 323 - current | (1945 - current) |
| West's Veterans Appeals Reporter | Vol. 1 - current | (1989 - current) |

WESTLAW® FENV-CS: SEARCH STRATEGY

Key words for extracting the applicable cases fell into five categories: 1) Environmental Groups, 2) Community, Labor and Insurance Groups, 3) The Government, 4) The Chemical Industry, and 5) The Petroleum Industry. All searches were restricted to the time period, 1960-1994. The following table lists the key words used (with the related number of citations retrieved in which the group was a defendant, plaintiff or intervenor).

TABLE A-1
Westlaw® Data Search Key Word Index

1) Environmental Groups

| |
|---|
| Sierra Club (390) |
| Natural Resources Defense Council (274) |
| Environmental Defense Fund (162) |
| Audubon Society (145) |
| National Wildlife Federation (124) |
| Friends of the Earth (92) |
| Public Interest Research Group (76) |
| Wilderness Society (80) |
| Defenders of Wildlife (35) |
| Citizens for a Better Environment (34) |
| Izaak Walton League (29) |
| Greenpeace (19) |
| National Parks and Conservation (16) |
| Environmental Action (6) |
| Environmental Policy Institute (4) |
| Nature Conservancy (3) |
| Conservation Foundation (3) |
| Earth First (2) |
| World Wildlife Fund (1) |
| Conservation Fund (1) |
| Clean Water Action (1) |

2) Community, Labor and Insurance Groups

| |
|-----------------|
| Union (279) |
| Brotherhood (9) |
| Insurance (503) |

3) The Government

Environmental Protection Agency (1273)

Ruckelshaus

Train

Costle

Gorsuch

Burford

Thomas

Reilly

Browner (1085)

Council for Environmental Quality (12)

Department of Interior (111)

Department of Agriculture (138)

Department of Health, Education and Welfare (11)

4) The Chemical Industry

Chemical Manufacturer's Association

Dow

DuPont

Union Carbide

Monsanto

W.R. Grace

Ethyl

Proctor and Gamble

Pfizer

Johnson & Johnson

Unilever

Merck

Hoescht Celanese (269).

5) The Petroleum Industry

American Petroleum Institute

Exxon

Mobil

Chevron

Amoco

Shell

Texaco

Atlantic Richfield

Occidental

Phillips

Sun (401).

Appendix B:
Superfund Sites by Company

TABLE B-1
Superfund Sites by Company

| Rank | Company | Number | Chemicals | Oil |
|------|------------------------------|--------|-----------|-----|
| 1 | General Electric | 55 | | |
| 2 | DuPont | 50 | X | |
| 3 | Monsanto | 39 | X | |
| 4 | US Air Force | 37 | | |
| 5 | General Motors | 35 | | |
| 6 | Union Carbide | 34 | X | |
| 7 | Browning Ferris Industries | 30 | | |
| 8 | Dow Chemical | 29 | X | |
| | Shell Oil | 29 | | X |
| 9 | Texaco | 28 | | X |
| | Westinghouse | 28 | | |
| 10 | Ciba Giegy | 27 | X | |
| | Rohm and Haas | 27 | X | |
| 11 | Allied Signal | 26 | X | |
| | Ashland Chemical | 26 | X | |
| | Mobil Chemical | 26 | X | |
| 12 | American Cyanamid | 25 | X | |
| 13 | Ford Motor Co. | 24 | | |
| 14 | PPG Industries | 23 | X | |
| | Rockwell International | 23 | | |
| 15 | Exxon | 22 | | X |
| | Reichold Chemicals | 22 | X | |
| | WR Grace & Co. | 22 | X | |
| 16 | Goodyear Tire and Rubber Co. | 21 | X | |
| 17 | Chrysler | 20 | | |
| | GAF Corp. | 20 | | |
| | Olin Chemical | 20 | X | |
| | Stauffer Chemical | 20 | X | |
| | Western Electric | 20 | | |
| 18 | BF Goodrich Co. | 19 | X | |
| | Koppers Chemical | 19 | X | |
| 19 | American Can Co. | 18 | | |
| | Amoco Corp. | 18 | | X |
| | BASF Corp. | 18 | X | |
| | FMC Corp. | 18 | X | |
| | Reynolds Metals Co. | 18 | | |
| | Uniroyal Inc. | 18 | X | |
| 20 | Chevron USA | 16 | | X |
| | Gulf Oil Corp. | 16 | | X |
| 21 | Atlantic Richfield Co. | 15 | | X |
| | Chemical Waste Management | 15 | | |
| | NL Industries | 15 | X | |

| | | | | |
|----|-------------------------------|----|---|---|
| | Owens-Illinois Inc. | 15 | | |
| | Proctor and Gamble | 15 | X | |
| | Texas Instruments Inc. | 15 | | |
| | US Army | 15 | | |
| | US Navy | 15 | | |
| 22 | Borden Chemical Co. | 14 | X | |
| | Burlington Northern RR | 14 | | |
| | Firestone Tire and Rubber Co. | 14 | X | |
| | Inmont Corp. | 14 | | |
| | Mobil Oil Corp. | 14 | | X |
| | Pfizer Inc. | 14 | | |
| | Waste Management Inc. | 14 | | |

[Source: US EPA, Site Enforcement Tracking System, 1991.]

**Appendix C:
Statistical Results for Structural Break in Trade
Journal Data**

LINE 0 TSP 4.2B (04/21/93) Msc II 3Mb 7/01/94 9:39 AM PNCF 1

and y.out
Friday, July 1, 1994

TSP Version 4.2B
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In case of questions or problems, see your local TSP
consultant or send a description of the problem and the
associated TSP output to:

TSP International
P.O. Box 61015, Station A
Palo Alto, CA 94306
USA

PROGRAM
.....

1 smpl 1960,1993;
2 read((file='andy_bin',format='binary') co time ind cv gov cv ind og)
3
4 1s ind_cv co time;
5 1s gov_cv co time;
6 1s ind og co time;
7 1s gov og co time;
8
9 replot (chowdate=1987,pvprint) chow;
10 1s ind_cv co time;
11 1s gov_cv co time;
12 1s ind og co time;
13 1s gov og co time;
14
15 replot (chowdate=1983,pvprint) chow;
16 1s ind_cv co time;
17 1s gov_cv co time;
18 1s ind og co time;
19 1s gov og co time;

EXECUTION
.....

Current sample: 1960 to 1993
LINE 4 TSP 4.2B (04/21/93) Msc II 3Mb 7/01/94 9:39 AM PAGE 7

Equation 1
.....

Method of estimation = Ordinary Least Squares

Dependent variable: IND_CV
Current sample: 1960 to 1993
Number of observations: 34

Mean of dependent variable = .477399
Std. dev. of dependent var. = .108320
Sum of squared residuals = .297306
Variance of residuals = .929082E-02
Std. error of regression = .096389
R-squared = .232163
Adjusted R-squared = .208169
Durbin-Watson statistic = 1.68588
Chow test = 6.35438 [1.005]
F-statistic (zero slopes) = 9.67554
Schwarz Bayes. Info. Crit. = -4.51192
Log of likelihood function = 32.3751

Variable Coefficient Estimated Standard Error t-statistic
CO .569119 .051804 16.8358
TIME -.524113E-07 .168495E-07 -3.11055

Equation 2
.....

Method of estimation = Ordinary Least Squares

Dependent variable: GOV_CV
Current sample: 1960 to 1993
Number of observations: 34

Mean of dependent variable = .475244
Std. dev. of dependent var. = .102674
Sum of squared residuals = .302730
Variance of residuals = .946037E-02
Std. error of regression = .097264
R-squared = .129791
Adjusted R-squared = .102597
Durbin-Watson statistic = 2.10696
Chow test = 2.42091 [1.106]
F-statistic (zero slopes) = 4.77278
Schwarz Bayes. Info. Crit. = -4.51384
Log of likelihood function = 32.0177

Variable Coefficient Estimated Standard Error t-statistic
CO .569119 .051804 16.8358
TIME -.524113E-07 .168495E-07 -3.11055

Durbin-Watson statistic = .837517
 Chow test = 19.7449 (.000)
 F-statistic (zero slopes) = .993852
 Schwarz Bayes. Info. Crit. = -4.11927
 Log of likelihood function = 25.3100

| Variable | Estimated Coefficient | Standard Error | t-statistic |
|----------|-----------------------|----------------|-------------|
| CO | .377552 | .041550 | 7.88324 |
| TIME | .20849E-02 | .207106E-02 | .996921 |

LINE 9 TSP 4.28 (04/21/93) Mac II 386 7/01/94 9:39 AM PAGE 4

Durbin-Watson statistic = .837517
 Chow test = 19.7449 (.000)
 F-statistic (zero slopes) = .993852
 Schwarz Bayes. Info. Crit. = -4.11927
 Log of likelihood function = 25.3100

| Variable | Estimated Coefficient | Standard Error | t-statistic |
|----------|-----------------------|----------------|-------------|
| CO | .377552 | .041550 | 7.88324 |
| TIME | .20849E-02 | .207106E-02 | .996921 |

LINE 9 TSP 4.28 (04/21/93) Mac II 386 7/01/94 9:39 AM PAGE 4

Method of estimation = Ordinary Least Squares

Equation 5

Dependent variable: IND (74
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .477339
 Std. dev. of dependent var. = .108320
 Sum of squared residuals = .297306
 Variance of residuals = .829082E-07
 Std. error of regression = .096389
 R-squared = .232163
 Adjusted R-squared = .208169
 Durbin-Watson statistic = 1.68188
 Chow test = 4.91780 (.014)
 F-statistic (zero slopes) = 9.67554
 Schwarz Bayes. Info. Crit. = -4.53192
 Log of likelihood function = 32.3251

Method of estimation = Ordinary Least Squares

Equation 3

Dependent variable: IND (CJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .629889
 Std. dev. of dependent var. = .120897
 Sum of squared residuals = .466277
 Variance of residuals = .014570
 Std. error of regression = .120705
 R-squared = .033383
 Adjusted R-squared = .017619E-02
 Durbin-Watson statistic = .751562
 Chow test = 20.9568 (.000)
 F-statistic (zero slopes) = 1.10515
 Schwarz Bayes. Info. Crit. = -4.08201
 Log of likelihood function = 24.6766

Method of estimation = Ordinary Least Squares

Equation 4

Dependent variable: GOV (CJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .363684
 Std. dev. of dependent var. = .110466
 Sum of squared residuals = .449175
 Variance of residuals = .014037
 Std. error of regression = .119477
 R-squared = .030122
 Adjusted R-squared = -.186342E-02

Method of estimation = Ordinary Least Squares

Equation 6

Dependent variable: GOV (CJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .363684
 Std. dev. of dependent var. = .110466
 Sum of squared residuals = .449175
 Variance of residuals = .014037
 Std. error of regression = .119477
 R-squared = .030122
 Adjusted R-squared = -.186342E-02

Method of estimation = Ordinary Least Squares

Equation 4

Dependent variable: GOV (CJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .363684
 Std. dev. of dependent var. = .110466
 Sum of squared residuals = .449175
 Variance of residuals = .014037
 Std. error of regression = .119477
 R-squared = .030122
 Adjusted R-squared = -.186342E-02

Method of estimation = Ordinary Least Squares

Equation 6

Dependent variable: GOV (CJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .363684
 Std. dev. of dependent var. = .110466
 Sum of squared residuals = .449175
 Variance of residuals = .014037
 Std. error of regression = .119477
 R-squared = .030122
 Adjusted R-squared = -.186342E-02

Method of estimation = Ordinary Least Squares

Mean of dependent variable = .475244
 Std. dev. of dependent var. = .102674
 Sum of squared residuals = .302730
 Variance of residuals = .946032E-07
 Std. error of regression = .097264
 R-squared = .129793
 Adjusted R-squared = .102597
 Durbin-Watson statistic = 2.10696
 Chow test = 1.20393 (.1191)
 F-statistic (zero slopes) = 4.77278
 Schwarz Bayes. Info. Crit. = -4.51384
 Log of likelihood function = -32.0177

Estimated Standard
 Variable Coefficient Error t-statistic
 CO .410241 .034111 12.0266
 TIME .371499E-02 .170025E-02 2.18467

LINE 11 TSP 4.2B (04/71/93) Mac II 386 7/01/94 9:39 AM PAGE 5

Equation 7

Method of estimation = Ordinary Least Squares

Method of estimation = Ordinary Least Squares

Dependent variable: JND OJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .629889
 Std. dev. of dependent var. = .120897
 Sum of squared residuals = .466227
 Variance of residuals = .014570
 Std. error of regression = .120705
 R-squared = .031363
 Adjusted R-squared = .017619E-02
 Durbin-Watson statistic = .377619E-02
 Chow test = 21.7134 (.0001)
 F-statistic (zero slopes) = 1.10515
 Schwarz Bayes. Info. Crit. = -4.08220
 Log of likelihood function = 24.6766

Estimated Standard
 Variable Coefficient Error t-statistic
 CO .668707 .042337 15.7964
 TIME -.221817E-02 .211001E-02 -1.05176

Equation 8

Method of estimation = Ordinary Least Squares

Method of estimation = Ordinary Least Squares

Dependent variable: GOV OJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .363684
 Std. dev. of dependent var. = .118466
 Sum of squared residuals = .449175
 Variance of residuals = .014037
 Std. error of regression = .118477
 R-squared = .030122
 Adjusted R-squared = .016342E-03
 Durbin-Watson statistic = .837517
 Chow test = 20.0910 (.0001)
 F-statistic (zero slopes) = .993852
 Schwarz Bayes. Info. Crit. = -4.11927
 Log of likelihood function = 25.3100

Estimated Standard
 Variable Coefficient Error t-statistic
 CO .327552 .041550 7.88324
 TIME .206489E-02 .207194E-02 .996921

LINE 14 TSP 4.2B (04/71/93) Mac II 386 7/01/94 9:39 AM PAGE 6

Equation 9

Method of estimation = Ordinary Least Squares

Method of estimation = Ordinary Least Squares

Dependent variable: JND OJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .477399
 Std. dev. of dependent var. = .108320
 Sum of squared residuals = .297306
 Variance of residuals = .929022E-07
 Std. error of regression = .096389
 R-squared = .212163
 Adjusted R-squared = .208169
 Durbin-Watson statistic = 1.68588
 Chow test = 6.83034 (.004)
 F-statistic (zero slopes) = 9.67554
 Schwarz Bayes. Info. Crit. = -4.53197
 Log of likelihood function = 32.3251

Estimated Standard
 Variable Coefficient Error t-statistic

CO .56919 .03304 16.8358
 TIME -.524113E-07 .168495E-07 -3.11055
 Equation 10

Method of estimation = Ordinary Least Squares

Dependent variable: Gv, CW
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .475244
 Std. dev. of dependent var. = .102674
 Sum of squared residuals = .302730
 Variance of residuals = .946037E-07
 Std. error of regression = .097264
 R-squared = .129791
 Adjusted R-squared = .102597
 Durbin-Watson statistic = 2.10696
 Chow test = 2.42236 (.106)
 F-statistic (zero slopes) = 4.77278
 Schwarz Bayes. Info. Crit. = -4.51384
 Log of likelihood function = 32.0177

Variable Estimated Standard
 CO .034111
 TIME .370449E-07 .170025E-07
 LINE 16 TSP 4.2R (04/21/93) Mac II 386 7/01/94 9:39 AM PAGE 7

Equation 11

Method of estimation = Ordinary Least Squares

Dependent variable: IMP OCJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .629889
 Std. dev. of dependent var. = .120897
 Sum of squared residuals = .466227
 Variance of residuals = .014570
 Std. error of regression = .120705
 R-squared = .033383
 Adjusted R-squared = .017619E-07
 Durbin-Watson statistic = .3751567

F-statistic (zero slopes) = 1.10515
 Schwarz Bayes. Info. Crit. = -4.08201
 Log of likelihood function = 24.6766
 Chow test = 20.1063 (.000)

Variable Estimated Standard
 CO .668707 .042332
 TIME -.221817E-07 .211001E-07

Equation 17

Method of estimation = Ordinary Least Squares

Dependent variable: Gv, OCJ
 Current sample: 1960 to 1993
 Number of observations: 34

Mean of dependent variable = .363684
 Std. dev. of dependent var. = .118466
 Sum of squared residuals = .449175
 Variance of residuals = .014037
 Std. error of regression = .118477
 R-squared = .10172
 Adjusted R-squared = -.186347E-03
 Durbin-Watson statistic = .87317
 F-statistic (zero slopes) = 18.6753 (.000)
 Schwarz Bayes. Info. Crit. = -4.11927
 Log of likelihood function = 25.3100

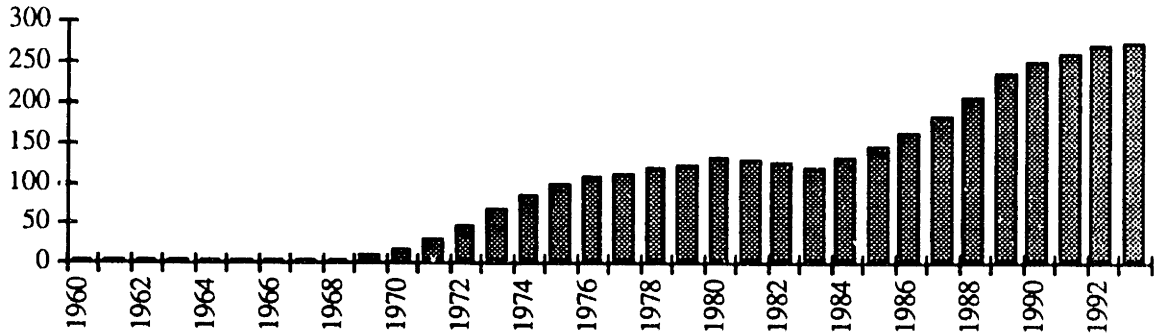
Variable Estimated Standard
 CO .327552 .041550
 TIME .206469E-07 .207106E-07
 LINE 18 TSP 4.2R (04/21/93) Mac II 386 7/01/94 9:39 AM PAGE 8

END OF OUTPUT.

MEMORY ALLOCATED (WORDS) : 350000
 MEMORY ACTUALLY REQUIRED : 1323 (0N)
 CURRENT VARIABLE STORAGE : 854

Appendix D:
Federal Case Law Data

FIGURE D-1
Total Federal Environmental Cases (1960-1993)*



* Three Year Rolling Averages

TABLE D-1
Linear Regression Trend Analysis
Total Federal Environmental Cases (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|-----------|----------------|----------------|-----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 9.45 *** | -18570 *** | 0.86 | 67.89 *** |
| 1982-1989 | 16.86 *** | -33308 *** | 0.86 | 36.64 *** |
| 1989-1993 | 11.10 * | -21840 * | 0.77 | 10.25 * |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-2
Lawsuits Involving Industry (1960-1993)*

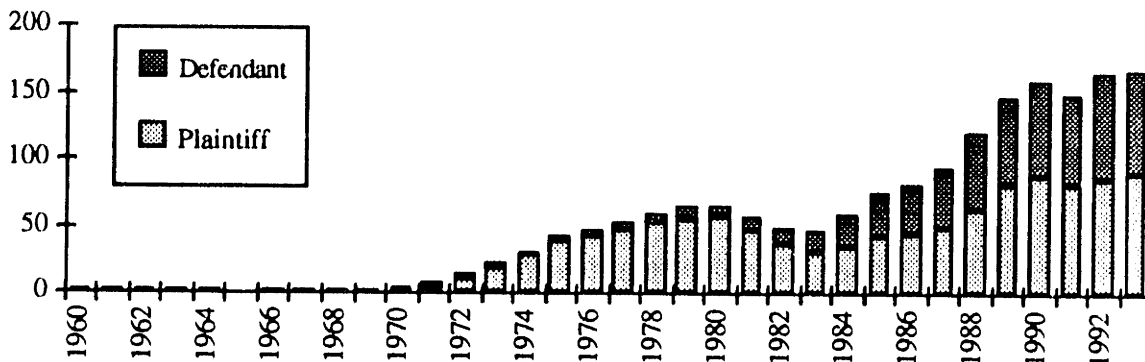
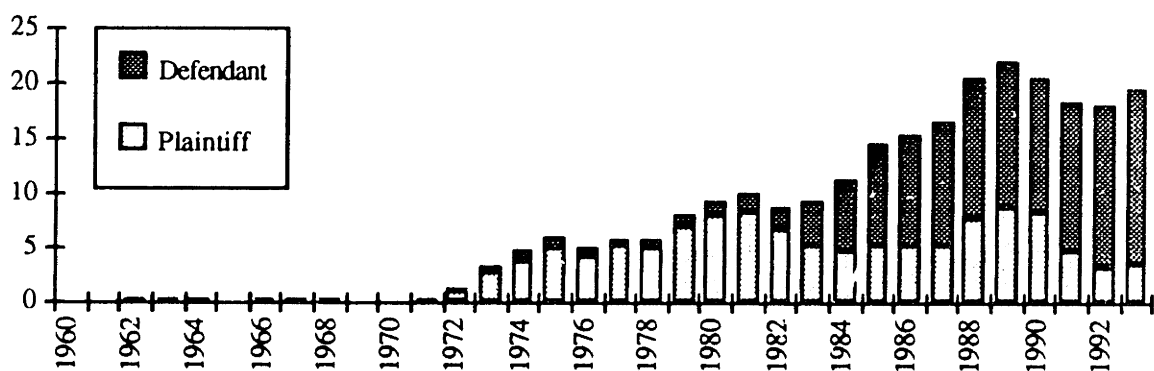


TABLE D-2
 Linear Regression Trend Analysis
 Lawsuits Involving Industry (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|-----------|----------------|----------------|-----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1981 | 6.29 *** | -12386 *** | 0.88 | 74.56 *** |
| 1981-1990 | 12.88 *** | -25494 *** | 0.78 | 28.06 *** |
| 1990-1993 | 12.53 ** | -24796 ** | 0.71 | 17.01 ** |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-3
 Lawsuits Involving the Chemical Industry (1960-1993)*



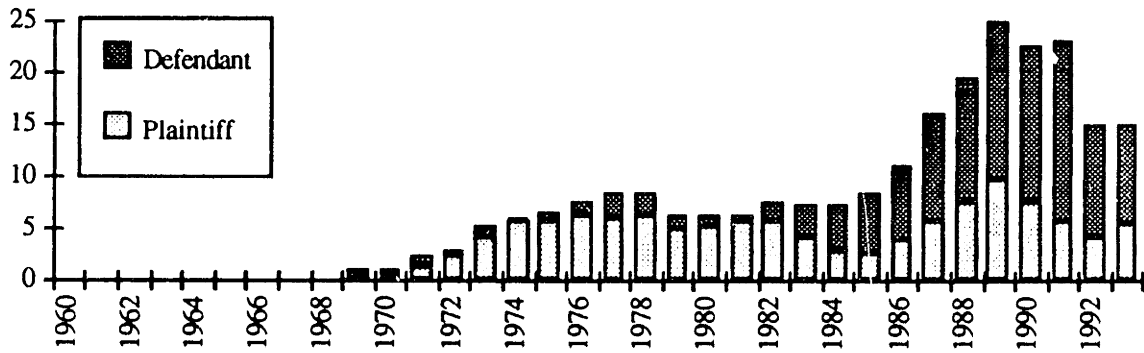
* Three Year Rolling Averages

TABLE D-3
 Linear Regression Trend Analysis
 Lawsuits Involving the Chemical Industry (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|----------|----------------|----------------|-----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 0.86 *** | -1699 *** | 0.83 | 54.50 *** |
| 1982-1989 | 2.44 ** | -4830 ** | 0.82 | 26.46 ** |
| 1989-1993 | -1.80 | 3604 | 0.34 | 1.56 |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-4
Lawsuits Involving the Petroleum Industry (1960-1993)*



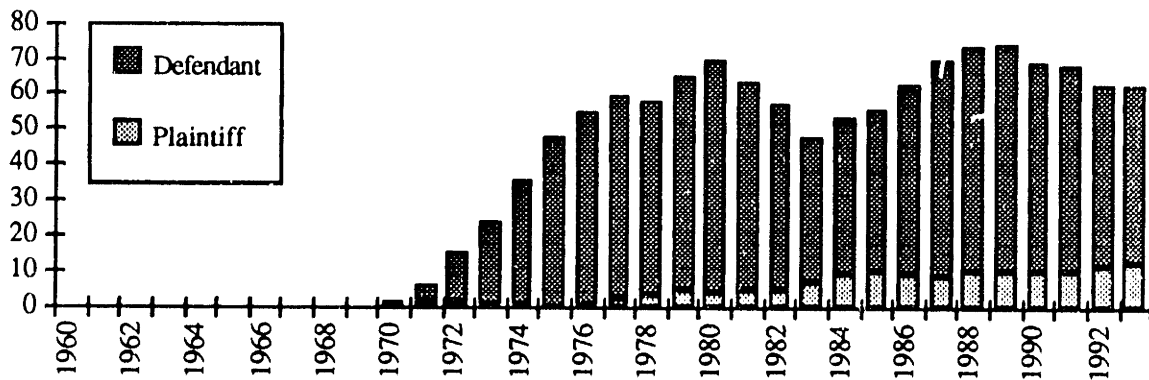
* Three Year Rolling Averages

TABLE D-4
Linear Regression Trend Analysis
Lawsuits Involving the Petroleum Industry (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|----------|----------------|----------------|-----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 0.42 * | -819 * | 0.39 | 6.99 * |
| 1982-1990 | 2.95 *** | -5844 *** | 0.83 | 34.46 *** |
| 1990-1993 | -6.50 | 12964 | 0.67 | 4.08 |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-5
Lawsuits Involving the Environmental Protection Agency (1960-1993)*



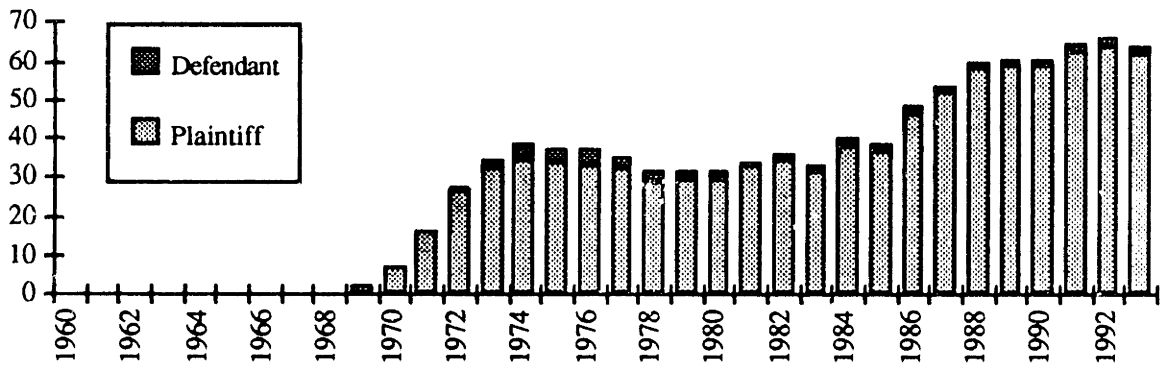
* Three Year Rolling Averages

TABLE D-5
 Linear Regression Trend Analysis
 Lawsuits Involving the Environmental Protection Agency (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|----------|----------------|----------------|-----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 5.54 *** | -10912 *** | 0.73 | 30.14 *** |
| 1982-1988 | 5.36 *** | -10574 *** | 0.89 | 39.23 ** |
| 1988-1993 | -3.94 * | 7916 * | 0.73 | 10.75 * |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-6
 Lawsuits Involving Environmental Groups (1960-1993)*



* Three Year Rolling Averages

TABLE D-6
 Linear Regression Trend Analysis
 Lawsuits Involving Environmental Groups (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|--------|----------------|----------------|---------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1974 | 8.20 * | -16145 * | 0.82 | 13.78 * |
| 1974-1981 | -0.82 | 1658 | 0.32 | 2.81 |
| 1981-1989 | 3.85 * | -7597 * | 0.53 | 7.79 * |
| 1989-1993 | 2.50 | -4915 | 0.37 | 1.76 |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-7
Lawsuits Involving Community Groups (1960-1993)*

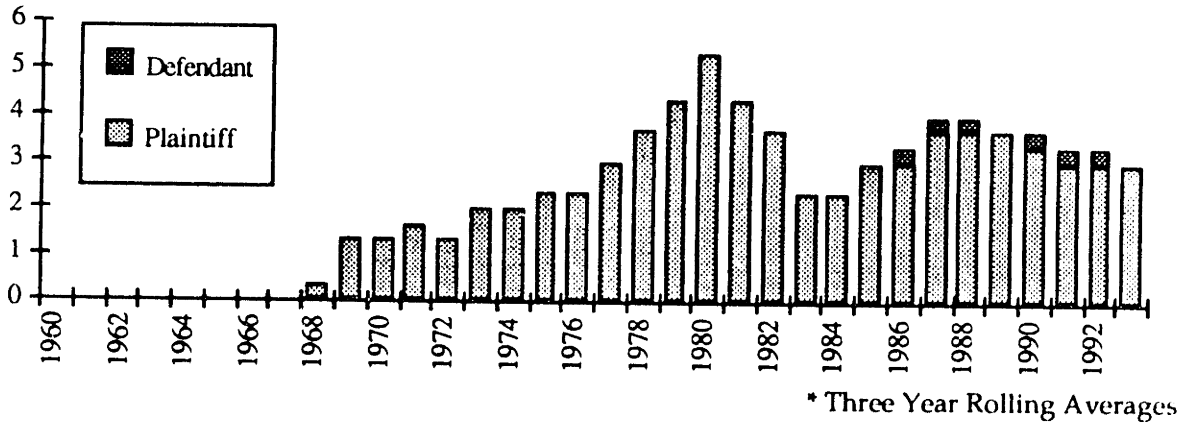


TABLE D-7
Linear Regression Trend Analysis
Lawsuits Involving Community Groups (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|---------|----------------|----------------|---------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1982 | 0.27 * | -539 * | 0.37 | 6.52 |
| 1982-1988 | 0.39 ** | -776 ** | 0.72 | 12.87 |
| 1988-1993 | -0.20 | 401 | 0.47 | 3.50 |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-8
Lawsuits Involving Employee Groups (1960-1993)*

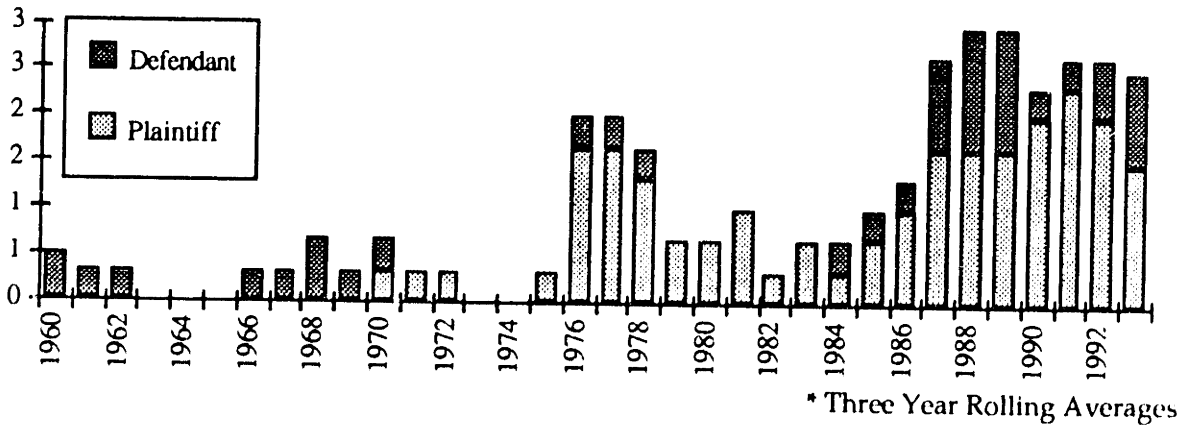
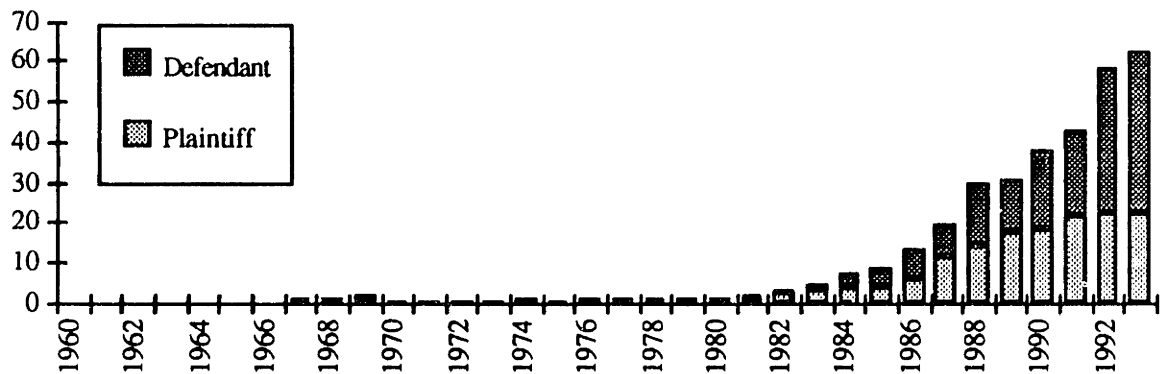


TABLE D-8
Linear Regression Trend Analysis
Lawsuits Involving Employee Groups (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|--------|----------------|----------------|---------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1976 | 0.04 | -71 | 0.02 | 0.13 |
| 1976-1981 | -0.40 | 792 | 0.14 | 0.68 |
| 1981-1988 | 0.51 * | -1014 * | 0.62 | 9.61 * |
| 1988-1993 | -0.31 | 628 | 0.25 | 1.35 |

(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-9
Lawsuits Involving Insurance Companies (1960-1993)*



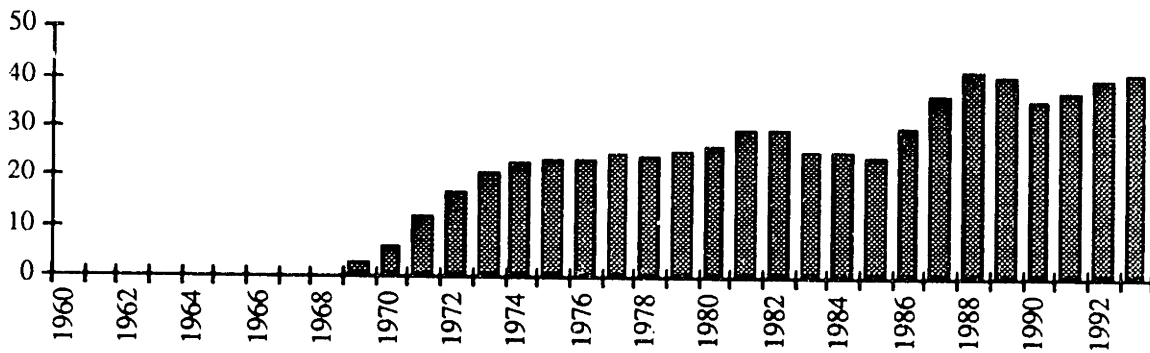
* Three Year Rolling Averages

TABLE D-9
Linear Regression Trend Analysis
Lawsuits Involving Insurance Companies (1960-1993)

| Date | slope | y-intercept | r ² | F-value |
|-----------|---------|----------------|----------------|----------|
| 1960-1970 | | <i>no data</i> | | |
| 1970-1983 | | <i>no data</i> | | |
| 1983-1990 | 4.33 ** | -8590 ** | 0.74 | 17.44 ** |
| 1990-1993 | 14.10 * | -28030 * | 0.91 | 20.14 * |

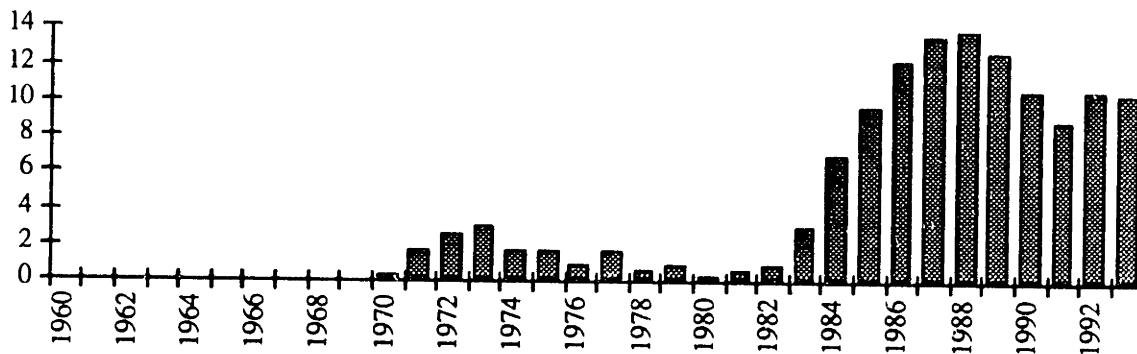
(p ≤ 0.05 *, p ≤ 0.01 **, p ≤ 0.001 ***)

FIGURE D-10
Lawsuits: Environmental Groups versus the Government (1960-1993)*



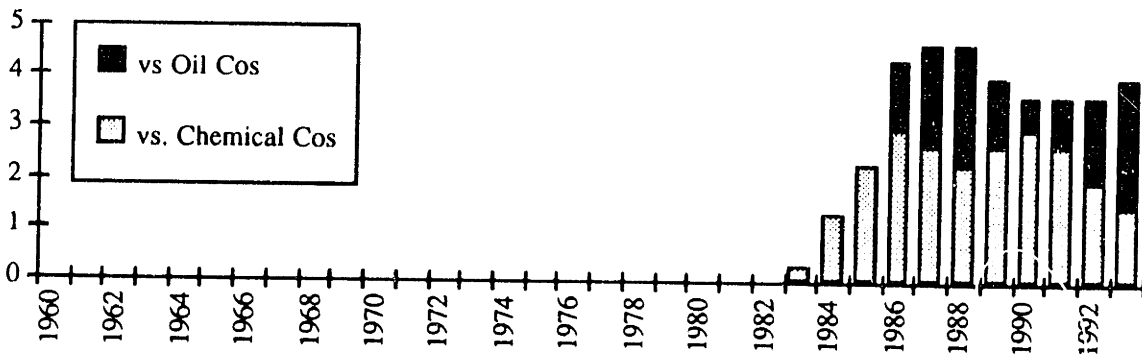
* Three Year Rolling Averages.
Note: Government refers to EPA and DOI.

FIGURE D-11
Lawsuits: Environmental Groups versus Industry (1960-1993)*



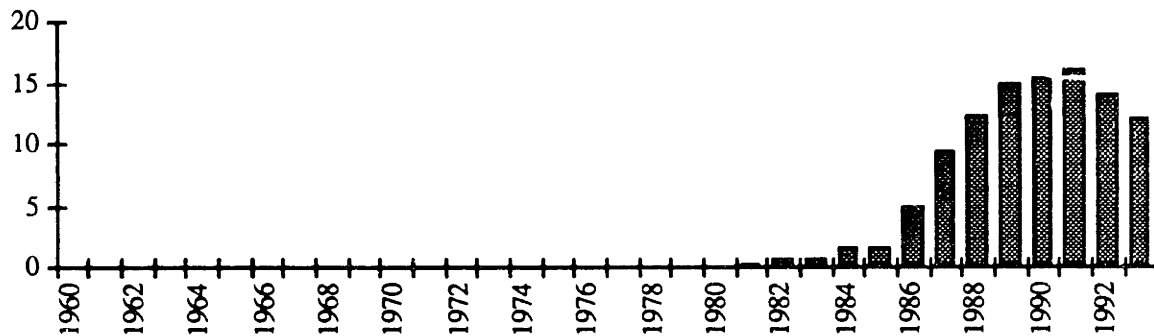
* Three Year Rolling Averages.

FIGURE D-12
Lawsuits: Environmental Groups versus Chemical and Oil Companies (1960-1993)*



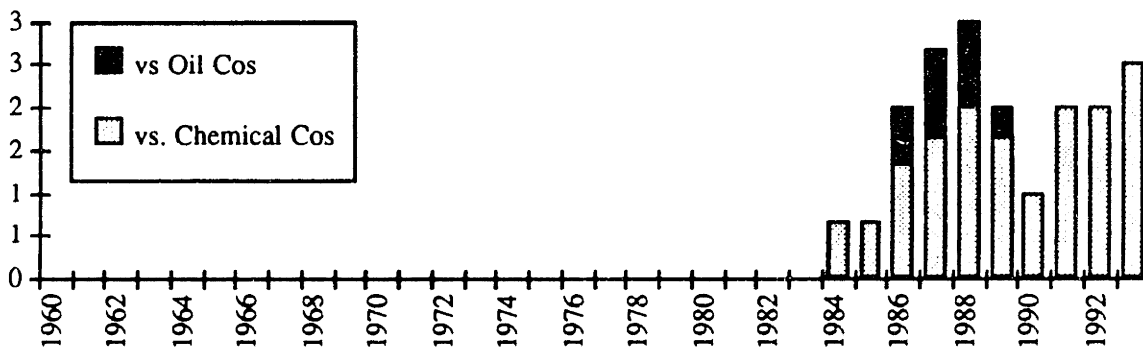
* Three Year Rolling Averages.

FIGURE D-13
Lawsuits: Insurance Companies versus Industry (1960-1993)*



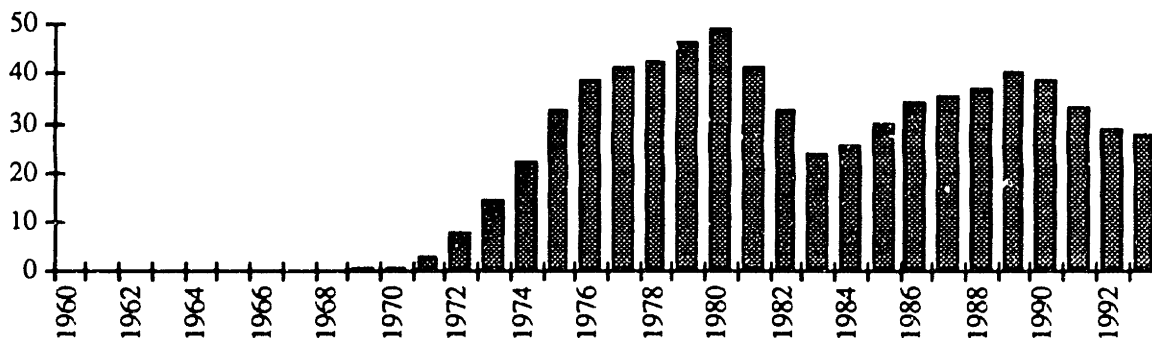
* Three Year Rolling Average.

FIGURE D-14
Lawsuits: Insurance Companies versus Chemical and Oil Companies (1960-1993)*



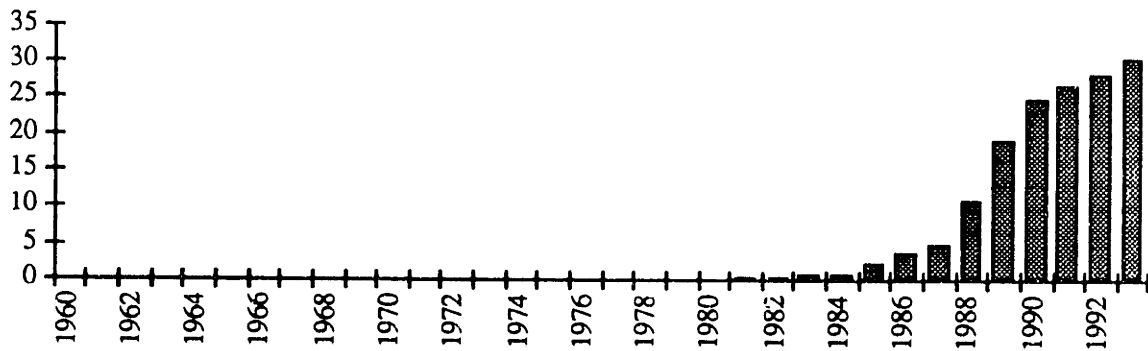
* Three Year Rolling Averages.

FIGURE D-15
Lawsuits: Industry versus the Government (1960-1993)*



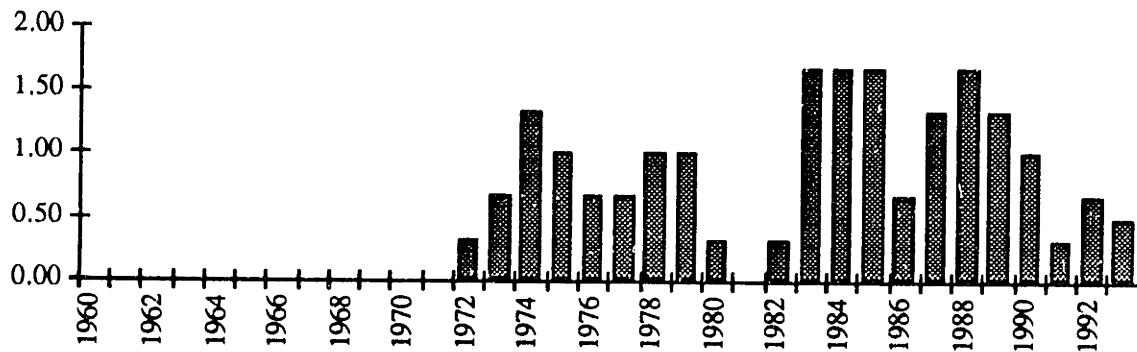
* Three Year Rolling Averages.

FIGURE D-16
Lawsuits: Industry Versus Insurance Companies (1960-1993)*



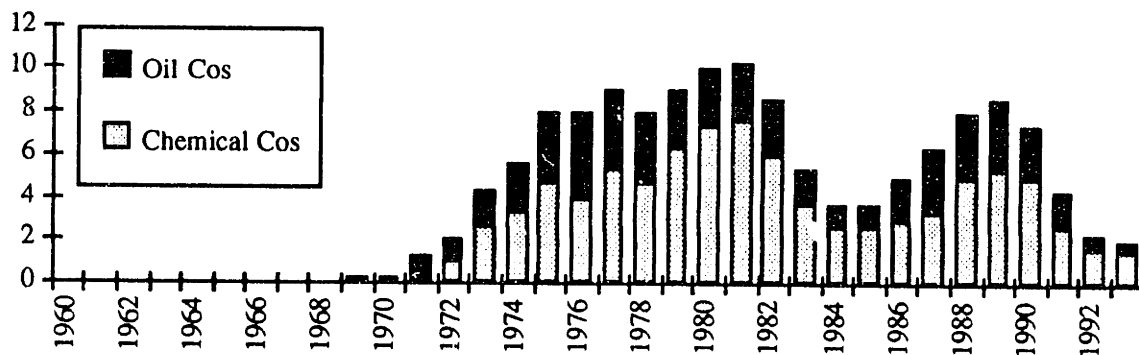
* Three Year Rolling Averages.

FIGURE D-17
Lawsuits: Industry versus Environmental Groups (1960-1993)*



* Three Year Rolling Averages.

FIGURE D-18
Lawsuits: Chemical and Oil Companies versus Government (1960-1993)*

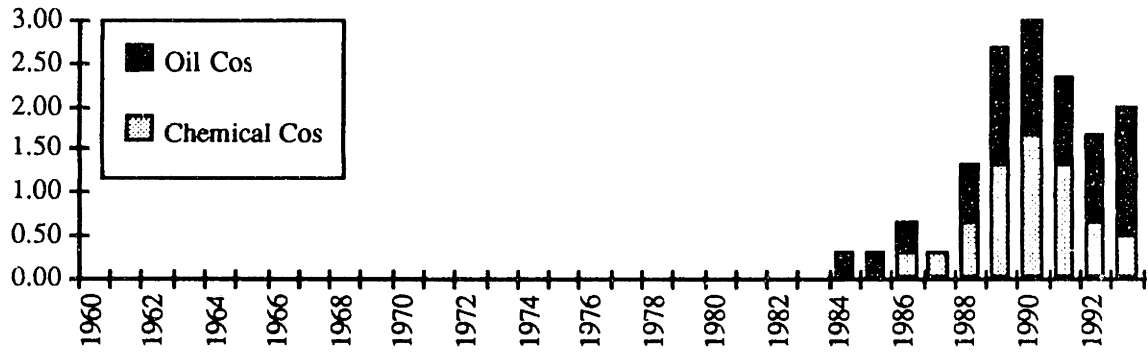


* Three Year Rolling Averages.

Note: All Chemical Company cases were against the EPA, 85% of Oil Company cases were against EPA, 15% against DOI.

FIGURE D-19

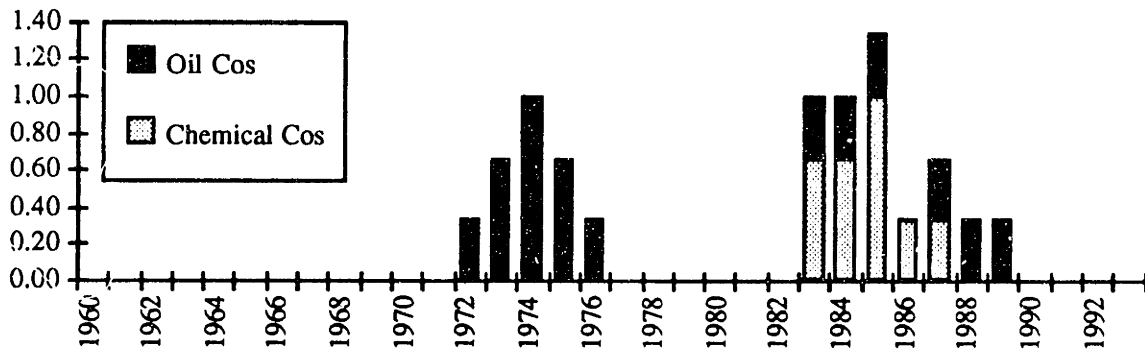
Lawsuits: Chemical and Oil Companies versus Insurance Companies (1960-1993)*



* Three Year Rolling Averages.

FIGURE D-20

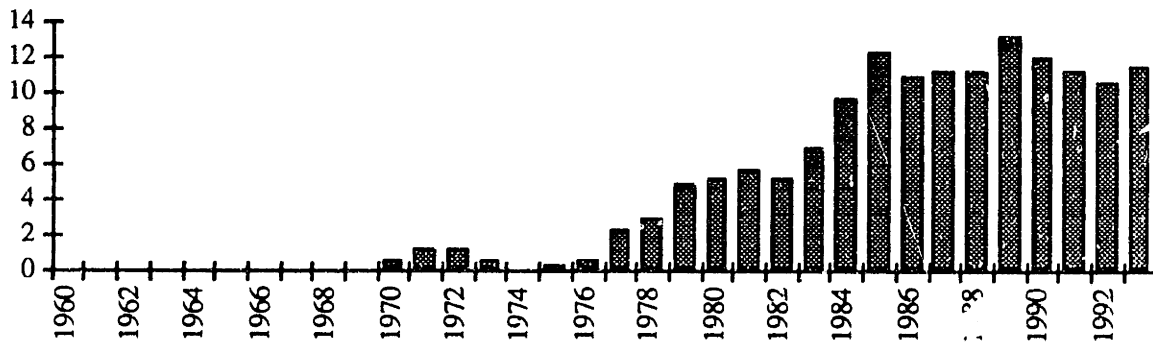
Lawsuits: Chemical and Oil Companies versus Environmental Groups (1960-1993)*



* Three Year Rolling Averages.

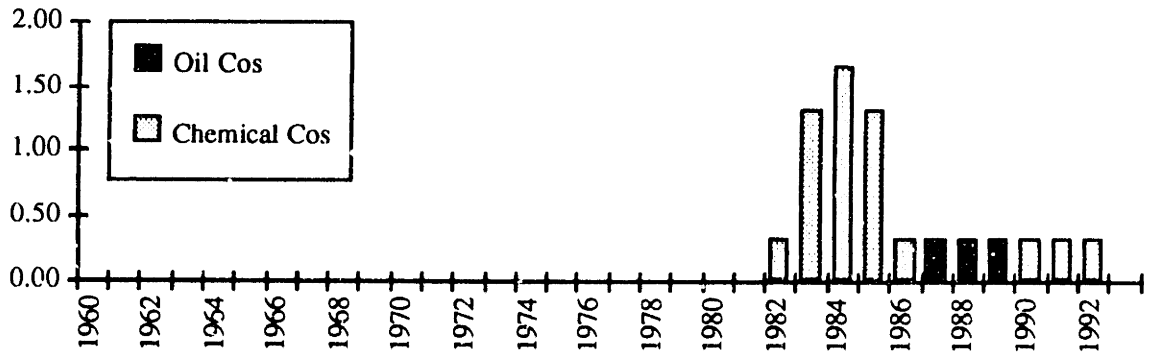
FIGURE D-21

Lawsuits: Government versus Industry (1960-1993)*



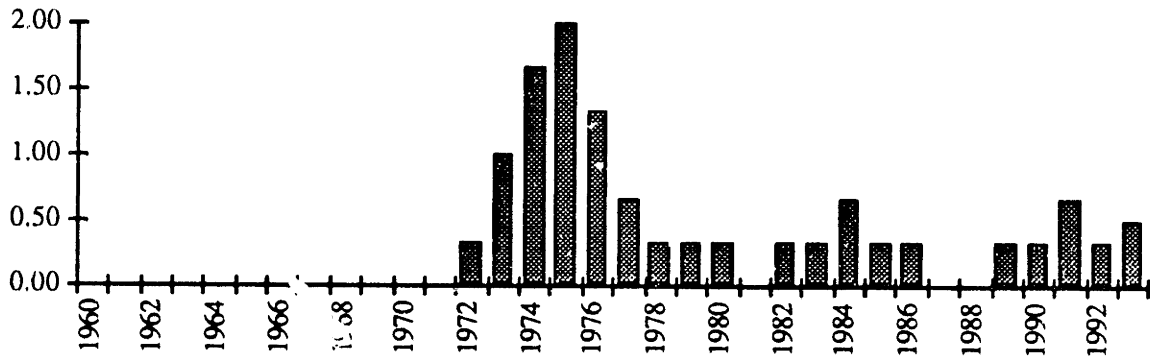
* Three Year Rolling Averages.

FIGURE D-22
Lawsuits: Government versus Chemical and Oil Companies (1960-1993)*



* Three Year Rolling Averages.

FIGURE D-23
Lawsuits: Government versus Environmental Groups (1960-1993)*



* Three Year Rolling Averages.

Appendix E:
Focus on Institutional Events & Institutional Actors

E.1. Focus on Specific Events and Issues

The staged evolution depicted in the previous chapters was found to have been spurred on by the emergence of external events. While these events have at times been common between industries (i.e. the Energy Crisis and the tenure of Ann Burford Gorsuch) at other times they have not. For example, where the *Oil & Gas Journal* sees the Santa Barbara oil spill of 1969 as the "psychological benchmark of US environmentalism" (editorial, May 1988), *Chemweek* traces its environmental roots back to the 1962 publication of *Silent Spring* (editorial, September 1992). And in the late-1980s, where the chemical industry was rocked by the Bhopal disaster of 1984, the oil industry soon met a similar fate in the aftermath of the Exxon Valdez disaster of 1989. While there is overlap in effect on each industry, these events manifest themselves in differential pressure. Yet, regardless of this fact, the progression within each industry has been quite similar both to that of each other's and to trends in public environmental concern observed by Dunlap (1991).

In analyzing external events and issues, *Chemweek* had more numerous and more diverse interests. *Chemweek* wrote a total of 94 articles on events ranging from the publication of *Silent Spring* (1962), to the first Earth Day (1970), the Exxon Valdez (1989) and the Earth Summit in Rio (1992). Issues ranged from biodegradable detergents (1965) to ocean incineration (1978) to environmental racism (1993) — see table E-1. Events in the *O&GJ* were primarily focused on oil spills such as the Torrey Canyon (1967), Santa Barbara platform (1969), Cadiz (1978), Pemex (1979), Valdez (1989) and the Kuwait oil well fires (1991). Issue coverage, again, dealt primarily with directly related industry issues such as air pollution from residual oil (1966), catalytic converters (1975), and the effects of global warming on hydrocarbon manufacturing (1990). While in reality, the

issues mentioned in both journals affect both industries, oil industry focus was more immediate and narrow.

In both cases however, a common trend was observed. Event related articles progressively focused away from a company specific focus towards industry-wide effects, suggesting an increasing sense of joint ownership of the problem. This can be seen most cryptically in the *Chemweek* coverage of the Seveso (1976), Love Canal (1978) and the Bhopal (1984) disasters and the *O&GJ* coverage of the Chevron Santa Barbara (1969), Amoco Cadiz (1978) and Exxon Valdez (1989) spills. In both journals, the earlier incidents were reported in reactive fashion, emerging not at the time of the incident but rather at the time of government action. The focus of the articles was on the specific companies involved and the government action against them. The two more contemporary catastrophes emerged immediately and the articles dealt first, with the potential and later, the actual impact of the incident on the industry as a whole.

TABLE E-1
Key Events and Issues Observed in Trade Journal Analysis

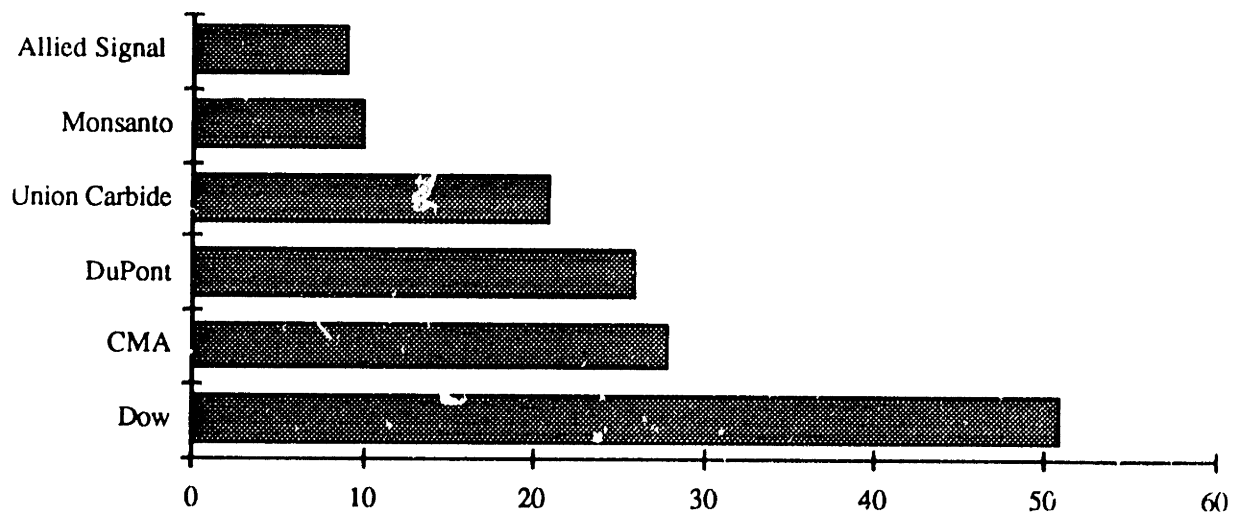
| <u>Chemweek</u> | | <u>O&GJ</u> | |
|---------------------------|------|--|------|
| Silent Spring Publication | 1962 | Leaded Gas Poses No Threat | 1961 |
| Midwest Fishkills | 1964 | Thermal Pollution | 1961 |
| Biodegradable Detergents | 1965 | Oil Field Pollution | 1963 |
| Lake Erie Cleanup | 1965 | Air's Lead Level is Acceptable | 1965 |
| Plastic Disposal | 1966 | Air Pollution and the Auto | 1966 |
| Torrey Canyon Spill | 1967 | Cutting Gasoline Volatility | 1966 |
| Phosphates in Lake Eire | 1967 | Torrey Canyon Spill | 1967 |
| SO ₂ Pollution | 1967 | Refinery Air Problems | 1968 |
| Deep Well Injection | 1968 | Refinery Waste Problems | 1968 |
| Santa Barbara Spill | 1969 | Santa Barbara Spill | 1969 |
| Groundwater Pollution | 1969 | Marpessa Spill | 1969 |
| Packaging | 1969 | | |
| Arrow Spill, Nova Scotia | 1970 | Chevron Oil Spill Fire | 1970 |
| Earth Day | 1970 | Arrow Spill, Nova Scotia | 1970 |
| Biodegradable Detergents | 1970 | NO _x Pollution and the Auto | 1970 |
| Ocean Dumping | 1970 | Lead Pollution and the Auto | 1970 |

| | | | |
|----------------------------------|------|-----------------------------|------|
| Plastics Disposal | 1971 | Oil Spill Frequency | 1970 |
| Limits to Growth Publication | 1972 | Julianna Spill, Japan | 1972 |
| Stockholm Conference | 1972 | Temano Spill, Maine | 1972 |
| Auto Emissions | 1972 | Tanker Collision, NY | 1973 |
| Litter | 1972 | Chemical Industry Env Costs | 1975 |
| Easing of Pollution Standards | 1973 | Catalytic Converters | 1975 |
| Energy and Pollution | 1973 | Sansinena Spill, LA | 1976 |
| Land Use Management | 1974 | Tanker Spills Hit Record | 1977 |
| 2nd Earth Day | 1975 | Amoco Cadiz Spill, France | 1978 |
| Aerosols and Ozone | 1975 | Alyeska Leak | 1979 |
| Seveso Disaster | 1976 | Pemex Blowout | 1979 |
| PCBs in MA Shellfish | 1976 | Spills Worsen | 1979 |
| Argo Merchant Spill | 1977 | | |
| Chloroform Leak in Ohio R. | 1977 | | |
| Chlorine Leak at Dow Plant | 1977 | | |
| Love Canal Disaster | 1978 | | |
| Illegal Dumping of Haz. Was. | 1978 | | |
| LA Smog | 1978 | | |
| Ocean Incineration | 1978 | | |
| Three Mile Island | 1979 | | |
| <hr/> | | | |
| Is EPA Emasculated? | 1982 | Pipeline Spill, Wyoming | 1982 |
| How Clean is Clean? | 1982 | Alvenus Spill, LA | 1988 |
| Times Beach Disaster | 1983 | Ashland Oil Tank Collapse | 1988 |
| Environ. Activists | 1983 | Exxon Valdez Spill | 1989 |
| Incineration of Haz. Was. | 1983 | Industry Effects of Valdez | 1989 |
| Bhopal Disaster | 1984 | | |
| Deep Well Injection | 1984 | | |
| How to Speed Up Cleanups | 1984 | | |
| International Env Issues | 1985 | | |
| Montreal Protocol | 1987 | | |
| Superfund Cleanup Costs | 1987 | | |
| SARA Title III | 1987 | | |
| Ashland Oil Tank Collapse | 1988 | | |
| Exxon Valdez Spill | 1989 | | |
| Env Liability | 1989 | | |
| <hr/> | | | |
| Earth Day | 1990 | APIs STEP Program | 1990 |
| Times Beach Cleanup | 1990 | Exxon's Arthur Kill Spill | 1991 |
| CMA's Responsible Care | 1990 | Kuwait Oil Fires | 1991 |
| Pesticide Spill in Sacramento R. | 1991 | Gulf Oil Spill | 1991 |
| CRC Alternatives | 1991 | Decline in Oil Spills | 1992 |
| Green Marketing | 1991 | Global Warming | 1992 |
| Rio Summit | 1992 | | |
| Life Cycle Analysis | 1992 | | |
| Economics and the Environ. | 1992 | | |
| Chlorine Ban | 1993 | | |
| Environmental Racism | 1993 | | |

E.2. Focus on Specific Institutional Constituents

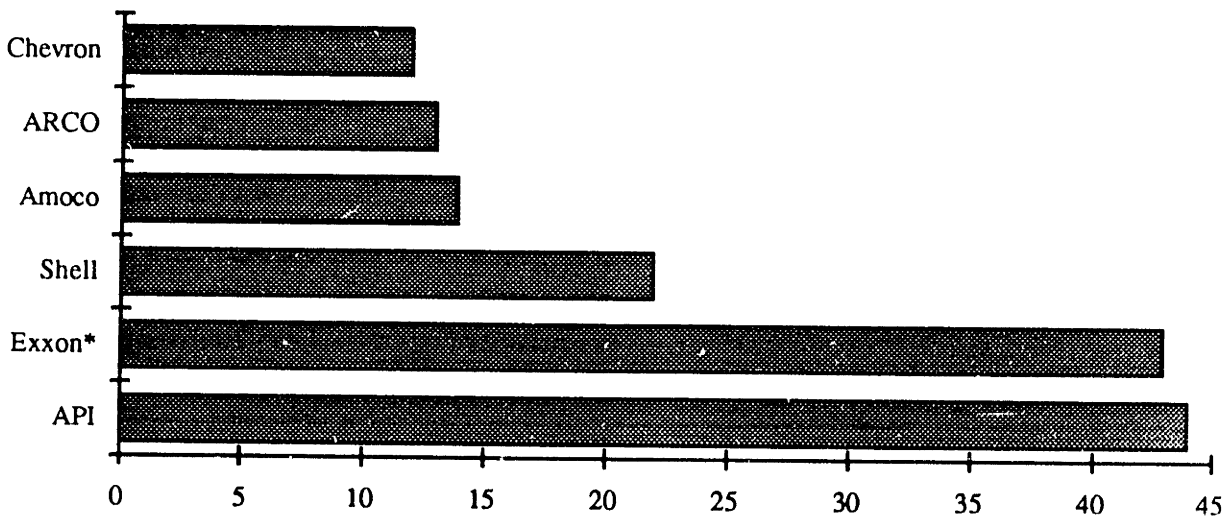
The data also reveals insights into who each industry watches as being significant influences in their respective institutional fields. Within the trade journal analysis, the *O&GJ* data depicts an oil industry that is more focused on internal industry actions. Of a total of 1836 environmentally related articles over the 34 year study period, 1056 (58%) dealt with industry affairs. Of these, 736 (70%) focused on broad industry issues, 256 (24%) focused on specific companies, and 64 (6%) on trade associations. The *Chemweek* focus revealed a less industry directed focus. Of a total of 2350 environmentally related stories, only 783 (33%) dealt with industry affairs. And of that subtotal, 429 (54%) focused on broad industry issues, 290 (37%) focused on specific companies and 64 (8%) on trade associations. Of those specific companies, Dow Chemical Corporation and Exxon⁶³ Corporation garnered the most coverage, suggesting that they enjoy the strongest influence within the institutional field — see figures E-1 and E-2.

FIGURE E-1
Chemweek Chemical Company Coverage



⁶³ This total includes 15 articles written about Exxon's predecessor, Humble Oil and 10 articles dealing with Exxon's actions with regards to the Valdez disaster.

FIGURE E-2
O&GJ Oil Company Coverage



*See footnote.

As for trade association focus, each journal wrote an equal number of articles. However, *Chemweek*, again showing more diversity, wrote about 14 different associations with the Chemical Manufacturer's Association (CMA, formerly the MCA) receiving 51% of the attention. *O&GJ* wrote about only 4 associations with the American Petroleum Institute (API) receiving 68% of the attention and the National Petroleum Refiners Association (NPRA) receiving 24%.

The federal case law data supports the observation that Dow Chemical Corporation and Exxon enjoy the strongest influence within the institutional field. In their respective industries, each company was the most cited plaintiff and one of the top cited defendants — see figures E-3 and E-4

FIGURE E-3
Lawsuits Involving Specific Chemical Companies
Plaintiff *Defendant*

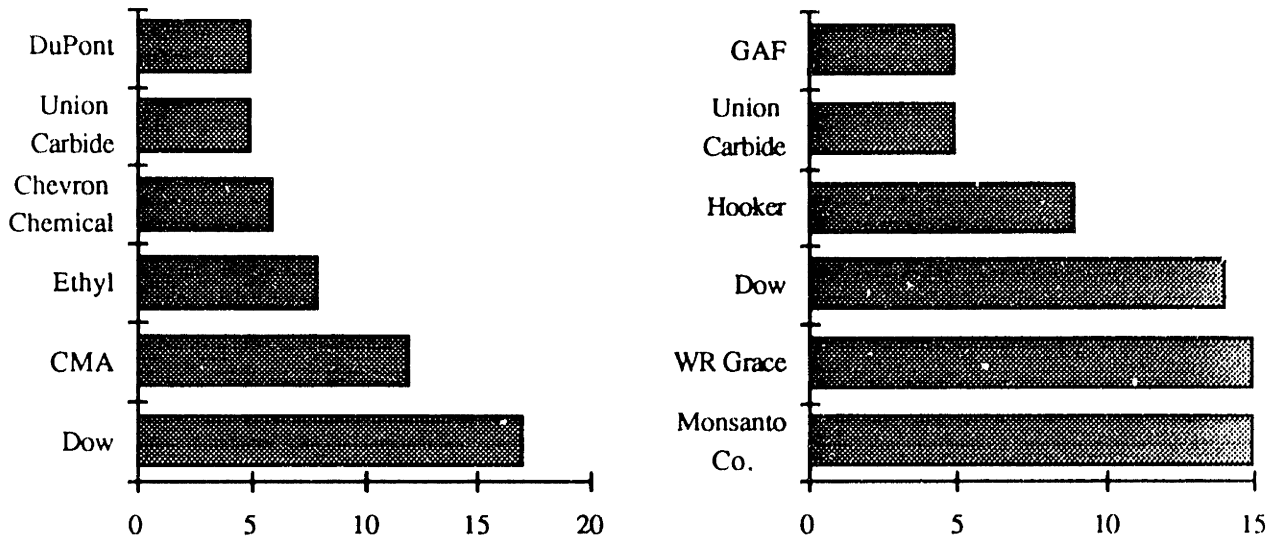
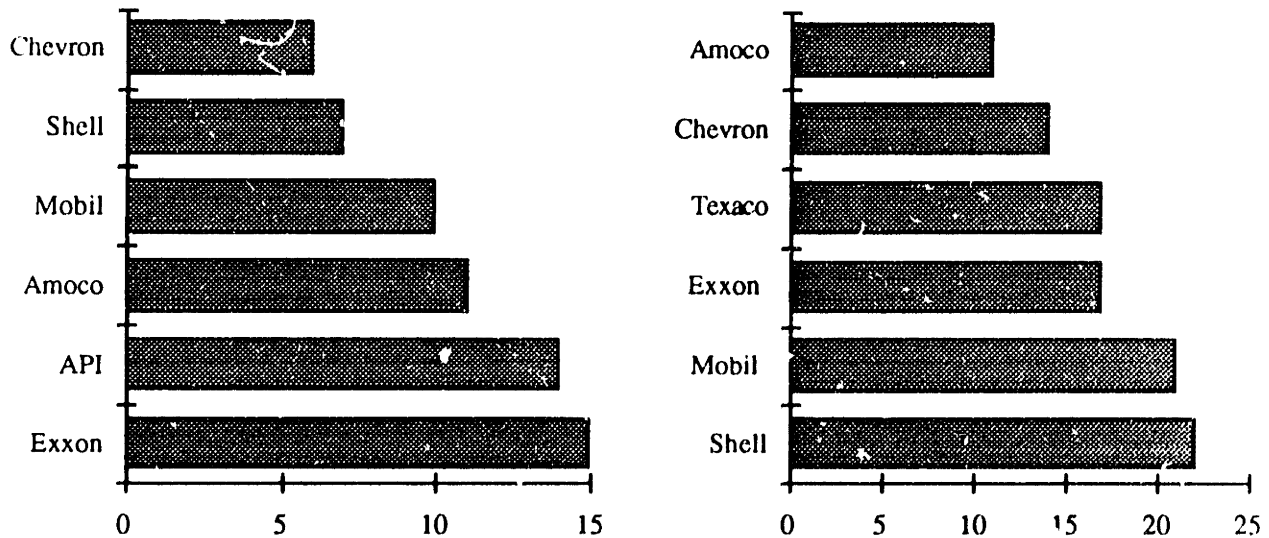


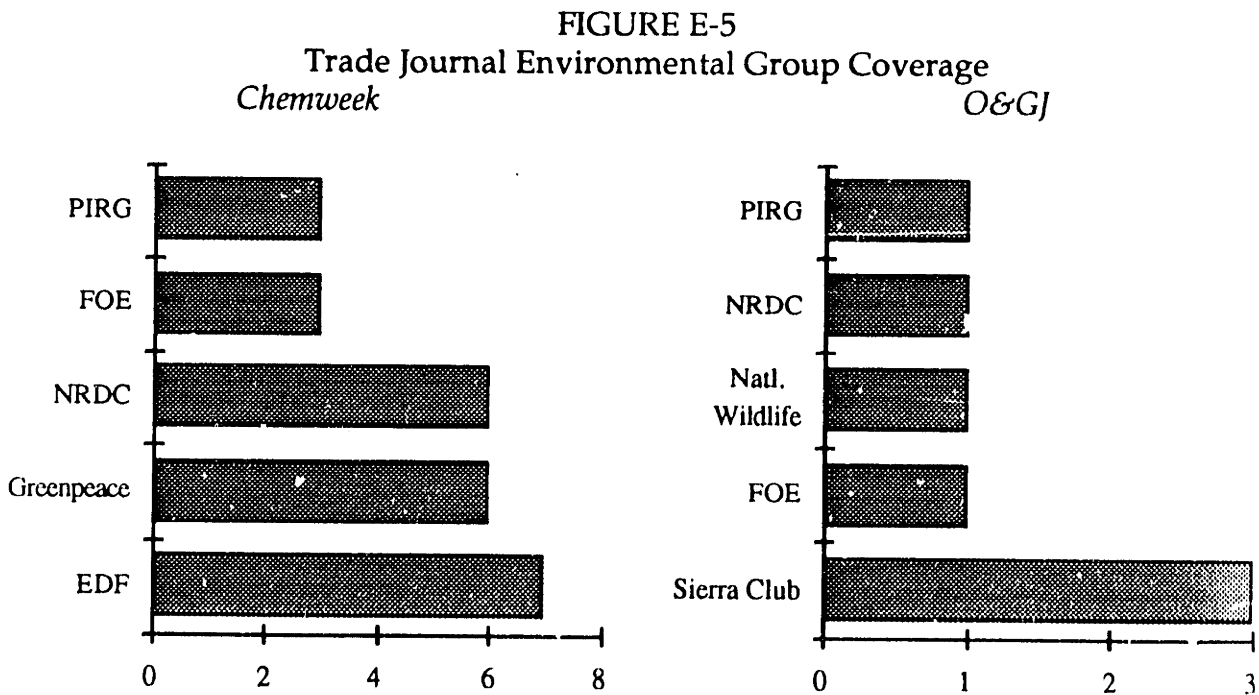
FIGURE E-4
Lawsuits Involving Specific Oil Companies
Plaintiff *Defendant*



It is interesting to note the degree to which these two industries are intertwined, carefully watching each other. *O&GJ* often wrote about the rising

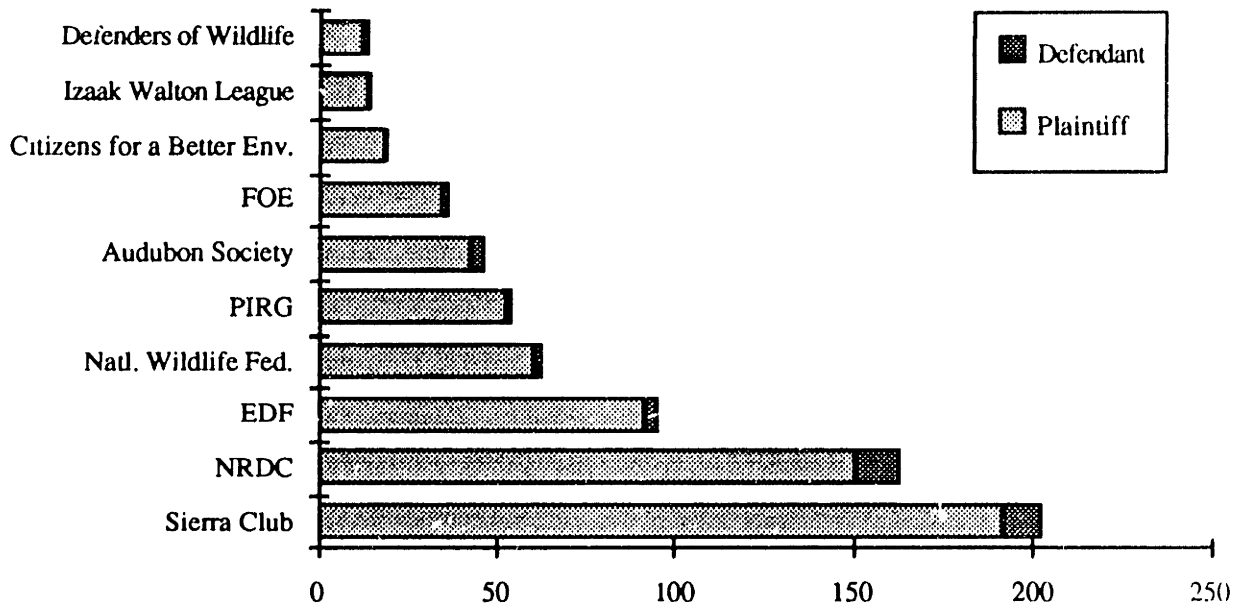
costs of environmental protection within the chemical industry and 6 chemical companies (n=20) were identified over the 34 year period. *Chemweek* countered with articles about 8 oil companies (n=9) and, 6% of the trade association articles were about the API. This emphasizes that when analyzing institutional fields, any definition of the boundaries is likely to be a simplification. In reality, the boundaries are blurry and ill-defined.

Just as *O&GJ* showed a strong preference for articles focused internally, their external focus towards environmental groups was also more limited than that of *Chemweek*. Environmental groups emerged in the late 1960s for both journals — 1968 for *Chemweek* and 1970 for *O&GJ* — while their levels remained relatively low from then until the present — overall average: *Chemweek*: 6%, *O&GJ*: 1%. While the Sierra Club appears to have a stronger impact on the affairs of the oil industry and the Environmental Defense Fund appears more influential in the chemical industry, these groups as well as the Natural Resources Defense Council, Friends of the Earth and the Public Interest Research Groups appear highly influential in both industries — see figure E-5.



The federal case law data, again supports this observation. While few environmental groups are cited as defendants, the Sierra Club, the Natural Resources Defense Council and the Environmental Defense Fund were cited most as both defendant and plaintiff — see figure E-6.

FIGURE E-6
Lawsuits Involving Specific Environmental Groups



Appendix F:
Overview of the Amoco Corporation

The Amoco Corporation can trace its roots to the Standard Oil Trust established by John D. Rockefeller in 1879. It was incorporated in 1889 with the construction of Standard's major oil refinery in Whiting Indiana. With the breakup of the trust in 1911 for violations of the Sherman Anti-Trust Act of 1890, this refinery would become the center piece for the newly formed Standard Oil of Indiana, now competing with the 30-some other Standard companies that made up the trust. Through the successive years Standard (Indiana) would acquire additional refining capabilities, production wells and pipe-line systems throughout the mid-west. Although primarily an oil company, in 1945, Standard (Indiana) formed Amoco Chemicals Corporation (ACC) as a sales unit for petrochemicals produced at their refineries. In 1957, ACC became a stand alone subsidiary assuming control for all Standard Oil chemical operations. Until 1970, ACC was in its formative stages, starting up operations to produce polypropylene, aromatic acids and purified terephthalic acid. In 1985, the parent corporation changed its name from Standard Oil of Indiana to the Amoco Corporation.

Today, the Amoco Corporation is a fully integrated company engaged in the world-wide exploration, production and transportation of crude oil and natural gas and the manufacture and marketing of petroleum and chemical products. The corporation, based in Chicago, Illinois, is a parent company for three wholly owned subsidiaries: Amoco Production Company (APC), Amoco Oil Company (AOC) and Amoco Chemical Company (ACC). In 1992, the Corporation posted \$28 billion in revenues, was the seventh largest producer of crude oil, the second largest producer of natural gas and the eleventh largest company in the United States (based on assets).

The production company owns about 28,000 net production wells world-wide, including more than 19,000 in the United States (Texas, Wyoming,

Louisiana, Utah, New Mexico, Colorado, Oklahoma, Kansas and the Gulf of Mexico). Their net worldwide crude oil and natural gas liquids (NGL) reserves were more than 2.7 billion barrels by the end of 1989. The chief sources of these reserves were the United States, Canada, Egypt and Trinidad. Amoco produces about 4 percent of the nation's crude oil and about 4 percent of its natural gas. This makes it the second largest in US natural gas production and the largest owner of natural gas reserves in North America.

The oil company markets its branded gasoline through service stations in 30 states and the District of Columbia. It operates seven US refineries, located at Whiting, Indiana; Texas City, Texas; Yorktown, Virginia; Savannah, Georgia; Mandan, North Dakota; Salt Lake City Utah; and Casper, Wyoming; with an operable capacity of 984,000 barrels of crude oil input per day. Working at about 91 percent capacity, this makes Amoco the fourth largest in US refinery runs, accounting for about 6 percent of US sales of refined product.

The oil company also owns and operates one of the largest petroleum pipeline networks in North America which currently includes more than 17,000 miles of wholly and partially owned pipelines. Roughly two thirds of the system is used to transfer crude oil from production wells to refineries with a capacity of almost 1 million barrels per day. The remainder are used for the transportation of refined products and chemical feedstocks.

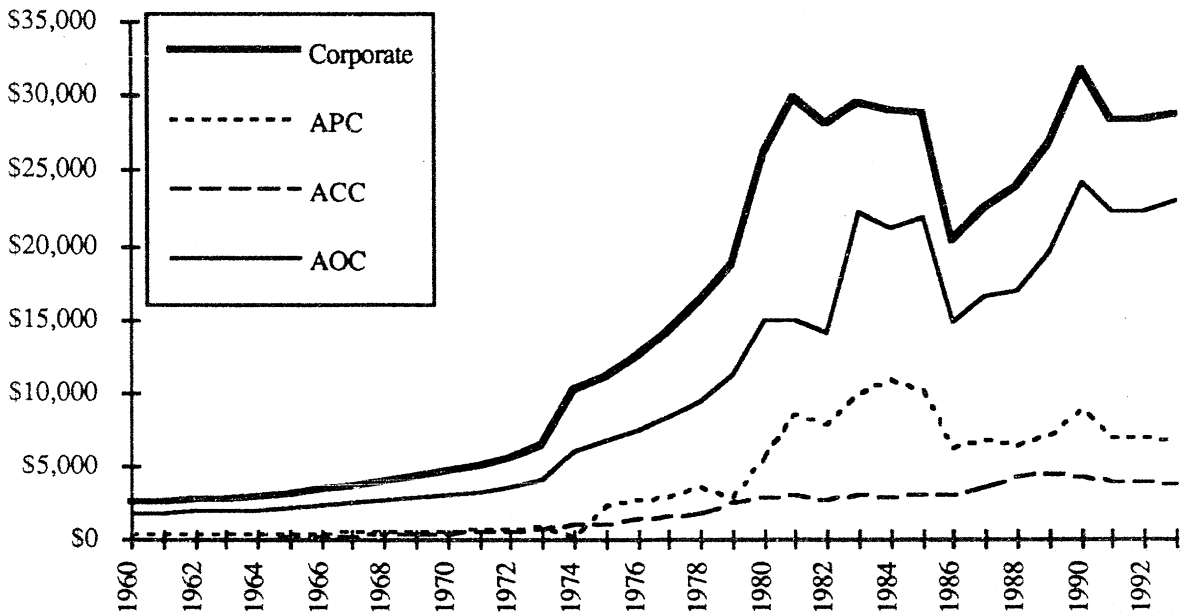
The chemical company's operations can be divided roughly into two main parts. One manufactures and markets, world-wide, commodity and specialty chemical products derived from petroleum. The other manufactures polymer products and is a "customer" for certain of Amoco's commodity chemicals, particularly propylene and styrene. Worldwide operations include 36 manufacturing plants in the United States and 19 wholly owned and joint ventures in 10 other nations. ACC's first major domestic chemical manufacturing

facility (in South Carolina) was completed in 1976. Its largest and most important product is purified terephthalic acid (PTA) which is the preferred intermediate for manufacturing polyester. Amoco produces about 30 percent of the PTA consumed in the world. Other products include polypropylene, polybutenes, paraxylene, and two intermediates, purified isophthalic acid and trimellitic anhydride.

The Amoco Corporation has also been moving into other new ventures. The Amoco Technology Company uses research and development, acquisitions and operations as means of spotting and accessing business diversification into new high-technology areas, primarily opto-electronics and biotechnology. Amoco Laser Company produces compact and durable lasers used in a wide range of medical, scientific and printing applications. Amoco's subsidiary Solarex Corporation produces photo-voltaic technology. And, Amoco subsidiaries Waste-Tech Services and Ecova provide services which fall into three major categories: consulting on remediation of hazardous waste sites; management of these materials at client's sites, and incineration at Waste-Tech's incinerator in Kimball, Nebraska.

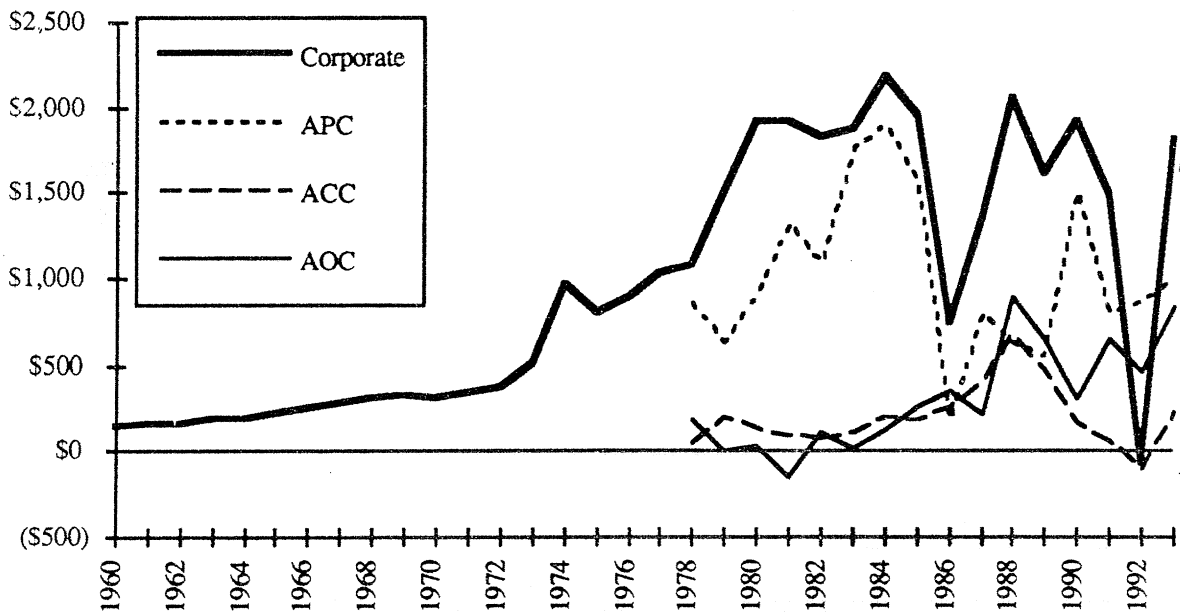
Revenues for the Corporation as well as those for AOC and APC have been on a rebound from a severe drop in 1986, coinciding with a major drop in oil prices. ACC revenues have been steadily growing for the past three decades — see figure F-1. Earnings, on the other hand, have fluctuated, dropping in 1986 with the drop in revenues and oil prices, rising the following year only to drop to negative levels for the first time in the past thirty years (for the Corporation), and then rising again in 1993 — see figure F-2.

FIGURE F-1
Amoco Revenues (\$ millions)



(Source: Amoco Annual Reports)

FIGURE F-2
Amoco Earnings (\$ millions)



(Source: Amoco Annual Reports)

Appendix G:
Evolving Versions of the CERES/Valdez Principles

| Original Valdez Principles (1989) | Amended Valdez Principles (1992) | Sun Endorsed CERES Principles (1993) |
|---|---|--|
| <p><u>1. Protection of the Biosphere:</u> We will minimize and seek to eliminate release of pollutants causing damage to the air, water, or earth or its inhabitants. Safeguard habitats in rivers, lakes, wetlands, coastal zones and oceans and minimize contributing to the greenhouse effect, depletion of the ozone layer, acid rain, or smog.</p> | <p><u>1. Protection of the Biosphere:</u> We will reduce and make continual progress toward eliminating the release of any substance that may cause environmental damage to the air, water, or the earth or its inhabitants. We will safeguard all habitat affected by our operations and will protect open spaces and wilderness, while preserving biodiversity.</p> | <p><u>1. Protection of the Biosphere:</u> We will reduce our overall emissions to the environment (air, water and land) with special emphasis on toxic substances. We will pay special attention to the protection of the surrounding environment at present facilities and when planning for new facilities or operations.</p> |
| <p><u>2. Sustainable Use of Natural Resources:</u> We will make sustainable use of natural resources, such as water, soils, and forests. Conserve nonrenewable natural resources through efficient use and careful planning. Protect wildlife habitat, open spaces, and wilderness while preserving biodiversity.</p> | <p><u>2. Sustainable Use of Natural Resources:</u> We will make sustainable use of renewable natural resources such as water, soils, and forests. We will conserve nonrenewable natural resources through efficient use and careful planning.</p> | <p><u>2. Sustainable Use of Natural Resources:</u> We will minimize the use of water in our facilities and strive to improve the quality of our water discharge streams. We will employ practical land management and conservation techniques to conserve the soils and forests at our facilities. We will make efficient use of non-renewable natural resources through careful planning and employment of conservation techniques.</p> |
| <p><u>3. Reduction and Disposal of Wastes:</u> We will minimize creation of waste, especially hazardous waste, and whenever possible recycle materials. Dispose of waste through safe and responsible methods.</p> | <p><u>3. Reduction and Disposal of Wastes:</u> We will reduce, and where possible eliminate, waste through source reduction and recycling. All waste will be handled and disposed of through safe and responsible methods.</p> | <p><u>3. Reduction and Disposal of Wastes:</u> We will continue to reduce and where possible eliminate waste through the use of source reduction, recycle/reuse treatment techniques. The handling and disposal of all waste will be conducted in a safe and responsible fashion in accordance with regulatory standards.</p> |

4. Energy Conservation: We will make every effort to use environmentally safe and sustainable energy sources. Invest in improved energy efficiency and conservation in our operation. Maximize energy efficiency of products we produce or sell.

4. Energy Conservation: We will conserve energy and improve the energy efficiency of our internal operations and of the goods and services we sell. We will make every effort to use environmentally safe and sustainable energy sources.

4. Energy Conservation: We will conserve energy through careful selection of raw materials and energy sources and through cost effective improvements in our operations, including technological improvements in new energy-consuming processes. Environmental protection and sustainability will be considered in selecting new energy sources.

5. Risk Reduction: We will minimize environmental health and safety risks to employees and communities in which we operate by employing safe technologies and operating procedures and by being constantly prepared for emergencies.

5. Risk Reduction: We will strive to minimize the environmental, health, and safety risks to our employees and the communities in which we operate through safe technologies, facilities, and operating procedures, and by being prepared for emergencies

5. Risk Reduction: Our goal is to prevent HES [Health, Environment and Safety] incidents such as environmental spills and releases, fires, explosions, injuries and illnesses and other accidents. We will utilize sound maintenance and work practices, safety-conscious design, employee training and incident investigations to minimize risks to our employees and the communities in which we operate. We will be prepared to respond promptly and professionally should an incident occur.

6. Safe Products and Services: We will sell products or services that minimize environmental impacts and are safe as consumers use them. Inform consumers of environmental impacts of the products or services.

6. Safe Products and Services: We will reduce, and where possible eliminate, the use, manufacture, or sale of products and services that cause environmental damage or health or safety hazards. We will inform our customers of the environmental impacts of our products or services and try to correct unsafe use.

6. Safe Products and Services: Through research, planning and analysis we will strive to minimize the environmental impact and health and safety hazards of our company products and services. We will counsel our employees and customers in the safe use and handling of our products and services and where feasible, attempt to correct unsafe use. We will strive to eliminate the use of purchased products which pose known environmental hazards such as PCB's and CFC's.

7. Environmental Restoration: We will take responsibility for harm we cause to the environment by making every effort to fully restore the environment and compensate persons adversely affected.

7. Environmental Restoration: We will promptly and responsibly correct conditions we have caused that endanger health, safety, or the environment. To the extent feasible, we will redress injuries we have caused to persons or damage we have caused to the environment and will restore the environment.

7. Environmental Restoration: We will promptly correct any conditions in our operations which result in a significant health, safety or environmental impact. We will take responsibility for any harm caused by our operations to our employees, customers, the general public or the environment; to the extent feasible, we will also restore the environment.

8. Informing the Public: We will disclose to employees and the public incidents relating to operation that cause environmental harm or pose health and safety hazards. Disclose potential environmental, health, or safety hazards posed by operations and not take action against employees who report conditions that create a danger to the environment or pose health and safety hazards.

8. Informing the Public: We will inform in a timely manner everyone who may be affected by conditions caused by our company that might endanger health, safety, or the environment. We will regularly seek advice and counsel through dialogue with persons in communities near our facilities. We will not take any action against employees for reporting dangerous incidents or conditions to management or to appropriate authorities.

8. Informing the Public: We will inform appropriate officials, employees, contractors, customers and the public about significant health, safety or environmental hazards related to our facilities in a timely manner. We will regularly participate in dialogue with our neighboring communities and their residents. No action will be taken against employees for reporting dangerous incidents or conditions to management or appropriate authorities.

9. Management Commitment: We will commit management resources to implement these Principles, to monitor and report on implementation, and to sustain a process to ensure that the board and CEO are kept informed of, and are fully responsible for, environmental matters. Establish a committee of the board with responsibility for environmental matters. Have one board member qualified to represent environmental interests.

9. Management Commitment: We will implement these principles and sustain a process that ensures that the Board of Directors and Chief Executive Officers are fully informed about pertinent environmental uses and are fully responsible for environmental policy. In selecting our Board of Directors, we will consider demonstrated environmental commitment as a factor.

9. Management Commitment: We will ensure that the Board of Directors, the Chief Executive Officer and senior management are fully informed about pertinent HES issues and take responsibility for carrying out HES policy. We will consider demonstrated environmental commitment and HES experience as factors in our selection of future board members.

10. Audits and Reports: We will conduct and make public and annual self-evaluation of progress in implementing these principles and in complying with all applicable laws and regulations throughout worldwide operations. Work toward timely creation of independent environmental audit procedures completed annually and made available to the public.

10. Audits and Reports: We will conduct an annual self-evaluation of our progress in implementing these principles. We will support the timely creation of generally accepted environmental audit procedure. We will annually complete the CERES Report, which will be made available to the public.

10. Audits and Reports: We support the concept of public accountability for HES performance and intend to report on our progress in consistent, measurable terms. This will be accomplished through publishing an annual report on our HES performance and accomplishments. In addition, to promote public accountability among others in the industrial community, we intend to cooperate with the environmental and social investment community by completing the annual CERES report.

Disclaimer: These principles establish an environmental ethic with criteria by which investors and others can assess the environmental performance of companies. Companies that sign these Principles pledge to go voluntarily beyond the requirements of the law. These Principles are not intended to create new legal liabilities, expand existing rights or obligations, waive legal defenses, or otherwise affect the legal position of any signatory company, and are not intended to be used against a signatory in any legal proceeding for any purpose.