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RESPONSIBLE CARE[®] AND EPCRA:
CHEMICAL MANUFACTURERS ASSOCIATION (CMA)
MEMBERS' MICHIGAN FACILITIES' VOLUNTARY COMPLIANCE WITH
THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (EPCRA)

VOLUME I

By

Carol Young Swinehart

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ABSTRACT

RESPONSIBLE CARE[®] AND EPCRA:
CHEMICAL MANUFACTURERS ASSOCIATION (CMA)
MEMBERS' MICHIGAN FACILITIES' VOLUNTARY COMPLIANCE WITH
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By

Carol Young Swinehart

Chemical Manufacturers Association (CMA) members must participate in its Responsible Care[®] program and most must make reports under the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986. The Michigan Department of Environmental Quality (DEQ) provided the 1987-1994 EPCRA reporting records of CMA members' 55 Michigan facilities. The records were analyzed to ascertain whether the facilities had complied voluntarily with EPCRA. DEQ's records suggest that no facility was in absolute compliance with the law for the entire period. However, considering various "benefit of the doubt" factors, 11 appeared to be in compliance. Seventeen facilities were in absolute compliance with one section and four with two sections during 1987-1994. The facilities' Responsible Care[®] coordinators and EPCRA compliance officials and other experts on the program and the law were interviewed. This work points to the need for further study to ascertain whether CMA members' participation in Responsible Care[®] is a reliable indicator of their voluntary compliance with existing environmental statutes.

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To those industries and businesses that work diligently to comply voluntarily with environmental laws and to be environmentally ethical. To all citizens who know that eternal vigilance is required to protect the Great Lakes environment and are working to be watchful.

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Chapter 1

INTRODUCTION

The Great Lakes are the second largest supply of fresh water on Earth--six quadrillion gallons.¹ Many Michigan industries need excellent quality water in order to conduct their business, and many of them rely on water--nearly 2 billion gallons per day--from the Great Lakes or their tributaries.² However, approximately 1,700 industrial concerns also discharge their treated effluent directly to Michigan's surface water,³ while numerous others pretreat their waste and send it through municipal sewage treatment systems. Most of this water eventually flows to the Great Lakes.

Situations such as the deterioration of Lake Erie in the 1960s created an increasing awareness of America's environmental problems. During the mid-1960's, Rachel Carson's book *Silent*

¹Great Lakes Basin, (East Lansing: Michigan Sea Grant College Program, 1990).

²Wayne B. Solley, Robert R. Pierce and Howard A. Perlman, *Estimated Use of Water in the United States in 1990*, U.S. Geological Survey Circular 1081, 1992.

³Patti Brant, Surface Water Quality Division, Michigan Department of Natural Resources, Personal Communication, 1994.

Spring clearly implicated the products and practices of chemical manufacturers in environmental degradation.⁴ The country's conscience was thus sensitized, and ever since, U.S. citizens have paid attention to things environmental.

THE LEGAL CONTEXT FOR ENVIRONMENTAL PROTECTION

The federal governments of Canada and the United States are responsible for managing Great Lakes resources. Under the authority of the Boundary Waters Treaty of 1909 between the United States and Great Britain,⁵ the two have developed three international agreements--the Great Lakes Water Quality Agreements of 1972 and 1978 and amended by Protocol in 1987⁶--to set mutual objectives for Great Lakes water quality.

The National Environmental Policy Act of 1969, the 1990 Amendments to the Federal Water Pollution Prevention and Control Act, the Clean Air Act Amendments of 1990, the Toxic Substances Control Act of 1976, the Comprehensive Environmental Response,

⁴Rachel Carson, *Silent Spring*, (Boston: Houghton Mifflin, 1962).

⁵United States, "Treaty Between the United States and Great Britain Relating to Boundary Waters, and Questions Arising Between the United States and Great Britain," January 11, 1909.

⁶United States and Canada. "Great Lakes Water Quality Agreement of 1978, Agreement, with Annexes and Terms of Reference, between the United States and Canada signed at Ottawa November 22, 1978 and Phosphorus Load Reduction Supplement signed October 16, 1983, as amended by Protocol signed November 18, 1987," Consolidated by the International Joint Commission, United States and Canada. (Windsor: September, 1989).

Compensation and Liability Act of 1980, and the Superfund Amendments and Reauthorization Act of 1986 are principal examples of United States environmental statutes.⁷

One major premise of these agreements and laws was that serious wrongs had been perpetrated against the environment. Another was that righting them and preventing future injustices required a "command and control" approach.⁸ This approach stringently regulated the amounts of pollutants that might be discharged into interstate waters. Beginning in the mid-1960s, the U.S. federal government's approach to Great Lakes protection was to mandate certain standards for interstate waters and expect states to implement them. Public and private facilities' discharges were regulated by permits issued under the National Pollutant Discharge Elimination System (NPDES).

Eight states, including especially the State of Michigan, have a significant responsibility for protecting the water quality of the Great Lakes.⁹ Michigan state government is

⁷The National Environmental Policy Act (NEPA) of 1969 (42 U.S.C.A. §§ 4321 to 4370c), the 1990 Amendments to the Federal Water Pollution Prevention and Control Act (NWPPCA) (33 U.S.C.A. §§ 1251 TO 1387), the Clean Air Act (CAA) Amendments of 1990 (42 U.S.C.A. §§ 7401 TO 7671q), the Toxic Substances Control Act (TSCA) of 1976 (15 U.S.C.A. §§ 2601 to 2671), and the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 (42 U.S.C.A. §§ 9601 to 9675).

⁸David J. Abell, "Emergency Planning and Community Right to Know: The Toxics Release Inventory," *SMU Law Review* 47:582.

⁹Great Lakes and Water Resources Planning Commission. *Water Resources for the Future: Michigan's Action Plan*, (Lansing: State of Michigan, 1987), 9.

considered the ultimate trustee of 38,716 square miles--40 percent--of this common resource,¹⁰ and is required by the state constitution to protect it from degradation.

The legislature shall provide for the protection of the air, water and other natural resources of the state from pollution, impairment and destruction.¹¹

The development of Great Lakes water quality policy and law in Michigan has historically occurred through the parallel, though not always synchronous, pathways of judicial decisions on case law, adoption of statutes by the legislature, and policy development initiatives of the executive branch. The historic Michigan Environmental Policy Act of 1970¹² and the litigation that has resulted, and, more recently "polluter pay" legislation are just a couple of examples of Michigan's environmental protection legislation.

However, traditional "command and control" approaches used by governments have significant limitations. In his argument for criminal enforcement of environmental laws, Earl Devaney of the U.S. Environmental Protection Agency (1992) quotes Chester Bowles, a member of the World War II Office of Price Administration:

¹⁰Michigan Agricultural Experiment Station, *Status and Potential of Michigan Natural Resources: Water Resources. Special Report 79*, (East Lansing: Michigan State University, 1994), 3.

¹¹Michigan Constitution. 1963. Art. 4, Section 52.

¹²MCL 691.1201.

There will always be five percent of individuals who will violate no matter what; 20 percent who will comply no matter what; and 75 percent who will comply only if the violators are punished and the requirements are perceived as nonarbitrary.¹³

Furthermore, enforcement of those traditional "command and control" environmental laws by financial, and more recently criminal, penalties, has proved expensive and difficult. Since 1970, the U.S. Environmental Protection Agency has been trying to implement and enforce environmental programs and laws. However, no government is likely ever to have enough policing capacity to ensure complete compliance with environmental laws through this approach.

Even when enforcement has been effective in stopping current pollution, cleaning up the contaminated sites inherited from previous generations has not always been possible, either technically or financially or both. It stands to reason that pollution prevented will never have to be cleaned up. Future generations can be spared a considerable health and financial burden if the present one chooses a preventative approach to pollution rather than continuing to use the tactics of "command and control." However, this places a considerable social, technical and financial burden on this generation. It becomes incumbent on society now to ascertain the dimensions and potential consequences of past, present and future pollution, to

¹³Earl Devaney, "Criminal Enforcement of Environmental Laws: an EPA Perspective," *Trial*, October 1992, 32.

agree upon what is undesirable and to pay for cleaning up, stopping and preventing it.

The U.S. and Michigan system of laws (including environmental ones) is largely dependent upon voluntary compliance. This means that the law must be respected and obeyed by the majority of individual and corporate citizens without coercion. Ultimately, this society will have to rely on the good conscience and concerted efforts of its members, both individual and corporate, to become aware of and be sensitive to their environmental responsibilities and to obey the laws voluntarily or even go beyond them to achieve environmental goals.

CORPORATE ENVIRONMENTAL BEHAVIOR

The "social contract"¹⁴ through which individuals and groups interact and govern their own behavior and that of institutions such as corporations has evolved in the United States to include a considerable emphasis on corporate responsibility for environmental protection. Cressey and Moore state that corporations are coming to believe that:

virtue is its own reward and the social contract, the idea that civilized life demands that private interests be pursued only within the 'rules of the game' set forth by the larger society.¹⁵

¹⁴Donald K. Cressey and Charles A. Moore, "Managerial Values and Corporate Codes of Ethics" *California Management Review*, Summer 1983, 60.

¹⁵Cressey and Moore, 59.

Industrial corporations, including chemical manufacturers, have certainly been affected by and have often attempted to influence water quality policy and law in Michigan. They have been significant actors in all three governmental arenas--pleading cases in court, as well as courting influence with legislators, bureaucrats and governmental executives through a variety of means and methods.

However, although industrial corporations both influence and are affected by Michigan's Great Lakes water quality policy and law, their influence has been diminished by the perception, fueled by notable cases of environmental violations, that they are motivated solely by greed for profits. One long-time public participation advocate and consultant to chemical companies has told them frankly, "IN THE EYES OF THE PUBLIC, THE CHEMICAL INDUSTRY IS... interested only in making a profit."¹⁶ Even those companies that comply completely with existing statutes or prevail in court on points of case law, may be considered suspect by some when they seek to influence public policy and legislation.

Industries argue that they know most about what they are contributing to water pollution and know best how to deal

¹⁶Diane Sheridan, "Is the Chemical Industry Believable? How Can It Gain Credibility," Unpublished Paper, 1993.

adequately with the problem.¹⁷ If they could regulate themselves, that is develop adequate "private law," some public law might be unnecessary.

The EPA's policy decision to emphasize voluntary pollution prevention by industry is a landmark in US environmental policy... If voluntary action does not lead to improved environmental performance, more "command and control" regulation is likely to occur, given the high societal importance placed on pollution control.¹⁸

And they could make a positive contribution to Great Lakes protection at significantly less public expense.

Therefore, the crux of the issue in the development of Michigan's Great Lakes water quality policy and statutory law is to establish it in such a way as to protect the public's interest in these common resources while ensuring as much voluntary compliance as possible.

CORPORATE CODES OF ENVIRONMENTAL ETHICS: A New Way of Doing Business

Developing environmental laws that adequately address society's need for clean water for many purposes, while ensuring a high rate of compliance with statutes and self-imposed constraints among those policing themselves, is challenging. It requires careful balancing of the public interest with private

¹⁷Cressey and Moore, "Managerial Values and Corporate Codes of Ethics," 64.

¹⁸James E. Post, "Managing as if the Earth Mattered," *Business Horizons* 34(4):37.

rights and responsibilities. Although they are only supplementary to statutory law, corporate codes of environmental ethics, conduct and practice offer some possibilities to help meet that challenge.

These codes are a relatively recent development in the corporate world. They propose to exceed current legal requirements and regard the law as the "floor," not the "ceiling" of ethical corporate behavior. Both individual corporations and whole industries--notably chemical manufacturers--are developing these codes.

"RESPONSIBLE CARE": A Public Commitment"

Since the late 1970s, the Canadian and U.S. chemical industry associations--the Canadian Chemical Producers Association (CCPA) and the U.S. Chemical Manufacturers Association (CMA)--have developed codes of environmental ethics under the umbrella title of Responsible Care[®]. The CCPA adopted a Statement of Policy on Responsible Care[®] in the late 1970s.¹⁹ As a 1996 account puts it, CMA heeded the "wakeup call" that sounded unmistakably from the groundswell of public opinion that followed the thousands of tragic deaths in Bhopal, India, and the

¹⁹David Powell, "The Development and Implementation of Industry-Wide Environmental Codes of Practice," in *The Corporation, Ethics and the Environment*, Center for Business Ethics, (Westport, CT: Quorum Books, 1990), 163-169.

injuries of hundreds in Institute, West Virginia, in 1984 and 1985 respectively. CMA members took stock of their public image and community relationships and decided that they needed to do some serious renegotiating of the "social contract" with their plant communities.²⁰

Following the example set by the CCPA, the CMA also developed a Responsible Care[®] program. It consists of a set of guiding principles and a series of codes of environmental management practices. A couple examples of the guiding principles are:

1. To recognize and respond to community concerns about chemicals and our operations.

4. To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.

9. To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.²¹

A copy of the entire list of Responsible Care[®] *Guiding Principles* can be found in Appendix A.

These may be considered ethical principles in the sense that they both undergird and go beyond existing legal requirements and that they are a voluntary assertion of responsibility for

²⁰Lisa H. Newton and David P. Schmidt, *Wake Up Calls: Classic Cases in Business Ethics*, (Boston: Wadsworth Publishing Company, 1996), 177-197.

²¹Chemical Manufacturers Association, "Responsible Care: A Public Commitment," (Washington, DC: 1993).

corporate action. However, no matter how high minded Responsible Care[®]'s principles might seem, they are entirely too vague to be considered self-governing "private law," as Cressey and Moore suggest such codes might become. They held, "The purpose of 'private law' is to make public law unnecessary."²²

The CMA also recognized a need for and developed codes of ethical environmental management practices. Member companies are held accountable for implementing the codes according to timetables. According to the CMA, the following areas are covered by the currently operational Responsible Care[®] management codes:

- Community Awareness and Emergency Response
- Pollution Prevention
- Process Safety
- Distribution
- Employee Health and Safety
- Product Stewardship

This study focuses on two codes: Community Awareness and Emergency Response and Pollution Prevention. These two codes go to the heart of the public's concerns over the use and processing of chemicals, as described by Sheridan's list, "50 QUESTIONS THE PUBLIC HAS ABOUT CHEMICAL PLANTS--EVEN YOURS."²³ The questions include issues of the environment, plant safety and health effects. They reflect a desire to be aware of what's being

²²Cressey and Moore, "Managerial Values and Corporate Codes of Ethics," 64.

²³Diane Sheridan, "50 QUESTIONS THE PUBLIC HAS ABOUT CHEMICAL PLANTS--EVEN YOURS," Unpublished, 1993.

manufactured in one's community, to be protected from any danger that the substances might pose in the event of an emergency release, and to prevent pollution whenever possible.

As CMA describes the Community Awareness and Emergency Preparedness (CAER) code, its purpose is to "assure emergency preparedness and to foster community right-to-know."²⁴ According to CMA, The code has two major components:

...first, to assure that member facilities that manufacture, process, use, distribute or store hazardous materials initiate and maintain a community outreach program to openly communicate relevant, useful information responsive to the public's questions and concerns about safety, health, and the environment; and second, to help protect employees and communities by assuring that each facility has an emergency response program to respond rapidly and effectively to emergencies.²⁵

... CAER originally was a voluntary initiative focused on emergency response issues [even before Bhopal]. The new CAER Code of Management Practices broadens the facility-community dialogue to cover the full range of safety, health and environmental issues.²⁶

Among the management practices listed with the code is the following:

B. Emergency Response and Preparedness

Member facilities that manufacture, process, use, distribute or store hazardous materials shall have an emergency response program that includes:

²⁴Chemical Manufacturers Association(CMA), "RESPONSIBLE CARE®: A Public Commitment. Community Awareness and Emergency Response (CAER) Code of Management Practices," (Washington, DC: Undated).

²⁵A related concept is the Pollution Incident Prevention Plan, required under the Part 31 rules of Section 1. Act No. 451 of the Public Acts of 1994 (Michigan). That concept is not included in the scope of this study.

²⁶CMA, "CAER Code."

5. Communication of relevant and useful emergency response planning information to the Local Emergency Planning Committee.²⁷

The purpose of the Pollution Prevention Code of Management Practices is defined by CMA as:

...to achieve ongoing reductions in the amount of all contaminants and pollutants released to the air, water, and land from member company facilities. These reductions are intended to respond to public concerns with the existence of such releases, and to further increase the margin of safety for public health and the environment.²⁸

Among the identified management practices associated with this code are the following:

Each member company shall have a pollution prevention program which shall include:

2. A quantitative inventory at each facility of wastes generated and releases to the air, water, and land, measured or estimated at the point of generation or release.

4. Education of, and dialogue with, employees and members of the public about the inventory, impact evaluation, and risks to the community.²⁹

A caveat included with the Glossary of Terms in the Pollution Prevention Code says,

Note that these [following] definitions may be broader than regulatory definitions, and that adherence to this Code does not relieve a company of the obligation to meet Federal, state and local regulatory requirements.³⁰

As the codes were developed, so were instruments on which

²⁷CMA, "CAER Code."

²⁸Chemical Manufacturers Association (CMA), "RESPONSIBLE CARE: A Public Commitment, Pollution Prevention Code of Management Practices," Undated.

²⁹CMA, "Pollution Prevention Code."

³⁰CMA, "Pollution Prevention Code."

CMA member companies were to record information indicating what they had done to achieve the goals of the code, thereby establishing a self-evaluation process as part of the program. According to CMA,

Member and Partner self-evaluations continue to be an important part of Responsible Care[®]. Each company annually reports progress on each of the six Codes of Management Practices. An independent contractor releases an aggregate report detailing industry progress in each of the Codes.³¹

In 1988, participation in Responsible Care[®] became a condition of membership in the CMA, creating a peer-enforcement dimension to the program.³²

In 1994 CMA's Board of Directors asked the association's member companies to set timetables for implementing the Codes, creating a time dimension for measuring the program's success. For 1994-95 CMA reported:

With the exception of the Product Stewardship Code, 90 percent of CMA members and Partners will be fully implementing Responsible Care[®] by the end of 1996, 95 percent by the end of 1997 and 100 percent by the end of 1998. Members and Partners will be fully implementing the Product Stewardship Code by the end of 1999. Members and Partners who have joined since ... 1994 will be required to submit code implementation timetables based on a five year implementation goal.³³

To foster dialogue with those outside the plant and

³¹Chemical Manufacturers Association(CMA), *10 Elements of Responsible Care[®]: Understanding the Initiative Through Member and Partner Progress*, 1995, 16.

³²CMA, *10 Elements of Responsible Care[®]*, 16.

³³CMA, *10 Elements of Responsible Care[®]*, 16.

organizational gates, CMA established a national Public Advisory Committee (PAP) for Responsible Care[®] and, through the CAER code, encouraged its members to create Community Advisory Panels (CAP).

CMA's PAP has consistently called for independent audits or "third party" verification of members' implementation of the program to ensure its public credibility.³⁴

As the Responsible Care[®] program has matured, CMA's leadership has seen the wisdom of implementing such a verification program. The Canadian Chemical Producers Association has already established independent audits as a condition of membership.³⁵

CMA's approach to this has been two-fold. First, three CMA members' plants have conducted demonstration audits with a verification team.³⁶ Second, in April, 1996, CMA approved a non-mandatory "Responsible Care[®] Management Systems Verification Protocol."³⁷

The protocol contains a major section on "Performance Measurement and Corrective Action," in which a critical element is:

³⁴CMA, *10 Elements of Responsible Care[®]*, 11.

³⁵Sharon Hamilton, Canadian Chemical Producers Association, personal communication, December 18, 1996.

³⁶CMA, *10 Elements of Responsible Care[®]*, 20.

³⁷Judy Stringer, "CMA Members Struggle with Verification," *ChemicalWeek*, 8 May 1996, 52.

The organization demonstrates the use of performance measurement and corrective action by having processes in place for: ...D.5 the audit or review of compliance with regulations...³⁸

According to the protocol, to evaluate the facility's management system, a verifier could, in the absence of a written policy, ask a senior manager: "How do you encompass the range of regulatory requirements and their compliance in your policy?" To test planning, an appropriate manager in the organization could be asked, "How does your organization identify the regulations, legislation and interpretations that are relevant to your operations?" To test for performance measurement and corrective action, a verifier might ask, "Could you describe your internal audit processes for measuring compliance with regulations and your organization's policies?"³⁹

CMA's Public Advisory Panel members reportedly are pleased that the protocol has been tested and adopted.⁴⁰ However, at a Responsible Care[®] conference in late April, 1996, PAP member Diane Sheridan, reportedly "told conference attendees that if they are not willing to make MSV mandatory and the findings publicly available, commitment to external evaluations will

³⁸Chemical Manufacturers Association(CMA), "Responsible Care[®] Management Systems Verification Protocol," (Washington, DC: Unpublished Draft, March, 1996).

³⁹CMA, "Management Systems Verification Draft."

⁴⁰CMA, *10 Elements of Responsible Care[®]*, 11.

continue to be questioned."⁴¹

Many CMA members are also involved in the International Standards Organization whose draft 14001 standards for management systems are, in many respects, similar to Responsible Care[®]. CMA officials have already performed a comparative analysis of the two, which can facilitate independent verification and auditing them both.⁴²

HYPOTHESIS

Corporate/industry codes of environmental ethics may do much to improve industry's public relations, but only if their validity can be established. They need to be assessed through an empirical approach in order to provide policy makers with a means of assessing corporations' appropriate role in developing Great Lakes water quality policy and law in Michigan.

The fundamental assumption is that a company and its associated facilities which subscribe to such a code must have high environmental standards in order to be accepted in their own organization and to achieve greater public credibility in participating in the development of environmental policy and law. One way of measuring such standards independently is by measuring performance using a suitable index mechanism.

⁴¹Stringer, "Members Struggle," 52.

⁴²CMA, "Management Systems Verification Draft."

Using Compliance with Law as an Index for Codes of Ethics

The question is, and the working hypothesis of this study was: "Is an industry/trade association member's participation in a code of environmental ethics a reliable indicator of voluntary compliance with environmental law?"

It appears that Responsible Care[®] is a corporate/industry environmental code program suitable for evaluation. It is designed to go beyond the law; it is peer-enforced; it lends itself to objective measurement; and it has been in place long enough to produce results. What statute, then, would be a suitable index to use?

THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT: A SUITABLE INDEX FOR EVALUATING RESPONSIBLE CARE¹

To use compliance with a statute as an index for evaluating the success of Responsible Care[®] it is important to understand the statute and the relationship between it and Responsible Care[®].

In 1986, Congress passed the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA)⁴³ (also known as SARA Title III because it was part of the amendments and reauthorization of CERCLA or Superfund in 1986). The statute was the lawmakers' way of responding to the groundswell of public

⁴³Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA), (42 U.S.C.A. §§ 11001 to 11050, EPCRTKA 301 to 330).

concern expressed over accidental releases of toxic chemicals. Abrams and Ward cite the tragic fatal incident that occurred halfway around the world in Bhopal, India, and another that happened in the United States at Institute, West Virginia, causing multiple serious injuries as motivating factors for passage of right-to-know statutes. They also allude to the more than 300 deaths that had resulted from more than 11,000 other U.S. chemical accidents from 1982 to 1988, as less publicized, but equally important stimuli for legislative action.⁴⁴ They say these incidents raised serious questions about whether U.S. chemical corporations were assuming appropriate responsibility for ensuring the welfare of their plant communities, as well as for the workers they were already bound by law to inform and protect under the Occupational Safety and Health Act (OSHA).⁴⁵

The prospects for additional accidents seemed clear and compelling, according to some who studied the situation. For example, Montgomery reported in 1986,

The potential for disaster is demonstrated by the pervasiveness of the chemical industry in the United States--12,000 chemical manufacturing plants, 400,000 major chemical storage facilities, and new chemicals created at

⁴⁴Robert Abrams and Douglas H. Ward, "Prospects for Safer Communities: Emergency Response, Community Right-to-Know, and Prevention of Chemical Accidents (State Environmental Perspectives: Articles from State Attorneys General)," *Harvard Environmental Law Review* 14:136.

⁴⁵Occupational Safety and Health Act (29 USC §651 et seq.).

the rate of 600 per year.⁴⁶

However, even before the notorious accidents in the mid-1980s, numerous state and local governments had adopted community right-to-know laws and ordinances, recognizing the potentially disastrous consequences if local governments and citizens did not gain the knowledge necessary to make informed decisions about the environmental health risks they were willing to assume.⁴⁷

Since its passage in 1986, EPCRA has opened the public's eyes to the potential for toxic pollution of America's communities and given the country a glimpse of the scope of this problem. For example, according to a 1995 Booth newspaper account,⁴⁸ U.S. Environmental Protection Agency reports show that Michigan companies produced 948 million pounds of toxic wastes in 1993 and projected that they would produce one billion pounds in 1994. About ten percent of the wastes discharged in 1993 went directly to air, land and water. Chemical companies, many of them members of CMA, generate much of that waste.

EPCRA, more than any other environmental law on the books today, requires corporations to interact with communities and

⁴⁶Christian Montgomery, "Reducing the Risk of Chemical Accidents: The Post-Bhopal Era," *Environmental Law Reporter* 16:10300 (1986).

⁴⁷Mary Beth Arnett, "Risky Business: OSHA's Hazard Communication Standard, EPA's Toxics Release Inventory, and Environmental Safety," *Environmental Law Reporter* 22:10467. 1992.

⁴⁸Mike Magner, "EPA: Michigan Companies Cut Toxic Emissions," (Booth Washington Bureau. April 30, 1995.) [database online], Available from Great Lakes Environment Wire, Great Lakes Information Network.

individual citizens in nontraditional modes. It has established the right of communities to learn about what chemical substances corporations are storing behind their fences and gates and how the storage and permitted or accidental releases of those substances affect local residents and the environment. It has also provided for new ways to obtain such information. It is really a "freedom of information" law, rather than a traditional pollution control one.⁴⁹

However, in at least one respect the EPCRA is no different than other environmental protection legislation. It also relies on fines, as Bowles was previously quoted as suggesting laws must. The penalties can amount to \$75,000 per day for a combination of continuing infractions.⁵⁰

Provisions of EPCRA

Nonetheless, as Stenzel states,

Overall, the [EPCR] Act appears to signify a significant shift in environmental law from crisis-by-crisis, reactive enforcement to government monitoring of potential environmental hazards by relying on computerized files of data submitted by businesses.⁵¹

Stenzel further states that EPCRA has:

⁴⁹Mary L. Lyndon, "Information Economics and Chemical Toxicity: Designing Laws to Produce and Use Data," *Michigan Law Review* 87:1795-1861.

⁵⁰EPCRA, Sec. 325.

⁵¹Paulette L. Stenzel, "Small Business and the Emergency Planning and Right-to-Know Act," *Michigan Bar Journal* 69:181. 1990.

two distinct yet complementary objectives. First, the statute sets up a mechanism through which communities will establish plans for dealing with emergencies created by chemical leaks or spills. ... Second, it extends to communities the type of right-to-know provisions which were guaranteed to workers earlier in the 1980s.⁵²

It accomplishes the first objective by requiring each state to establish a State Emergency Response Commission (SERC) and to create emergency planning districts and appoint a Local Emergency Planning Commission (LEPC) for each one.⁵³ Each district is required to develop an accident prevention and response plan, in collaboration with representatives of covered facilities. EPCRA empowers the LECPs to collect toxic substance inventory and emissions data from certain types of manufacturers and utilize the information in the development of the district's plan.⁵⁴

The plans are to include the following: the identities of facilities; procedures to be followed in the event of a release; and the identities of "Community Emergency Coordinators" and of a "Facility Coordinator" (one from each business facility subject to Title III reporting).⁵⁵

To accomplish the Community Right-to-Know objective, EPCRA requires each covered facility to report certain information to the U.S. Environmental Protection Agency (USEPA), to the State

⁵²Stenzel, "Small Business," 181.

⁵³EPCRA, Sec. 301.

⁵⁴EPCRA, Sec. 303.

⁵⁵EPCRA, Sec. 303.

Emergency Response Commission (SERC) and to the Local Emergency Planning Committee (LEPC).⁵⁶

EPCRA's scope of covered facilities includes companies in certain categories of manufacturing--Standard Industrial Codes 20-39, that utilize and distribute more than "threshold" quantities--10,000 pounds of any of 316 toxic chemicals--in a year. While required participation in EPCRA is not universal, most manufacturing facilities and now federal agencies (though not subject to enforcement or penalty) are required to report on their inventories of the chemicals on their premises and about the permitted and unpermitted releases of contaminants into air, water and soil, or their reuse, recycling and disposal.⁵⁷

Sections 311, 312 and 313 of EPCRA are particularly appropriate for evaluating Responsible Care[®]. Basic provisions of those sections are described next.

Section 311 requires "covered" facilities to submit to several agencies (including the State Emergency Response Commission) Material Safety Data Sheets (MSDSs) for, or a list of, all the substances the facility has on hand that are also found on the list of substances covered by EPCRA. These were to be submitted on or before October 17, 1987, or within three months after the facility is covered by OSHA, or within three months after a facility learns new, significant information about a substance covered by EPCRA.⁵⁸

⁵⁶EPCRA, Sec. 311, 312, 313

⁵⁷EPCRA, Sec. 313.

⁵⁸EPCRA, Sec. 311.

Section 312 requires "covered" facilities to submit to several agencies one of two types of inventory forms (Tier I or Tier II), on which are listed the amounts of the covered substances the facility had on hand during the preceding calendar year. These reports were to be filed annually on or before March 1, beginning in 1989.⁵⁹

Section 313 requires "covered" facilities to submit reports on releases (permitted or otherwise) of covered substances which it manufactured or processed in amounts greater than the threshold quantities established by EPA. The annual reports must be filed on or before July 1, beginning in 1989.⁶⁰

Portions of the statutory language of these three sections of EPCRA are included in Appendices B (Section 311), C (Section 312), and D (Section 313) to provide additional background on the information that covered facilities must provide.

Limitations of EPCRA

By requiring companies to prepare and submit a Material Safety Data Sheet (MSDS) on each toxic substance to comply with Section 311, to complete a Tier I or Tier II form as part of the Hazardous Chemical Inventory to comply with Section 312, EPCRA was expected to produce tremendous volumes of paper. In addition to the inventory report, a Toxic Release Inventory (TRI) report, popularly known as "Form R," must be filed with federal and state authorities, accounting for any emissions (regulated or

⁵⁹EPCRA, Sec. 312.

⁶⁰EPCRA, Sec. 313.

otherwise) from the company's facilities to comply with Section 313.⁶¹

The sheer volume of the information might overwhelm even the most sophisticated bureaucracy, not to mention the small staffs of local government. For all this plentitude of information, however, EPCRA compliance data has the following limitations.

First, the substances being quantified do not encompass all known toxic substances. Only 302 individual chemicals and 20 chemical categories were initially chosen for these reporting purposes, purportedly according to their known propensity for causing human health problems, primarily according to those identified in the Occupational Safety and Health Act (OSHA).⁶² Numerous additions were proposed in 1994 by EPA, and twelve substances have been delisted since 1989.⁶³

Second, no real risk information is provided along with the data to help the public judge whether or not a large volume of one substance emitted is more dangerous than a small quantity of another.⁶⁴

Third, companies are neither required to monitor their inventories nor to measure emissions precisely. Rather, they are

⁶¹EPCRA, Sec. 311, 312, 313.

⁶²Occupational Safety and Health Act (29 USC §651 et seq.).

⁶³David Hanson, "Toxics Release Inventory: EPA Seeks to Monitor 313 More Chemicals," *Chemical & Engineering News*, 17 January 1994, 4-5.

⁶⁴Arnett, "Risky Business," 10474.

required only to estimate the quantities involved, and then only according to data provided for compliance with other federal laws.⁶⁵ Further, according to Abell and reported by *Environmental Reporter*, surveys conducted by Citizen Action indicate that 69 percent of all TRI data are based on the "least verifiable and least accurate" of all estimation techniques. Only 31 percent of the estimates used actual monitoring and mass balance calculations, which are the most accurate methods of estimation.⁶⁶ However, they are required to report accidental emissions immediately so that emergency response measures can be implemented.⁶⁷

Fourth, companies may request a "trade secret" exemption for substances that they have created or invented that do not lend themselves to easy analysis by competitors. Trade secrets are considered so vital to protecting a company's competitive advantage and profitability that Congress deemed the exemption appropriate, though it attempted to balance the protection for companies and communities by defining the term "exemption"

⁶⁵EPCRA, Sec. 313.

⁶⁶"Emergency Planning: Group Questions Manufacturers' Report of 11 Percent Reduction in Toxic Releases," 23 *Environmental Reporter* No. 18 at 1318 (September 4, 1992) (citing a study conducted by Citizen Action on the 1990 TRI data), quoted by Abell in "Emergency Planning and Community Right to Know," 1994.

⁶⁷EPCRA, Sec. 304.

narrowly so as to minimize the number of toxic substances that might qualify for one.⁶⁸

Fifth, required participation is limited to companies with more than ten employees at a facility.⁶⁹ While this minimizes the burden on small firms to participate in laborious data production, it also obscures the fact that serious mishaps occur in such operations. Also, major industrial sources--storage facilities, barges, oil and gas producers, power plants, incinerators, tank farms, mining operations and solvent recyclers--are currently excused from reporting.⁷⁰ Although some of these sources do not engage in the manufacture of contaminants, they certainly have the potential for discharging them in significant quantities.⁷¹ Some exempted facilities--dry cleaners, public utilities, solid and hazardous waste landfills, incinerators, gas stations, agriculture and vehicles--are major sources of pollution. Although these chemical users do not manufacture the hazardous substances, they handle or utilize them in situations that can have consequences to the public just as

⁶⁸EPCRA, Sec. 322.

⁶⁹EPCRA, Sec. 302.

⁷⁰Paul Harris, "Generators Brace for Increased TRI Burdens," *Environment Today*. 3(6):1,24,26.

⁷¹Abell, "Emergency Planning and Community Right to Know," 587.

serious as those facilities that generate or manufacture the materials.

Enforcement of EPCRA is also an issue of concern. Ascertaining just how many and which companies are covered by its provisions has delayed the law's implementation, and compliance in some sectors is admittedly slow, less than 70 percent, according to the General Accounting Office (GAO) figures cited by Arnett, 1992,⁷² despite industrial association and professional organization cooperation in publicizing its requirements. A Tufts University study group concluded that:

the long term effectiveness of community right-to-know laws depends on citizens' making productive use of chemical release information in planning, lobbying, and litigation.⁷³

A Suitable Index

These limitations notwithstanding, considering the common purposes they share, as well as some of their specific features, EPCRA is a suitable index for evaluating some aspects of Responsible Care[®]. EPCRA comes as close as any law to defining what constitutes a minimally positive, open relationship or

⁷²General Accounting Office, *Hazardous Waste: Data Management Problems Delay EPA's Assessment of Minimization Efforts*, No. RCED-91-131 29-31(1991), cited in Arnett, "Risky Business," 10473.

⁷³Michael Baram, P. Dillon and B. Ruffle, *Managing Chemical Risks: Corporate Response to SARA Title III*. Tufts University Center for Environmental Management, 1990, cited in Arnett, "Risky Business," 10486.

"social contract" between corporations and communities, and, if Responsible Care^R works, subscribing to it should be a good predictor of compliance with such right-to-know laws.

As some company representatives and other experts describe the two, they serve different, but complementary purposes.⁷⁴

Responsible Care^R is intended to improve continuously CMA members' management practices on an internally developed set of goals. Included in "The Guiding Principles of Responsible Care^R" are two which are particularly pertinent in this context:

1. To recognize and respond to community concerns about chemicals and our operations....
4. To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.⁷⁵

Among other things, Responsible Care^R's "Community Awareness and Emergency Response (CAER) Code" requires CMA members to:

Initiate and maintain a community outreach program to openly communicate relevant, useful information responsive to the public's questions and concerns about safety, health and the environment.

Provide information about activities such as waste minimization, emissions reduction, health effects of

⁷⁴EPCRA compliance official and Responsible Care^R coordinator interviews by author. June, 1996.

⁷⁵Chemical Manufacturers Association (CMA), "Responsible Care: A Public Commitment," (Washington, DC: 1993).

chemicals and efforts to ensure the safe transport of chemicals.⁷⁶

The program's "Pollution Prevention Code" requires that CMA members:

Inventory wastes generated and the volume of releases to the land, air and water and evaluate their potential impact on employees, the public and the environment."⁷⁷

EPCRA requires CMA members and non-members alike to produce the kind of information that could prove useful in implementing Responsible Care[®].

Therefore, it is appropriate to attempt to evaluate a portion of the Responsible Care[®] program by attempting to gauge compliance with the Emergency Planning and Community Right-to-Know Act. After all, Responsible Care[®] is geared toward continuous improvement in areas of management that are not necessarily defined in EPCRA or any other statute, and EPCRA is designed to provide the public with very important information that citizens and their government representatives can use to make informed decisions about the risks presented by toxic substances.

⁷⁶Chemical Manufacturers Association (CMA), "RESPONSIBLE CARE[®]: A Public Commitment. Community Awareness and Emergency Response (CAER) Code of Management Practices," Undated.

⁷⁷Chemical Manufacturers Association (CMA), "RESPONSIBLE CARE: A Public Commitment. Pollution Prevention Code of Management Practices," Undated.

The statute and the program also intersect at the point where the information produced by the facilities in compliance with EPCRA guides them in making inventory, process and production decisions that will reduce the communities' risk from exposure to those substances. This nexus is echoed in two of Responsible Care[®]'s guiding principles.

2. To develop and produce chemicals that can be manufactured, transported, used and disposed of safely.

3. To make health, safety and environmental considerations a priority in our planning for all existing and new products and processes.⁷⁸

Thus, it is especially feasible to utilize compliance with EPCRA's data production requirements--Sections 311, 312 and 313--as an index of CMA members' commitment to Responsible Care[®]. This study assesses the credibility of some aspects of the CAER and Pollution Prevention codes of Responsible Care[®] by measuring the voluntary compliance of CMA members' Michigan facilities with those sections of EPCRA.

This study attempted to address the following specific questions:

How do corporate codes of environmental ethics compare with existing state public policy and law?

Do Michigan corporations that subscribe to the tenets of Responsible Care[®] comply voluntarily with the existing federal law on Emergency Planning and Community Right-to-Know?

⁷⁸CMA, "Guiding Principles."

Has these facilities' compliance with this existing law improved since they began implementing Responsible Care^R?

Are any improvements made by the chemical industry of the character or degree to afford it a more significant role in developing Great Lakes water quality public policy and law?

Is the Chemical Manufacturers Association's Responsible Care^R program suitable and sufficient "private law?"

Defining Voluntary Compliance

Essential to this study was an operating definition of the term "voluntary compliance." It does not, in this context, mean an absence of enforcement action by U.S. EPA. For purposes of this study, voluntary compliance was defined as providing the reports required by Sections 311, 312 and 313 of EPCRA to the State of Michigan Department of Environmental Quality's (DEQ) Environmental Assistance Division (formerly in the Department of Natural Resources) on or before the deadlines specified in the statute. Further discussion of the practical implications of using this standard to analyze the data obtained from DEQ, including the use of a "grace period" and several "Benefit of the Doubt" factors, can be found in Chapter 3 (Methods) and Chapter 4 (Findings).

SIGNIFICANCE OF THE STUDY

The extent to which corporate/industry codes of environmental ethics such as Responsible Care^R are adopted and

implemented may have a significant effect on the future development of environmental policy and law if the codes' credibility can be measured. Businesses and industries whose voluntary compliance with environmental statutes and with their own peer codes are independently verified may stake a more legitimate claim to a place at the public policy negotiating table.

Research of this type should help bring the theoretical debate over corporate environmental ethics described in the following literature review into the empirical realm and into sharper focus. If it can be demonstrated that corporations and trade associations with such codes have good records of compliance with existing laws and do adhere faithfully to even stricter self-imposed standards, then they may reasonably be accorded greater credibility in law and policy development. They can conceivably make valuable contributions based on their expert knowledge of environmental conditions, at least with respect to corporate involvement in the development of public policy and law in Michigan.

If, on the other hand, it can be demonstrated that the facilities do not comply voluntarily with existing statutes, then it is reasonable to question their commitment to environmental responsibility. If the companies that adopt the industry codes do not perform well on their own criteria, then the codes may be

regarded either as a flawed or failed approach or as merely public relations ploys.

In the past few years, EPA has put increasing emphasis on pollution prevention and voluntary commitments to reduce industrial discharges, such as its 33/50 program.⁷⁹ In 1996, the Michigan legislature passed a new law providing companies with the opportunity to withhold from the public information from environmental audits of their facilities.⁸⁰ To what degree should the public accept those industries' perspective on such issues? This research should help at least clarify the debate.

If the companies' commitment exceeds the law, water quality itself may benefit by measurable degrees. The corporations could benefit, if participation in Responsible Care[®] is shown to be a reliable predictor of voluntary compliance with law, by a better public image that could enhance their profits. And the public could benefit from a cooperative, rather than confrontational, relationship between businesses and government in the management of commons resources. It is much less expensive to collaborate than to be adversarial, and pollution prevention is much less expensive than cleaning up, if cleanup is even possible.

⁷⁹Pollution Prevention Act of 1990, (42 U.S.C.A. §§ 13101 to 13109).

⁸⁰Environmental Audit Privilege and Immunity Act of 1986. M.C.L. 324.14801. M.C.L. 324.14801.

It appears likely that the theoretical debate over the character and conscience of the corporate "person" will continue. The most ardent of those opposing the notion of corporate social responsibility probably will not be convinced by this empirical examination that the amoral corporate "machine" is somehow capable of having a conscience. However, it is possible to measure the environmental performance of corporations against existing law and the codes the corporations have devised.

Finally, it appears that the public will continue to desire a sustainable environment in which any business, industry or other corporate "person" will be expected to act as a responsible corporate citizen. After all, corporations were created by the state to serve society and the state can order the terms of their existence. Their design and intent are created by human beings who have the capacity for moral reasoning. Thus, those humans can establish both the minimum ground rules for existence of corporations and the vision and spirit to fulfill their goals. And one of their conditions for existence can be environmental responsibility.

Chapter 2

REVIEW OF THE LITERATURE

Business ethics has been a subject of scholarly inquiry for a few decades and the topic is still current. As a very recent example, in *Wake Up Calls: Classic Cases in Business Ethics* (1996), Lisa Newton and David Schmidt--she a philosopher and he a professor of business--provide a brief, practical overview of ethics to guide their students' thinking about these matters and provide very operative definitions of various aspects of business ethics. Their definition of key terms, which are also used in this study, includes:

Morals or Morality: The rules that govern our behavior as persons toward other persons; also duties.

Values: States of affairs that are desired by and for people and that we want to increase; ends, goals.

Virtues: Conditions of people that are desirable both for the people themselves to have and for the healthy functioning of society.

Ethics: Properly speaking, the systematic analysis of morals, values and virtues in order to discover:

 Their theoretical links and relationships

 How they work together (or not) in practice.

 ...specifically, a professional ethic is a particular code of rules and understandings worked out by the members of a profession to govern their own practice.

Ethical principles: Very general concepts that sum up a range of morals, values and virtues from which moral imperatives can be derived.⁸¹

Newton and Schmidt go on to observe,

To practice moral conduct, or lead a moral life, it is essential to acquire just those virtues--become just that sort of person--that will make immoral conduct impossible. To practice professional ethical conduct, it is essential to acquire the virtues appropriate to the profession. These should differ depending on the function of the profession in the community. ... The businessman will value prudence most highly...⁸²

BUSINESS ETHICS

The discussion in the literature on business ethics has been largely theoretically-oriented. The debate among scholars has included discussions of theories of corporate "persons" and their capacity to have a conscience or ethical practice worthy of the name in writings by Velasquez;⁸³ Benjamin and Bronstein;⁸⁴ and Mander.⁸⁵ It has also encompassed Levitt's theorizing on the desirability of "corporate social responsibility" beyond

⁸¹Newton and Schmidt, *Wake Up Calls*, 3-4.

⁸²Newton and Schmidt, *Wake Up Calls*, 16.

⁸³Manuel G. Velasquez, S.J., "Why Corporations are not Morally Responsible for Anything They Do." *Business and Professional Ethics Journal*. 2(3):1-18.

⁸⁴Martin Benjamin and Daniel Bronstein, "Moral and Criminal Responsibility and Corporate Persons," in *Corporations and Society: Power and Responsibility*, W. Samuels and A. Miller, eds. (New York: Greenwood Press, 1987), 277-278.

⁸⁵Jerry Mander, "The Myth of the Corporate Conscience." *Business & Society Review* 81:56-63.

producing profits for shareholders in the late 1950s.⁸⁶ More recently, in 1994, Ballum reviewed the relationship of business and government.⁸⁷ Other scholars, namely Brooks,⁸⁸ Cahn,⁸⁹ and Davidson⁹⁰, have also reviewed some surveys of corporate/industry environmental policy and practice.

Velasquez argues that one should not confuse attributions of moral responsibility to groups with that ascribed to individuals. Although the corporation may be a legal "person," it cannot be held to the same moral standard as a human being because it lacks the capacity to formulate an intention of its own. In fact, he cites a danger in holding the corporate entity itself as the morally responsible party:

If we attribute moral responsibility to the corporation, then we may be satisfied with blaming and punishing only the entity, instead of holding the individuals morally responsible for their own acts in carrying out corporate policy.⁹¹

⁸⁶Theodore Levitt, "The Dangers of Social Responsibility," *Harvard Business Review* 36:41-50.

⁸⁷Deborah H. Ballum, "The Evolution of the Government-Business Relationship: Colonial Times to the Present," *American Business Law Journal* 31(4):533-640.

⁸⁸Leonard J. Brooks. "Corporate Codes of Ethics." *Journal of Business Ethics* 8:117-129.

⁸⁹Robert Cahn. "A Place for Environment in the Corporate Structure." *Management Review* 4/79: 15-20.

⁹⁰D. Kirk Davidson. "Straws in the Wind: The Nature of Corporate Commitment to Environmental Issues." in *The Corporation, Ethics and the Environment*, Michael W. Hoffman, Robert E. Frederick and Edward S. Petry, Jr. eds. (Westport, CT: Quorum Books, 1990), 59-65.

⁹¹Velasquez, "Why Corporations Are Not Morally Responsible," 15.

Benjamin and Bronstein⁹² and Mander⁹³ maintain that corporations simply do not have the capacity to care because all of their acts are instrumental, oriented toward profit goals. They are not innately responsive to the public, but must be regulated by the public conscience as expressed through law.

Still others, notably Stroup and Shaw, engage the debate from a completely different perspective by arguing that environmental commodities such as water and air should be considered property "rights," so that liability and tort principles can be used effectively to protect them.⁹⁴

Moreover, virtually all businesses in the United States, but perhaps especially industrial operations, have a continuing relationship with government, as Ballum describes. She observes that business "has had a longstanding mistrust and suspicion of government"⁹⁵ However, she has also realizes the importance of having a supportive governmental environment in which to operate.⁹⁶ She recalls Theodore Roosevelt's economic management strategy as having government:

⁹²Benjamin and Bronstein, "Moral and Criminal Responsibility and Corporate Persons," 277.

⁹³Mander, "The Myth of the Corporate Conscience," 58.

⁹⁴Richard L. Stroup and Jane S. Shaw, "The Free Market and the Environment." *The Public Interest* 97:30-43.

⁹⁵Ballum, "The Evolution of the Government-Business Relationship," 556.

⁹⁶Ballum, "The Evolution of the Government-Business Relationship," 557.

acquire corporate information that would be shared with the public in the hope that such publicity would provide the incentive for corporations to police **themselves** (emphasis added) out of fear that if they did not, the public would call for more stringent government regulation.⁹⁷

In the relatively prosperous 1950s, Levitt held that if business takes over the social responsibilities of government, the two might coalesce into a "unitary state" that would not have the checks and balances deemed necessary in this country.⁹⁸

These are only some of the arguments in a continuing theoretical debate that does not seem headed toward a conclusion.⁹⁹

Meanwhile, individual corporations and industry trade associations have set about the business of actually developing codes of ethical conduct, most recently codes of environmental ethics.

CORPORATE ENVIRONMENTAL ETHICS

Where does value for the environment figure in the realm of professional business ethics? The emphasis on corporate environmental ethics has evolved since the 1960s. Brooks¹⁰⁰

⁹⁷Ballum, "The Evolution of the Government-Business Relationship," 616-617.

⁹⁸Levitt, "The Dangers of Social Responsibility," 44.

⁹⁹Rogene A. Buchholz, "Corporate Responsibility and the Good Society: From Economics to Ecology," *Business Horizons* 34(4): 19-31.

¹⁰⁰Brooks, "Corporate Codes of Ethics," 123.

quotes a Conference Board¹⁰¹ Research Report as indicating that 82 percent of the CEOs of 300 large corporations said, in the mid 1980s, that environmental issues should be considered ethical matters and 86 percent said that the environment would be one of a handful of critical issues in the next five years.

Cahn's 1979 review of another Conference Board survey found that while 88 percent of those corporations surveyed handled the environment at the vice president level or higher, and 60 percent had an environmental affairs officer making decisions on production procedures and plant sitings, 60 percent had no formal environmental policy.¹⁰²

Davidson examined annual reports and other expressions of corporate policy and found some interesting contrasts. In his review of oil and chemical company annual reports, Davidson found only three that mention the environment as an issue for shareholder consideration.¹⁰³ Davidson suggests that corporations acknowledge that government regulation is necessary in the absence of self-policing. However, if industry policed itself, would so much government be necessary?

¹⁰¹The Conference Board is an organization of businesspeople, founded in 1916, "that enables senior executives from all industries to explore and exchange ideas of impact on business policy and practices." Among its functions are a "professionally managed research program that identifies and reports objectively on key areas of changing management concern, opportunity and action." The Conference Board, Inc. New York.

¹⁰²Cahn, "A Place for Environment in the Corporate Structure," 15.

¹⁰³Davidson, "Straws in the Wind," 65.

The Academic Debate Continues

The ongoing theoretical debate about the capacity of corporations to conduct themselves as ethical persons does not appear headed toward a speedy conclusion. And, to date, little empirical evidence has been developed on the nature and efficacy of codes of environmental ethics. These two factors have made it difficult for policy makers to assess the appropriate relationship of these codes to the development of Great Lakes water quality policy and law in Michigan, particularly what degree of influence those who espouse them should be accorded on the development of policy and law.

RESPONSIBLE CARE[®]: Evaluating the Public Commitment

Newton and Schmidt title their chapter on Responsible Care[®] "A Commitment of Faith,"¹⁰⁴ but how much faith can the public place in this new way of doing business in the chemical industry? Evaluation of the program is critical to building that trust.

Self-Evaluation

As described earlier, self-evaluation is one of the hallmarks of Responsible Care[®]. CMA member companies file annual reports with CMA's consulting firm about their progress in implementing the program's six codes of management practices.

¹⁰⁴Newton and Schmidt, *Wake Up Calls*, 177-197.

They place themselves in one of the following six categories of implementation:

- Does Not Apply (DNA),
- Evaluating Company Practices (EV),
- Developing Implementation Plan (DP),
- Implementing Action Plan (IA)
- Management Practice in Place (PP)
- Reviewing Implementation (RI)¹⁰⁵

CMA itself reports annually on the progress of implementing Responsible Care[®], using the consultant's analysis of the information provided by its member companies and feedback from its Public Advisory Panel. The 1994-95 report indicates that 84 percent of CMA members are at least implementing their action plans for the CAER Code and that 73 percent have their CAER Code practices in place. On the Pollution Prevention Code, 80 percent report that they are at least implementing their action plans and 60 percent have their Pollution Prevention Code practices in place.¹⁰⁶

The Court of Public Opinion

In one of *ChemicalWeek's* annual issues on Responsible Care[®], its publisher Weiskopf reviewed the results of two polls conducted in 1993 to assess the progress of U.S. chemical companies in achieving the goals of their industry wide program. One of the polls, conducted by Cambridge Research Associates,

¹⁰⁵CMA, 10 *Elements of Responsible Care*, 16.

¹⁰⁶CMA, 10 *Elements of Responsible Care*, 16.

"demonstrates improvement but not nearly as strong an improvement as that perceived by executives," in a different poll conducted by Anderson Consulting and commissioned by CMA.¹⁰⁷

Weiskopf concludes:

...the race to win public opinion between an industry on the move and those who would continue to characterize chemical manufacturers as "bad guys" is a marathon and not a sprint. It is a race that can only be won through demonstrated improvement, combined with patient, consistent, and open communication.¹⁰⁸

External Empirical Evaluations

Three studies in the early 1990s point to the possibility of examining a corporate/industry code of environmental ethics using an empirical approach. According to Fear, the empirical level is one of four in the logico-empirical process of conducting research.

At this level, concepts are transformed into variables. In addition, statements about the purported relationships between/among the variables must be such that the relationships are amendable to measurement.¹⁰⁹

Each of the studies described below is empirical in its own way.

¹⁰⁷Michael Weiskopf, "Publisher's Page," *ChemicalWeek*, 7 and 14 July 1993, 3.

¹⁰⁸Weiskopf, "Publisher's Page," 3.

¹⁰⁹Frank A. Fear, "A Measurement Design Framework," (notes for a lecture presented in Resource Development 803 at Michigan State University, October 27, 1993).

Wake Up Call: "For Whom the Toscin (Bell) Tolls"

Rachel Carson's book *Silent Spring* sounded one kind of environmental wake up call, clearly implicating the products and practices of chemical manufacturers in environmental degradation as it described the reproductive fate of robins that had been exposed to the pesticide DDT.¹¹⁰ Newton and Schmidt describe the development of Responsible Care[®] as an ethical response to the wake up call sounded by the toscin bells (an allusion to the bell that was used to sound emergencies in European villages) of Bhopal and Institute. The authors give the chemical industry high marks for its departure from business as usual.¹¹¹

According to Newton and Schmidt, the CMA did not close its organizational "eyes" or "mind" to the moral dilemma posed by the industry's dual capacities for improving life and the environment and destroying both. Rather, its leaders took the position that they must do more than attempt to restore their credibility through traditional public relations campaigns. They must actually do the difficult job of cleaning up their historical problems and set higher than legal standards for their future. They must "do the right thing" in order to regain public trust and establish themselves as good corporate citizens and neighbors, one of the qualities of "virtue based" ethical

¹¹⁰Carson, *Silent Spring*, 1963.

¹¹¹Newton and Schmidt, *Wake-Up Calls*, 177-197.

behavior, as the authors define it, and as used in this study.¹¹²

Quantitative Studies

Thus far, two groups have attempted to evaluate Responsible Care[®] by conducting systematic, quantitative studies. The first was The PIRGs (Public Interest Research Groups),¹¹³ which issued its report, *Trust Us. Don't Track Us.: An Investigation of the Chemical Industry's "Responsible Care" Program*, in 1992.¹¹⁴ The other study, *The U.S. Responsible Care[®] Initiative: The Dynamics of Shaping Firm Practices and Values*, was conducted by Jennifer Nash and Jennifer Howard of the Technology, Business and Environment Program at the Massachusetts Institute of Technology under the direction of Professor John Ehrenfeld and presented to the Fourth International Research Conference on the Greening of Industry Network in November, 1995.¹¹⁵

¹¹²Newton and Schmidt, *Wake-Up Calls*, 184.

¹¹³The PIRGs "are state-based non-profit and non-partisan research and advocacy groups working on environmental and consumer issues. PIRGs are active in more than 30 states nationwide and have more than one million members," from Carolyn Hartmann, *Trust Us. Don't Track Us.: An Investigation of the Chemical Industry's "Responsible Care" Program*, (Washington, DC: The PIRGs, 1982), 2.

¹¹⁴Carolyn Hartmann, *Trust Us. Don't Track Us.: An Investigation of the Chemical Industry's "Responsible Care" Program*, (Washington, DC: The PIRGs, 1982).

¹¹⁵Jennifer Nash and Jennifer Howard, "The U.S. Responsible Care[®] Initiative: The Dynamics of Shaping Firm Practices and Values," (paper presented at the Fourth International Research Conference on the Greening of Industry Network in November, 1995).

The PIRGS' Perspective

In conducting their assessment, The PIRGS decided to take the CMA up on the request of its president Robert Roland, as reported in *ChemicalWeek's* annual Responsible Care[®] issue, July 1991.

We have said all along that we are not asking the public to trust us. We are asking everyone to track us, to monitor our performance and make suggestions that will help us improve.¹¹⁶

Hence the program's unofficial motto, "Don't trust us. Track us."

The PIRGs chose to track 192 CMA member facilities in 28 states, reportedly on the basis of their being in the top ten CMA member-owned facilities in their state to report releases of toxic chemicals in 1989, in compliance with Section 313 of EPCRA.¹¹⁷

Then citizen outreach staff in state PIRG organizations called the facility's designated contact person for EPCRA to ask nine questions. Appendix E contains the list of questions used by the interviewers.

Written by Staff Attorney Carolyn Hartmann, the PIRGs' report finds CMA members seriously lacking in their responsiveness to the survey. The report also seriously

¹¹⁶Robert Roland, President of CMA, in *ChemicalWeek*, July 1991, quoted by Hartmann in *Trust Us. Don't Track Us.*, 8.

¹¹⁷Hartmann, *Trust Us. Don't Track Us*, 12.

questions CMA members private and public commitment to the ideals espoused by Responsible Care[®].

"The results of this survey are disturbing:

At 81 of the facilities--**42 percent**--callers could not reach anyone to answer their questions, despite repeated attempts.

At 31 of the facilities surveyed--or 27 percent--**the company contact either could not or would not answer any of the questions;***

At 61 of the facilities surveyed--or 55 percent--**the company contact could answer only some of the questions--29 of these facilities answered less than half of the questions;*** and

At 19 of the facilities surveyed--or 17 percent--**the contact gave an answer to each of the nine questions*** and seemed to understand the spirit of "Responsible Care."¹¹⁸

*emphasis in original

The PIRGs' survey included seven Michigan facilities, of whose representatives, two answered all nine questions, two answered some questions, one answered none, and two with whom no contact was established after three tries.¹¹⁹

The focus of the PIRGs' survey was getting facilities to respond. Although the questionnaire provided space to document the contact person's answer, this information was not shared systematically in the study report. In fact, the report states explicitly that, **"PIRG DID NOT GRADE ANSWERS BASED ON ACCURACY."**

¹¹⁸Hartmann, *Trust Us. Don't Track Us*, 13.

¹¹⁹Hartmann, *Trust Us. Don't Track Us*, Appendix, 3.

... If a company provided us with any information, we gave them the benefit of the doubt as to accuracy and counted their answers in our results."¹²⁰

The PIRGs concluded that their survey "indicates that the vast majority of the companies are still operating under the motto of, "Trust us. Don't Track Us."¹²¹

Nash and Howard's "Greening" Review

Nash and Howard reached different conclusions about Responsible Care[®] than the PIRGs, using a different approach and different criteria at a later date. To measure the program's impact on environment, health and safety performance and attitudes of chemical companies, the two conducted a survey of 16 firms during the summer of 1995.

They chose medium-sized firms which manufactured a reasonably consistent set of products, feeling that "the impact of Responsible Care[®] would be most pronounced among 'second tier' companies which lack the visibility and resources of industry leaders."¹²² They selected the companies on the basis of their 1993 revenues. They narrowed this group of 51 by applying the criteria of SIC codes, choosing companies that manufacture products in at least one of the most frequent SIC code classes.

¹²⁰Hartmann, *Trust Us. Don't Track Us*, 12.

¹²¹Hartmann, *Trust Us. Don't Track Us*, 4.

¹²²Nash and Howard, "The U.S. Responsible Care[®] Initiative," 6.

From this smaller pool of 36 prospective participants, they contacted 25 to determine their willingness to participate in interviews within the time constraints of the study and found 16 who agreed to participate.¹²³

Many of the companies who chose not to participate did so because they felt the time commitment was too great. Several cited recent or ongoing internal reorganizations as a complicating factor.¹²⁴

Nash and Howard attempted to interview each company's Responsible Care® coordinator or corporate environmental manager, community relations manager, product design or process engineering manager, and plant manager. Each interview was pre-scheduled and interview questions were faxed in advance. Interviews were conducted by telephone and required approximately 45 minutes.¹²⁵

Nash and Howard identified three primary dimensions of change, which they sought to measure through their survey:

- i - change in the company's internal practices and organization,
- ii - expansion in the boundaries of the company, and
- iii - shifts in the company culture.¹²⁶

Then they developed a model, "which identifies the artifacts and values expected to result as a firm expands and improves its

¹²³Nash and Howard, "The U.S. Responsible Care® Initiative," 7.

¹²⁴Nash and Howard, "The U.S. Responsible Care® Initiative," 7.

¹²⁵Nash and Howard, "The U.S. Responsible Care® Initiative," 7.

¹²⁶Nash and Howard, "The U.S. Responsible Care® Initiative," 8-9.

environmental management practices," drawing on other corporate "greening" models. Their study "sought to understand the degree to which the principles themselves have been internalized, rather than the degree to which the principles are capable of creating a truly green corporation."¹²⁷

The findings of Nash and Howard's survey indicated that Responsible Care[®] has been associated with significant changes in internal organization of the participating companies. Evidence of these changes were management involvement and shifts in internal power relationships.¹²⁸

They also found that Responsible Care[®] was associated with "significant new activities, as well as several changes in internal practices."¹²⁹ Among these were the companies' efforts to define Responsible Care[®] practices, develop internal audits of their performance on Responsible Care[®] practices, to train employees in "the results of Responsible Care[®], and to use Responsible Care[®] goals and targets in assessing employee performance and adjusting compensation."¹³⁰

Nash and Howard found that Responsible Care[®] "had its greatest impact in broadening the firm's boundaries and requiring

¹²⁷Nash and Howard, "The U.S. Responsible Care[®] Initiative," 9.

¹²⁸Nash and Howard, "The U.S. Responsible Care[®] Initiative," 11.

¹²⁹Nash and Howard, "The U.S. Responsible Care[®] Initiative," 12-14.

¹³⁰Nash and Howard, "The U.S. Responsible Care[®] Initiative," 14-15.

firms to interact more frequently with people and firms beyond their fence lines," although not significantly with groups that might disagree with them.¹³¹ Included in the expanded boundaries were interactions with local communities, distributors, suppliers, customers, in product stewardship, and with other firms in the industry.

In assessing changes to values, Nash and Howard found three different perspectives among those they interviewed:

- Responsible Care[®] is largely unimportant. The existing culture exemplified Responsible Care[®] values prior to the initiative;¹³²
- Responsible Care[®] imposes discipline and standardization. It forces people to do what they say, to live up to espoused values;¹³³
- Responsible Care[®] is transformative. It has significantly changed the work people do and how they value the environment.¹³⁴

They also found that those expressing these different perspectives did have one view in common.

They all felt that Responsible Care[®], as a coordinated effort by the whole industry, provided a legitimate framework which enabled them to make changes that might not otherwise have been high priority.¹³⁵

¹³¹Nash and Howard, "The U.S. Responsible Care[®] Initiative," 28.

¹³²Nash and Howard, "The U.S. Responsible Care[®] Initiative," 22.

¹³³Nash and Howard, "The U.S. Responsible Care[®] Initiative," 23.

¹³⁴Nash and Howard, "The U.S. Responsible Care[®] Initiative," 24.

¹³⁵Nash and Howard, "The U.S. Responsible Care[®] Initiative," 26.

EMERGENCY PLANNING and COMMUNITY RIGHT-to-KNOW ACT of 1986 (42 U.S.C.A. § 11001 to 11050) EPCRA Sections 301-350

Much has been written since the mid-1980s about the Emergency Planning and Community Right-to-Know Act of 1986 (EPCRA) (42 U.S.C.A. § 11001 to 11050). Academic professionals have certainly utilized the information generated in the reports mandated by EPCRA in scholarly research and publications, with dozens of journal articles published during the first decade since passage of the act. This sharing of knowledge and perspectives may be particularly useful in further policy development, because these researchers must submit to the rigor of peer review.

For purposes of this study, in addition to the citations in the introduction, the literature review focused on articles pertaining to the information production aspects of the statute and the implications of using EPCRA-generated information.

Revealing Reports

In a 1994 *SMU Law Review* article, Abell analyzed TRI reports and presented the following data: In 1989, 22,569 facilities reported releasing 5.7 billion pounds of listed chemicals. This was a 19 percent reduction (1.27 billion pounds) in releases since 1987 (1989 TRI National Report, p.1), despite a seven percent increase in the number of facilities reporting since 1988 (1989 TRI National Report, p.1). Nearly 60 percent of the

reduction was attributable to only 127 facilities. (1989 TRI National Report, p.2) A very small percentage of facilities are generating most of the toxics. Twenty-five percent of the 322 chemicals accounted for 83 percent of all releases and transfers in 1989. (1989 TRI National Report, p.3) The TRI has also identified the specific industries that generate significant releases of toxic materials. Across the country, the chemical industry accounted for nearly 48 percent (2.8 billion pounds) of the total TRI releases and transfers in 1989.¹³⁶

For each of the four years that EPA has collected TRI forms, the total number of reported emissions has decreased. In many cases, the reported reductions may result from changes in the way companies report their emissions, as opposed to actual reductions in emissions,¹³⁷

according to reports developed by Citizen's Fund and the National Wildlife Federation, cited by Abell.

Elusive Enforcement

Enforcement action has consisted primarily of the relatively difficult pursuit of those who have not filed any report, estimated at 30 percent by the General Accounting Office (GAO), in its report "EPA's Toxic Release Inventory is Useful But Can Be

¹³⁶Abell, "Emergency Planning and Community Right to Know," 589.

¹³⁷Gary D. Bass and Alair MacLean, "Enhancing the Public's Right-to-Know about Environmental Issues," *Villanova Environmental Law Journal* 4:299.

Improved," No. RCED-91-121 (1991), cited by Arnett.¹³⁸ Because EPCRA gives EPA no authority to inspect facilities for compliance, Arnett argues, this undermines EPA's efforts to identify nonreporters and verify the data of those who do report. Verifying the data provided to improve confidence in its reliability was not even part of the enforcement plan.¹³⁹

Arnett continues,

EPA's decision to use its limited enforcement resources to track nonreporters does not encourage the thousands of facilities that submit late TRI reports to file in a timely manner.¹⁴⁰

Rather than assessing penalties against late filers, Arnett reports that EPA allowed them to revise data after submitting an initial estimate. However, it created a loophole for facilities to use revisions to extend the reporting deadline, although appropriate timing in providing information can be critical to health, safety and welfare. However, the decision in a citizen suit, *Atlantic States Legal Foundation v. Whiting Roll-Up Door Manufacturers*, in the United States District Court for the Western District of New York,¹⁴¹ put laggard filers on notice that late is not better than never.

¹³⁸Arnett, "Risky Business," 10475.

¹³⁹Arnett, "Risky Business," 10476.

¹⁴⁰Arnett, "Risky Business," 10476.

¹⁴¹*Atlantic States Legal Foundation v. Whiting Roll-Up Door Manufacturers*. 777 F. Suppl. 745 (W.D.N.Y. 1991).

Arnett says that when EPA does assess penalties, it is in accordance with its 1984 policy on civil penalties that seeks to remove any economic incentive for noncompliance that would accrue from the penalty's being less costly than the profit benefit from avoiding the law. "[I]t is Agency policy that penalties generally should, at a minimum, remove any significant economic benefits resulting from failure to comply with the law."¹⁴² Arnett explains,

It recognizes that in a period of noncompliance, the violator has use of funds that would otherwise have been spent on compliance, and it thus requires that penalties for significant violations of environmental regulations be at least as great as the amount by which the company would benefit from noncompliance.¹⁴³

For example, a company which profits from failure to invest the resources in data collection required to comply with EPCRA should be assessed a fine at least equal to the amount by which its profits have increased during the period of noncompliance.

EPA is beginning to levy some significant fines, according to one review, and courts have also upheld the need for compliance by imposing penalties, too.¹⁴⁴

¹⁴²EPA, Policy on Civil Penalties (2/16/84), ELR Admin. Materials 35083, 45083, cited in Arnett, p. 10476. Philip Saunders, Jr., "Civil Penalties and the Economic Benefits of Noncompliance: A Better Alternative for Attorneys Than EPA's BEN Model," 22 *Environmental Law Reporters*, 10003, 10004 (Jan. 1992) cited in Arnett, "Risky Business," 10476.

¹⁴³Arnett, "Risky Business," 10476.

¹⁴⁴Steven J. Christiansen and Stephen H. Urquhart, "The Emergency Planning and Community Right to Know Act of 1986: Analysis and Update," *BYU Journal of Public Law* 6:256.

Perhaps even more telling, however, is the strong case for voluntary compliance that EPA Administrative Law Judge Marvin Jones made in his decision on *Riverside Furniture Corp.*,

The success of EPCRA can be attained only through voluntary, strict and comprehensive compliance with the Act and regulations which recognize that achievement of such compliance would be difficult and that a lack of compliance would weaken, if not defeat, the purposes expressed [in the Act].¹⁴⁵

Enforcement will, no doubt, continue to be an issue in the effectiveness of EPCRA, but voluntary compliance will always be the essential ingredient.

Information Implications

Industry itself, although probably not without some misgivings over the time and expense involved, has found that the information produced to comply with EPCRA has paid off in various spheres. In many instances, companies have learned more about their own operations than they ever knew before.

This was really the first time we had aggregated the numbers from all of our plants into one combined set of numbers. The magnitude was surprising to us," said Stephen R. Archer of Monsanto Co., in a 1991 interview with *Occupational Hazards*.¹⁴⁶

Some have recognized and begun to address hazards.

¹⁴⁵*U.S. Environmental Protection Agency v. Riverside Furniture Corporation*, Docket No. EPCRA-88-H-VI-406S, March 27, 1989.

¹⁴⁶Gregg LaBar, "Totaling Up the Toxics," *Occupational Hazards* 53(7):31.

At the tiny American Grease Stick Co. in Muskegon Heights, [Michigan], covers have been placed on holding tanks to prevent chemicals from evaporating in the production of automotive lubricants. ...

"It was a simple thing," said the plant's technical resources manager, Tommy R. Jones. "We had concerns about employee health. Even though we were below the limits, we still felt the less breathed, the better for them."¹⁴⁷

Some have altered products or processes to make more efficient use of feedstocks. For instance, "process changes at Monsanto's Pensacola, Fla., nylon plant--one of the state's largest emitters of TRI chemicals--lowered emissions 74% between 1990 and 1991."¹⁴⁸ The companies also have implemented new waste reduction programs and adapted and continued previously adopted programs. Monsanto pledged not only to report, but to reduce the volumes of its emissions of toxic substances voluntarily and substantially within one year.¹⁴⁹ Thayer reports, "reductions in the amount of ammonia required to neutralize nitric acid [at the previously cited Monsanto nylon plant] decreased by 18 million lbs. the amount of ammonium nitrate wastes disposed of through deep well injection."¹⁵⁰

¹⁴⁷Magner, "EPA: Michigan Companies Cut Toxic Emissions."

¹⁴⁸Ann M. Thayer, "Growing Exchange of Information Spurs Pollution Prevention Efforts," *Chemical & Engineering News* 71(30):19.

¹⁴⁹Joani Nelson-Horchler, "Right-to-Know is on the Grow. Industry Week 238(5):48.

¹⁵⁰Thayer, "Growing Exchange of Information," 19.

Within a couple of years, this effort resulted in EPA's enlisting others to its voluntary pollution prevention program called 33/50.¹⁵¹

The Proof in the Profits

Through its objectives, EPCRA has been instrumental in renegotiating the "social contract" between U.S. society and those corporations which may have previously profited by introducing into communities unacceptable risk from exposure to toxic substances.

To the surprise of some, they have profited monetarily as well as from the public relations improvement they have experienced by complying.

It's always better to have the information out there and to have it come from [the company], rather than having it come from a different source," says [Ronald] Michaud [of Dupont], because we are the generators of the waste and emissions and therefore the information ought to come from us.¹⁵²

Experience has shown that the companies that bit the bullet and made the investment early on are much better off today than the companies that postponed making the investment and then might have been forced to close down a plant because it couldn't meet regulations or the end-of-pipe approach simply became so prohibitively expensive. Sorab Vachta, Catalytica.¹⁵³

¹⁵¹EPA, *Toxics in the Community, National and Local Perspectives* 251 (1991), cited in Christiansen and Urquhart, p. 252.

¹⁵²Thayer, "Growing Exchange of Information," 25.

¹⁵³Thayer, "Growing Exchange of Information," 15-16.

A study conducted by researchers at Tufts University's Center for Environmental Management examined the steps that companies have taken to implement the information disclosure requirements of EPCRA. The researchers concluded that EPCRA has had far-reaching effects on companies and that industrial practices and attitudes toward chemical risk management and risk communication are changing.¹⁵⁴

A Test of Goodwill

Since EPCRA's enactment in 1986, "companies appear to be more concerned about developing a reservoir of goodwill in the community than before the law's enactment."¹⁵⁵

It is appropriate at this point to put the goodwill Baram describes to an empirical test. Thus, this thesis assesses quantitatively the voluntary compliance of CMA members' Michigan facilities with three sections of EPCRA and uses that as an index of the validity of Responsible Care's CAER and Pollution Prevention codes.

¹⁵⁴Michael P. Baram, P. Dillon and B. Ruffle, "Managing Chemical Risks: Corporate Response to SARA Title III." Tufts University Center for Environmental Management, 1990.

¹⁵⁵Baram, Dillon and Ruffle, "Managing Chemical Risks," 1990.

Chapter 3

METHODS

In order to examine the relevance of an industry/trade association's code of environmental ethics to environmental policy and law, an empirical approach was chosen. Virtually all of the discussions in the literature to date have been theoretical, so it was deemed appropriate to bring the discussion more into the realm where data can inform the debate.

The hypothesis for this study was: Will members of an association required to subscribe to a code which purports to go above and beyond the law, at a minimum, be complying voluntarily with existing laws?

Specifically, voluntary compliance with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986¹⁵⁶ was used as an index of validity for the Responsible Care^R Program.

The methodology for this study was developed specifically to test this hypothesis because no evidence of this type of empirical study was found in the literature. Newton and Schmidt

¹⁵⁶42 U.S.C.A. § 11001 to 11050; EPCRA § 301 to 330.

(1996), Nash and Howard (1995) and The PIRGs (1992) all conducted empirical evaluations of Responsible Care[®], but none of them used compliance with a statute as an index and neither has anyone else. Indeed, most previous evaluation of such codes has been purely theoretical rather than empirical.

RATIONALE

Several reasons were found for using this approach: relevancy of these sections to elements of Responsible Care[®]; importance of the information in the reports required by these sections; reasonableness of the geographic scope; pertinence of the time frame; and feasibility of obtaining the compliance information.

First, many of the statute's elements are pertinent to some of the Responsible Care[®] Program's "Codes of Management Practice," notably the Community Awareness and Emergency Response and Pollution Prevention codes. This makes compliance with the law a relevant standard for evaluation. CMA members should be complying with this statute in order to gain public credibility for the Responsible Care[®] program to have public credibility.

Second, examining compliance with the information production sections--311, 312 and 313--of EPCRA was chosen for study for several reasons. Providing the reports required by these sections--Material Safety Data Sheets (or lists of chemicals used at a facility), inventories of toxic substances quantities at a

facility, and reports of quantities of toxic substances released into the air, water and land in the facility's community--provide information critical to a community's ability to develop emergency plans and a facility's ability to prevent pollution. The reports also generate just the kind of information that a facility must share with its community to perform well on the Responsible Care[®] CAER Code and analyze appropriately to develop plans for the implementing the Responsible Care[®] Pollution Prevention Code. Furthermore, it was most feasible to obtain records of compliance on these sections from the state agency which collects them from all facilities.

Third, CMA members' Michigan plants were chosen as a reasonable starting point for this evaluation, because it seemed appropriate to examine the issue in the context of state government. The companies often interact with state government and attempt, individually and through the Michigan Chemical Council, to influence state policy and legislation. This scope also was compatible with the temporal and financial constraints of the investigator.

Fourth, reviewed in this study were the dates on which the Department of Environmental Quality (DEQ) had received the information required by Sections 311, 312 and 313 for the years 1988-1994. These years were pertinent because, in 1988, participation in Responsible Care[®] became a condition of CMA membership and EPCRA became fully operational. Also it was

expected that, as of January, 1996, 1994 would be the latest year for which full compliance information would be available for the study, and seven years' data from this period seemed adequate to provide a reasonable evaluation of the facilities' performance.

Finally, DEQ has compiled this information for the years 1991-present in a computer data base. Earlier records are maintained in the department's paper files, making it relatively convenient to obtain the data.

PROCESS

The study was conducted using a combination of interviewing experts on the subjects of EPCRA and Responsible Care[®], then obtaining data about compliance with the previously mentioned sections of EPCRA, interviewing facilities' Responsible Care[®] coordinators and EPCRA compliance officials, and, finally, analyzing the compliance data.

Interviews

Interviews were conducted with two groups, using two different sets of questions, at two primary stages of the study-- preliminary interviews with experts and follow up interviews with Responsible Care[®] coordinators and EPCRA compliance officials from CMA members' Michigan facilities. The interviews were designed to elicit contextual information and perspectives that would augment the material obtained through the literature review

(in the case of the experts) and provide a greater understanding of the EPCRA compliance data (in the case of the facility representatives).

Instruments

Lists of the basic questions used in both sets of interviews are found in Appendix F. Neither of the interview instruments was pre-tested, but questionnaires were provided to all participants in advance, and an opportunity for clarification of the questions was provided at the outset of each interview.

In addition to the basic list of questions, at the end of the interview the interviewer always asked participants if they had any additional comments and recorded their responses.

Preliminary Interviews with Experts

Interviewing experts on Responsible Care[®] and EPCRA was the initial phase of the study. The list of these experts was developed by consulting a number of sources--CMA staff members and CMA's annual reports on Responsible Care[®], members of the State of Michigan Emergency Response Commission and faculty members and students at Michigan State University. Names were solicited on the basis of the individual's knowledge of and working experience with Responsible Care[®] or EPCRA or both. The original participating experts were asked for recommendations of

any other persons who might provide particularly pertinent information on the research topic.

The list eventually included 18 individuals from a variety of backgrounds, with varying degrees and kinds of expertise on one or both of these topics. Three were staff members at the headquarters of the Chemical Manufacturers Association (CMA) and were responsible for administering or implementing the Responsible Care[®] program. One was from the staff of a Michigan CMA member. Two were from CMA's Public Advisory Panel, which provides guidance to the organization on Responsible Care[®]. One was a member of a chemical facility's Community Advisory Panel, which CMA member facilities are encouraged to organize in order to develop better communication with the communities in which they are located.

Two were staff members from the Environmental Assistance Division of the Michigan Department of Environmental Quality, which staffs Michigan's State Emergency Response Commission (SERC) and which collects reports submitted by facilities for compliance with EPCRA. Four were current or former members of Michigan's SERC, which is charged with the responsibility of establishing emergency planning districts, establishing local emergency planning committees, reviewing their plans and receiving reports submitted by manufacturing and processing facilities in compliance with EPCRA. Three of the SERC members were also members of Local Emergency Planning Committees (LEPC),

which are responsible for working with local facilities to develop emergency plans for their communities. Another LEPC member is a professional broadcaster of emergency information, and five were associated with national environmental organizations that have a particular interest in EPCRA or Responsible Care[®]. Interviewing these individuals and obtaining additional information from them augmented the information obtained through the literature review on those subjects.

Between late November, 1995, and July, 1996, a personalized certified letter was sent to each individual on the initial list of prospective experts for the study, informing them of its purpose and methodology. The letter requested their cooperation and participation in the preliminary interview phase of the study and offered them the opportunity to ask questions about it.

The letter included a consent form, describing the possible risks and anticipated benefits of their participation, and a list of the basic questions to be posed during the interviews. The letter requested that the consent form be returned by fax by a certain date, indicating whether or not the expert would participate in the interview phase of the study. The letter also contained a post card by which the respondent could request a report on the study's findings. Copies of all the form letters and consent forms are included in Appendix G.

Between late December, 1995, and July, 1996, interviews with the consenting experts were conducted. Each expert was asked to

provide any pertinent materials that would supplement the literature on the topic obtained from other sources and for references to any other experts they thought would offer additional important information or insight.

Follow Up Interviews with Facility Representatives

In August, 1995, a list of Chemical Manufacturers Association (CMA) members' Michigan facilities was obtained from the CMA. The list, included in Appendix H, consisted of 64 facilities apparently owned by 36 corporations. Each facility was assigned a code number to preserve the confidentiality of its DEQ data as they were analyzed and presented, as well as the information and comments provided by the facility via telephone, letter and interview.

In mid-December, 1995, a personalized registered letter was sent to each of the individuals at the facilities as listed by CMA. In the cases where no individual's name was identified, the letter was addressed to "plant" or "facility" manager. The letter informed the prospective participants of the study's purpose and methodology. It requested the respective facility manager's cooperation in identifying the Responsible Care[®] coordinator and the EPCRA compliance official for the facility so that they might be contacted to request their participation in the study's follow up interview phase. The letter also offered the managers the opportunity to ask questions about the project.

The rest of the letter's contents were identical to those sent to the experts, except for the list of basic questions to be addressed to the facility representatives.

In order to recruit additional participants to the study or, at least, obtain some response to the request for participation, a follow up letter was mailed to the original addressees who had not responded and whose address had been confirmed with the return receipt from the original letter. This letter, also included in Appendix G, reminded the facility representatives of the study, asked that they indicate whether or not they were willing to recommend staff members to participate in the follow up interviews, to return the original consent forms or request a new packet of information and to respond by fax by a certain date. The follow up letters were sent via regular first class mail since the addresses had all been previously confirmed.

In May, 1996, a letter was sent to each individual identified by the manager as the facility's Responsible Care^R coordinator and/or EPCRA compliance official, soliciting their participation in the follow up interview phase of the study. The letter informed the prospective participants of the study's purpose and methodology and offered them the opportunity to ask questions about the project. The letter asked them to suggest dates and times between the end of May and mid-June, 1996, during which they would be available for an in-person or telephone interview. In other respects, the contents of the initial

letters to Responsible Care[®] coordinators and EPCRA compliance officials were identical to those sent to the plant/facility managers and are included with them in Appendix G.

After the follow up interviews were scheduled and before they were conducted, each participant received a faxed letter, confirming the date and time and providing a copy of the facility's data record form, which showed the reporting compliance data for their facility that DEQ had retrieved. This provided the interviewee with the opportunity to review the information DEQ had provided about their facility and their facility's own records if they chose to do so, as well as the opportunity to review the basic questions to be asked during the interview.

Data from DEQ

Meanwhile, in January, 1996, the names and addresses of all of the CMA members' Michigan facilities were submitted to the Michigan Department of Environmental Quality (DEQ), which is one of the agencies mandated by EPCRA to receive the facilities' reports on Sections 311, 312, and 313. The Freedom of Information Act (FOIA) coordinator in the DEQ's Environmental Assistance Division was asked to retrieve EPCRA compliance data on the facilities for the years 1988-1994. Provided was a sample table on which to record the dates on which DEQ had received the required information for Sections 311, 312, 313. As requested,

DEQ provided in writing the dates on which the department recorded as receiving the information required by Sections 311, 312 and 313 of EPCRA. Those data were then recorded on a facility data record form.

The compliance information was analyzed in various ways described below, after the follow up interviews were conducted.

Initial Categorization

Based on considerations described below, the following categories were used initially to tabulate each facility's reporting data for each year and section and are noted on the facility data forms in Appendix I:

OK = reported by DEQ as received on or before the statutory deadline.

WW = reported by DEQ as received within ten calendar days after the statutory deadline.

W+ = reported by DEQ as received more than ten calendar days after the statutory deadline.

ND = no date recorded by DEQ when received.

NI = no information received by DEQ.

NRR = not required to report.

NF = not found by DEQ at the address provided by CMA.

These were used in determining whether any facility was in absolute voluntary compliance with the three sections of EPCRA in a combined categorical analysis, and in a compliance-participation matrix.

Caveats in Categorizing Compliance -- "Benefit of the Doubt"

One challenge in evaluating compliance with this law is that the statute itself does not require verification of any of the information submitted.

In analyzing the deadlines and the data, several things became evident which, taken together, meant that calculating compliance, even on the basis of submitting information according to statutory deadlines, was not a simple matter.

For one thing, the law specifies deadlines on or before which the facilities are to submit information. However, it does not specify whether the information must be received by or simply sent by those dates, a distinction which had a bearing on analyzing the data. Also, the DEQ's FOIA coordinator indicated that the staff is not always able to stamp the reports as received on the day they actually arrive. This is particularly true, she said, of the Tier I and II reports submitted under Section 312 by March 1, because the department often must process more than 10,000 of them. More than 500 facilities are required to submit "Form Rs" on or before July 1. She also commented, as did facility representatives, that many facilities send their reports by certified mail and that a postmark can also indicate compliance with the letter, as well as the spirit, of the law.¹⁵⁷

¹⁵⁷Information Coordinator, Michigan Department of Environmental Quality, Environmental Assistance Division. Personal Communication. November, 1996.

Therefore, in calculating whether or not a facility had voluntarily complied with these sections of the statute, it seemed appropriate to establish several "benefit of the doubt" (BOTD) factors, because of the complications that emerged from the vagaries of interpreting the information from DEQ.

For another thing, five of the reporting deadlines fell on weekends. According to the DEQ's spokesperson, recording the reports as received can be complicated both by weekend deadlines and the postal holiday that follows the July 1 reporting deadline for Section 313 by just a few days. In categorizing compliance, it seemed appropriate to allow for that, as well as for possible delays in mail delivery. Therefore, in the analyses, "WW" was to indicate when information was reported as received by DEQ within ten calendar days of the statutory deadline.

"W+" was used to indicate when information was received more than ten calendar days after the deadline, irrespective of how much later. The fact that it was ultimately provided is to the facility's credit, but providing it in a timely fashion is the more important criterion in calculating compliance. The decision in *Atlantic States Legal Foundation v. Whiting Roll-Up Door Manufacturers* in the United States District Court for the Western District of New York, put laggard filers on notice that late is not better than never. "The court noted that EPCRA allows

[citizen] suit for 'failure to' comply with the Act's reporting requirements..."¹⁵⁶

In some reporting years, DEQ apparently received no information for some sections from some facilities. "NI" was used to identify those situations.

Analysis by Section

The data were analyzed according to compliance with each EPCRA section that was included in the study. Each of the three sections studied had some unique factors associated with calculating compliance, and these are described below.

SECTION 311 - The deadline for submitting the Material Safety Data Sheet (MSDS) for each chemical as required under Section 311 is absolute, but may differ from one facility to another. It is the earlier of two possibilities--one year after October 17, 1986, or "three months after the owner or operator of a facility is required to prepare or have available a material safety data sheet (MSDS) for the chemical under the Occupational Safety and Health Act and regulations promulgated under that Act."¹⁵⁷

¹⁵⁶777 F. Suppl. 745 (W.D.N.Y. 1991)

¹⁵⁷EPCRA Sec. 311 (d) (1) (A) (B)

It was not possible, from the information provided by DEQ, to ascertain whether any of the facilities fell into the second category. Thus, it was difficult in some cases to decide whether or not a facility was, in fact, complying even though DEQ received its information more than ten calendar days after the initial deadline. The facilities were placed in the "W+" grouping, though arguably they could have been considered "OK," so that was considered when making the final calculation of compliance. Others submitted the MSDSs after they had submitted information required by other sections of the act. These were grouped with other facilities which submitted the MSDSs more than ten calendar days after the initial deadline in the category labeled "W+," but no BOTD factor was applied to the final categorization of their compliance.

Another complexity in determining compliance with Section 311 stemmed from the fact that, in the early stages of receiving the MSDSs or lists (another option allowed facilities to submit a list instead), DEQ apparently did not always record a "date received" on the form. So a category of "no date" or "ND" was established to account for that factor.

Strange as it may seem, according to DEQ records, some facilities submitted no MSDSs, even though they submitted at least some of the required information for other sections. These were placed in the "NI" category.

SECTION 312 -- This section also presents a few unique characteristics that complicate the compliance evaluation process. Under this section, facilities are allowed to submit inventory information about toxic substances in one of two forms--so called Tier I reports or Tier II reports. Facilities can submit, and in some instances have submitted, both types of information for the same reporting period. In cases where the facility provided both Tier I and Tier II reports for a given year and one report was received by the deadline but the other was not, compliance was calculated according to the one received by the deadline.

A further complication is the fact that the Administrator of the EPA "may establish threshold quantities for hazardous chemicals covered by this section below which no facility shall be subject to the provisions of this section."¹⁵⁸ This makes it difficult to tell whether the fact that a facility submits no inventory information in a particular year indicates noncompliance with the section or simply that it inventoried quantities below the threshold established for the substances which it held in that year. However, if a report was submitted for Section 313 for a given year, it was assumed that a Tier I or Tier II report should also have been submitted for Section 312, in which case no "NI" credit was allowed.

¹⁵⁸EPCRA, §312, (b) Thresholds.

SECTION 313 -- The information contained in the facilities' reports for this section makes it, by far, the most well-publicized aspect of EPCRA. To comply with this section, facilities are required to report the combined total of the toxic chemical substances "manufactured, processed, or otherwise used in quantities exceeding the threshold established by subsection (f)" of the section during the preceding calendar year, as well as any sized accidental releases of those substances to any medium. The information generated by this so-called "toxics release inventory" (TRI) is of great public interest and importance, because it is the first and thus far the only known place where the totality of discharges of toxic substances to the air, water and land are presented. Achieving reductions in these quantities, while not a statutory requirement, is also a goal of Responsible Care's pollution prevention code. However, it was not the focus of this study.

Supplying the information by the deadline was the determining factor for compliance, because the statute does not establish limits on the quantities released, but rather thresholds over which released quantities must be reported. A complicating factor in calculating compliance with this section is that the threshold quantities for manufacturing or processing were reduced each of the first three reporting years. Thus, a facility might not be required to report for 1988, for which the

manufacturing/processing threshold was 50,000 pounds, but might fall within the reporting requirement for 1989 when it dropped to 25,000 pounds.¹⁵⁹

Other factors used in ascertaining who must report under this section are the SIC code of the facility and the number of its full-time employees. Specific information about these matters was not obtained for this study, though three facilities identified themselves as not being required to report.

Therefore, if DEQ received from a facility no information for this section of EPCRA, it was not really possible within the scope of this study to determine whether or not that constituted noncompliance. The category used to indicate that no information was received by DEQ was simply "NI."

Calculating Compliance

The data were analyzed in several ways, using the basic information provided by DEQ. First, the information for each facility was categorized according to the above criteria by section and by year.

Absolute Compliance

A determination was made on whether the facility was in complete compliance, depending on whether it received all "OKs"

¹⁵⁹EPCRA, Sec. 313, (f) (1) (B) (I).

on its form, meaning that the DEQ had recorded receiving all reports for all sections on or before their respective deadlines.

BOTD Compliance

Then the various BOTD factors were applied to each facility to determine whether it would then be considered in compliance, by section, by year or by numbers of years.

Compliance by Section

The difficulties described above notwithstanding, the facilities' compliance with each individual section was also analyzed.

Ranking Analyses

Two ranking analyses were performed. One was ranking each of the facilities according to the number of times DEQ reported receiving the required information on or before the statutory deadline. A total of 15 "OK's" was the maximum possible score. In this analysis, BOTD factors "WW" and "ND" were ranked as functionally equivalent, with "W+" next (applying a BODT for having submitted the information, albeit belatedly) and "NI" as last. This may have produced some aberrations, because the fact that a facility submitted no information for a particular section in a given year did not necessarily mean that it was not complying. It may simply have meant that they were not required

to report anything on that section for that particular year.

Therefore, in another calculation, the ranking took into account all the possible BOTD factors, in this case ranking "NI" above "W+", except for Section 311, in which case it ranked below.

Categorical Compliance

The following categories were used to describe a facility's Combined "compliance" with all three sections:

- 1 - All information received by due date (OK)
- 2 - All information received within ten calendar days of due date (delivery delays) (WW)
- 3 - All information received, some more than ten calendar days after due date (W+)
- 4 - Information not received in all categories/years; but information that was received came in by due date
- 5 - Information not received in all categories/years; some information that was received came within one week of due date
- 6 - Information not received in all categories/years; some information that was received came more than one week after due date
- 7 - Not required to report (NRR)
- 8 - Not found by DEQ (NF)

Some of these categories correspond to the initial compliance categories described above, in which case, they are noted in parentheses following the category description. Others are

summary categories. These were used in a categorical compliance analysis.

Participation Analysis

Another analysis indicated how facilities responded to the request for their participation in follow up interviews. That information was further compared with the compliance information to ascertain whether any correlation between compliance and participation would be evident.

Corporate Groupings

Finally, the facilities were also grouped according to the Corporation to which they apparently belonged to analyze whether patterns of compliance might exist within those corporations.

DEPARTURES FROM THE RESEARCH PLAN

It was not feasible to implement two aspects of the original research plan. The first called for categorizing the facilities by size and randomly selecting prospective interviewees from those stratifications. That approach assumed that virtually all of the facilities would be willing to participate in the follow up interviews. Since the final sample was reduced by the number not found or not required to report, as well as by the relatively small number of facilities consenting to participate in the follow up interview phase, it seemed an appropriate alternative

strategy to interview anyone who was willing. This did not really diminish the results because the reporting data provided by DEQ were the fundamental unit of study and that sample was of an appropriately significant size.

The other facet of the research plan that proved infeasible to implement was the proposal to interview anyone who had conducted a "third party" or independent audit of a facility's Responsible Care[®] performance and/or EPCRA compliance. The initial letter to facility representatives requested the names of anyone they knew who had conducted such an audit. None of the respondents identified anyone who had done such an audit of a Michigan facility.

EXPECTATIONS OF THE METHODOLOGY

It was expected that the above approach would yield both quantitative documentation of one segment of an industry association's compliance with some aspects of an existing environmental statute and enriched analysis of the relationship of that compliance with participation in the association's code of environmental ethics.

Chapter 4

FINDINGS

The findings of this study are presented according to the Outline of methods in the previous chapter. First, insights and information generated from the preliminary interviews with experts, then analysis of the DEQ data, and finally insights and perspectives of the facilities' representatives gleaned from the follow up interviews are described.

INTERVIEWS

Experts' Participation

Two-thirds of the experts contacted participated in the preliminary interviews. All of their registered mail receipts were returned, confirming the address information. Between late December, 1995, and mid-July, 1996, telephone or in-person interviews with twelve experts were conducted. Six of the individuals from the initial list simply provided information, were unable to schedule an interview, or declined to participate. See Appendix F for a list of the basic interview questions for experts.

The experts were most cooperative and helpful. They came from different backgrounds, as described in the previous chapter, and contributed a variety of information and perspectives. Some experts suggested others to consult; some provided reference materials or suggested helpful articles, reports and books to review. The information, the insights and perspectives they shared all lent additional important background and context for understanding the empirical data.

The experts' views of Responsible Care[®] and EPCRA seemed to reflect their backgrounds and experiences. Because Confidentiality was promised to all interview subjects, they are referred to only by the letter assigned to them for purposes of this study and by some indication of their background or experience with Responsible Care[®] and/or EPCRA.

Environmental Advocates

Not surprisingly, some of those who came from environmental advocacy background expressed skepticism. One person, a former member of the State Emergency Response Commission and current participant in a Local Emergency Planning Committee, stated:

My impression was that if they really do all this [Responsible Care[®]] stuff, take it seriously, they could make great progress. Part of me wonders if they'll do more than it takes to look good and really integrate

environmental perspectives into every facet of company operations.¹⁶⁰

Another person was profoundly disillusioned by her experience as a member of the local chemical plant's Community Advisory Panel.

Responsible Care[®] is a facade that the chemical industry has painted. They're putting up this facade about how they care for the environment, but really are trying to figure out how to make more money ...¹⁶¹

However, she said she continues to participate and brings environmental concerns to the group.

Others with both local and state experience were more positive in their perspectives:

I still see Responsible Care[®] as primarily a "beyond compliance" kind of program, in lieu of compliance with law. It's an acknowledgment in my mind that the core laws are not really enough to ensure responsible behavior.¹⁶²

The part I like most about Responsible Care[®] is that the chemical industry is stepping up to the whole notion of industry taking the lead in right-to-know, rather than not participating.¹⁶³

The same individual also pointed out the difficulty chemical companies have in communicating with environmental advocates and developing a true partnership in preparing emergency plans for

¹⁶⁰Expert I, notes from telephone interview by author, January, 1996, East Lansing, MI.

¹⁶¹Expert B, notes from telephone interview by author, January, 1996, East Lansing, MI.

¹⁶²Expert N, notes from telephone interview by author, February, 1996, East Lansing, MI.

¹⁶³Expert J, notes from telephone interview by author, February, 1996, East Lansing, MI.

communities. This observation echoed what Nash and Howard found in their survey of companies.¹⁶⁴

One expert with international environmental experience pointed to the relationship between Responsible Care[®] and ISO 14000 as industry initiatives and EPCRA as a regulatory approach to providing the public with important information.¹⁶⁵

Reporter

The reporter said he was impressed with industry's participation in the Local Emergency Planning Committee with which he is associated.

We get super cooperation from them. They cover the cost of mailings; the committee has no money. ... [One facility] was just great in setting up a model committee and have been just great in providing information when they've had incidents. Industries have been just great in their involvement. ... I have to give them an A+.¹⁶⁶

CMA Staff and Volunteers

Members of CMA's Public Advisory Panel (PAP) had the most working knowledge of Responsible Care[®] and were quite candid about its limitations.

¹⁶⁴Nash and Howard, *The U.S. Responsible Care[®] Initiative*, 28.

¹⁶⁵Expert H, notes from telephone interview by author, March, 1996, East Lansing, MI.

¹⁶⁶Expert A, notes from telephone interview by author, July, 1996, East Lansing, MI.

I think it [developing the codes] was a valiant effort. I sometimes felt, and I'm sure that almost everyone on the PAP felt, that it had to be so watered down to please everyone at CMA.

I think that whenever the really in-depth, involved panelists felt that there could be any drifting away from the right-to-know, that's when they would be angry, if they felt that the attorneys and lobbyists were not respecting the ground, the gains that had been made.¹⁶⁷

They also saw Responsible Care[®]'s potential for getting chemical companies on the right track to ethical environmental behavior.

Though there were times that we didn't get the [specific, strong] language that we wanted, in general the codes applying to the principles were a very positive step and, I think, a useful one for local plant managers and people responsible for this program.¹⁶⁸

Responsible Care[®], with its commitment to mutual assistance [among CMA member companies], does exert some pressure to provide data to the local community, even if the law doesn't require it. It increases the likelihood of peer enforcement.¹⁶⁹

Responsible Care[®] has not been promoted to industry as a way to improve its competitive advantage. This program is the right thing to do ethically.¹⁷⁰

The CMA staff members interviewed were understandably convinced that Responsible Care[®] is a viable effort.

The members that put together the codes wanted to go beyond just the regulation. They said, "You know, regulation is

¹⁶⁷Expert F, notes from transcribed tape recorded interview by author, February, 1996, Ypsilanti, MI.

¹⁶⁸Expert F, notes from transcribed tape recorded interview by author, February, 1996, Ypsilanti, MI.

¹⁶⁹Expert D, notes from telephone interview by author, January, 1996.

¹⁷⁰Expert D, notes from telephone interview by author, January, 1996.

fine for everyone else, but if we're going to earn the public's trust, if we're going to demonstrate that we're improving, we've got to set our goals higher." So, in most cases, the codes were written to go beyond what the regulation was at that time.¹⁷¹

We feel like, in many instances, we've gone beyond what various regulations require in establishing the codes.¹⁷²

They were grappling with the desirability and inevitability of independent verification of its accomplishments and benefits, as described later in this chapter.

Perhaps the most important finding from the interviews, though, was the confirmation that the Responsible Care[®] program and the Emergency Planning and Community Right-to-Know Act are worth examining as models for the future of government-business-public relationships in general and corporate environmental ethics in particular.

Facilities' Participation

In one sense it would have been possible to conduct this study without consulting any of the facilities, let alone obtaining their participation in follow up interviews. The information obtained from the Department of Environmental Quality would have sufficed to conduct an objective analysis of the facilities' voluntary compliance with submission of EPCRA-

¹⁷¹Expert A1, notes from transcribed tape recorded interview by author, May, 1996, Arlington, VA.

¹⁷²Expert A2, notes from transcribed tape recorded interview by author, May 1996, Arlington, VA.

mandated reports. However, it was quite useful to engage the facilities' representatives in some dialogue about their understandings of Responsible Care[®] and EPCRA in order to interpret the DEQ data.

Facility Managers

The reaction from facility managers about having staff members participate in the follow up interviews was very mixed-It ranged from no response whatsoever, to apologies and explanations for not participating, to positive responses to the first letter. All but two of the managers' registered mail receipts were returned, confirming the address information. Two of the letters were returned, along with the receipt, indicating that the individual addressee was no longer at the facility.

As of February 10, 1996, 16 responses to the initial letter to the facilities had been received. Of those responses, five provided names of their facility's Responsible Care[®] coordinator and EPCRA compliance official. In 11 instances, the response was a letter or phone call, declining to participate and, in some instances, providing an explanation or apology. These explanations were quite similar to those reported by Nash and Howard,¹⁷³ lack of time, changes in facility operations or corporate structure, or press of other responsibilities.

¹⁷³Nash and Howard, *The U.S. Responsible Care[®] Initiative*, 7.

Representatives of two of those facilities indicated that theirs is not a manufacturing or processing site and, thus, not required to report under EPCRA.

In late February, 1996, a follow up letter was mailed to the 43 original addressees who had not responded. Responses from 21 facility contact persons had been received as of April 1. Seven of them indicated some willingness to participate. Four of those provided the names of the Responsible Care[®] coordinator and EPCRA compliance official for their facilities. Fourteen of those responding declined to participate, in some instances offering explanation or apology. One more representative identified his facility as not being required to report under EPCRA.

Representatives from two facilities owned by the same corporation indicated that they were closing down, but responded differently to the request to participate. One wrote, "I regret to inform you that the _____ plant at _____ is closing down. We therefore will not be able to help you with your research project." However, the facility contact from the other plant called and described the shutdown process and the techniques being used to recycle the property for future use as part of an industrial park. Of some interest was the fact that one of the CMA's PAP members also does consulting about public participation in groups such as Community Advisory Panels. She thinks that is as important to maintain community relations during this stage of a plant's "life cycle" as during its active operations.

One manager's letter said, "wish you the best of luck in presenting your hypothesis, which by the way is very correct." That remained to be seen.

Facility Representatives' Participation

The consent forms from the facility managers yielded the names of 13 Responsible Care[®] coordinators and 11 EPCRA compliance officials to contact for interviews. In one instance, a single individual was the facility's Responsible Care[®] coordinator and its EPCRA compliance official. In another instance, the facility representative recommended that the corporate level Responsible Care[®] coordinator be interviewed, in addition to the local facility's coordinator. In still another instance, a single individual was responsible for coordinating Responsible Care[®] activities for several facilities. In one instance, two individuals were responsible for the facility's EPCRA compliance. Neither the Responsible Care[®] program nor the EPCRA statute specifies that the functions be assigned to separate individuals. Thus, it is the prerogative of the facility and its parent company or corporation to organize its staff to fulfill these functions, and the responses of the facilities reflects that flexibility.

Sixteen individuals responded to the letter inviting them to participate in the follow up interviews. The rest were contacted by telephone. Eventually, 16 individuals, ten Responsible Care[®]

coordinators and seven EPCRA compliance officials (due to one person covering both responsibilities at one facility), representing nine facilities participated in the those interviews.

The backgrounds of those representatives interviewed varied to some degree, but most had both educational and experiential qualifications for their current responsibilities. Several had college degrees in relevant sciences, and many had on-the-job or conference/workshop educational training. Most had considerable experience within their facility or corporation, though not necessarily in their current positions. The Responsible Care[®] coordinators were more somewhat more familiar with EPRCA's requirements, if not with their own facilities compliance record, than the EPCRA compliance officials were with the specifics of Responsible Care[®]. However, most did actively communicate with one another in fulfilling their responsibilities. In fact, a few of the interviews with company representatives were conducted jointly, with both individuals participating.

Facility Representatives' Interview Findings

The perspectives on the relationship between Responsible Care[®] and EPCRA were interestingly similar. Almost all of those interviewed saw the program and the law as having a common purpose and as complementary in their approach. Responsible Care[®] was perceived as both "going beyond the law" and as more

process-oriented than the statute, trying to ensure that companies and their facilities have the type of management systems that will, at a minimum, ensure compliance with environmental statutes. Interestingly, the Responsible Care^R codes point out to member companies that, indeed, complying with the codes does not relieve them of complying with statutes.¹⁷⁴ EPCRA was prescribing the types of information that facilities might need to generate in fulfilling their community relations obligations under the CAER code. Some EPCRA compliance officials described information management systems they had developed to generate the required data and how they had been able to use the data in working with the Community Advisory Panels their facilities have organized, as well as the LEPCs to which they are required to report.

DATA FROM DEQ

The reporting compliance information obtained from DEQ was the primary empirical component of the study. By April 15, 1996, DEQ's FOIA coordinator had provided the final results of the search for data on reporting compliance. In 10 instances, she could not find the facility at the address provided. In two of those instances, the mailing address provided was a post office box, and DEQ reportedly files its information by street address

¹⁷⁴CMA, Pollution Prevention Code.

only. As subsequently learned, through communication with the facilities' representatives described in the previous section, at least three of them are not manufacturing sites and, thus, are not required to report under EPCRA. The street address of another facility was obtained through correspondence with its representatives and was resubmitted to DEQ's FOIA coordinator, who was then able to locate the requested information. Four of the facilities not found by DEQ did respond to either the initial or followup letter, though none agreed to be interviewed. Therefore, the final sample consisted of 55 facilities apparently owned by 31 corporations.

Recording the Data

A table was created for each facility, on which were recorded its filing dates for Sections 311, 312 and 313 of EPCRA as reported by DEQ. These tables also included the results of the analyses performed for this study. Figure 1 on page 110 is a sample table, showing how the data might appear for a hypothetical facility, along with an explanation of the codes used in categorizing compliance. The codes used are described in more detail in Chapter 3. Completed data forms for the facilities studied are found in Appendix I.

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Analyzing the Data

The data were analyzed in several ways in an attempt to address the research question of whether membership in CMA and participation in Responsible Care[®] would predict compliance with EPCRA.

COMPLIANCE SUMMARY	COMPLIANCE CATEGORY	PARTICIPAT'N CATEGORY	SECTION COMP	YEAR COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) ND (1) WW (1) W+ (1) NI (6)	6	D	0	1	40	35	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	COMPLIANCE CATEGORY
1987	ND				ND
1988		2/28/89		NI	OK/NI
1989			3/1/90	NI	OK/NI
1990			4/5/91	NI	W+/NI
1991		3/2/92 sa		NI	WW/NI
1992		3/1/93		NI	OK/NI
1993			2/25/94	NI	OK/NI
1994			2/16/95	6/30/95	OK/OK
CAT TOTAL	ND	OK (2) WW (1)	OK (3) W+ (1)	OK (1) NI (6)	OK (6) ND (1) WW (1) W+ (1) NI (6)

OK = report recorded as received by DEQ on or before the statutory deadline.

WW = report recorded as received by DEQ within ten calendar days of the statutory deadline.

NI = no report received by DEQ.

W+ = report was recorded as received by DEQ received more than ten calendar days after the statutory deadline.

ND = No date recorded by DEQ on form received from facility.

NRR = Not required to report.

NT = Not found by DEQ.

 = Received after statutory deadline.

Figure 1. Sample Facility Data Record Form

Absolute Compliance Standard -- Nobody's Perfect

Applying an absolute standard, by which DEQ would have had to record receiving all reports from a facility for all sections on or before the statutory deadline, no facility would be considered in full compliance. In a variation on this analysis, a calculation was made to ascertain how many facilities complied with a given number of sections for a particular number of years and how many were in full compliance with a particular section for a number of years. Note that a single facility could be counted twice, depending on its reporting record. The results of this analysis are shown in Table 1 below. Section 311 had only one reporting year, so the facilities that complied with that section were credited with one section for one year.

Table 1. Number of Facilities in Absolute Compliance with Numbers of Sections and Numbers of Years.

Number Years	1 Section	2 Sections
1	4	6
2	11	6
3	13	9
4	14	8
5	7	3
6	4	4
7	1	0

In addition, 17 facilities were in compliance with one section or another for all eight years, while only four were in absolute

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compliance with two sections for all years, and none was in compliance with all three sections for all years.

DEQ reported receiving so few reports from three facilities--one report for one section for one year only--that it raised the possibility that the facilities were not really required to report. However, because neither the DEQ nor the facility itself made that claim, it was not considered. At least one facility reported in the follow up interview that it neither inventoried, manufactured or processed large enough quantities of the substances to be required to report, but submitted the information nonetheless. In the instances in which DEQ did not find a facility and the facility's representative claimed that it was not responsible for reporting, the facility's claim was accepted.

Table 2 on page 99 shows the number of facilities in absolute compliance (no BOTD factors allowed) by reporting years, with the notation of the day of the week on which the reporting deadline fell and the years when the deadline fell on a weekend, one of the complicating factors described in Chapter 3 above. Figures 2 and 3, on pages 100 and 101 respectively, chart the numbers and percentages of facilities in absolute compliance with all sections by year.

Table 2. Absolute Compliance by Deadline Year. (N=55 Facilities)

DEAD LINE YEAR	DEADLINE DATE	DEADLINE DAY	DEAD LINE DATE	DEADLINE DAY	NUMBER REPORTED RECEIVED	PERCENT REPORTED RECEIVED
1987	OCTOBER 17	SATURDAY			16	29
1989	MARCH 1	WEDNESDAY	JULY 1	SATURDAY	16	29
1990	MARCH 1	THURSDAY	JULY 1	SUNDAY	20	36
1991	MARCH 1	FRIDAY	JULY 1	MONDAY	16	29
1992	MARCH 1	SUNDAY	JULY 1	WEDNESDAY	7	13
1993	MARCH 1	MONDAY	JULY 1	THURSDAY	19	35
1994	MARCH 1	TUESDAY	JULY 1	FRIDAY	22	40
1995	MARCH 1	WEDNESDAY	JULY 1	SATURDAY	17	31

Benefit of the Doubt (BOTD) Standard

Without further investigation, confirmation or verification of the DEQ data and by applying all of the following possible Benefit of the Doubt (BOTD) factors, a total of eleven facilities could be considered in full compliance with the statute for all years studied:

- **ND** = in compliance since DEQ did not record a date received for Section 311.
- **WW** = all reports received within 10 calendar days of the deadline.
- **NI** = allowing for the possibility that the facility was not required to submit information for that section for that reporting year, the only exceptions being Section 311, for which every facility was required to submit the MSDS's, and Section 312 in the case where a facility had submitted its report for Section 313 for the same year.
- **W+** = the only report received more than a week after the initial deadline was the one for Section 311, in which case the report was submitted before the reporting deadlines for Sections 312 and 313.

This amounts to 20 percent of the final sample of facilities.

ABSOLUTE COMPLIANCE

All Sections

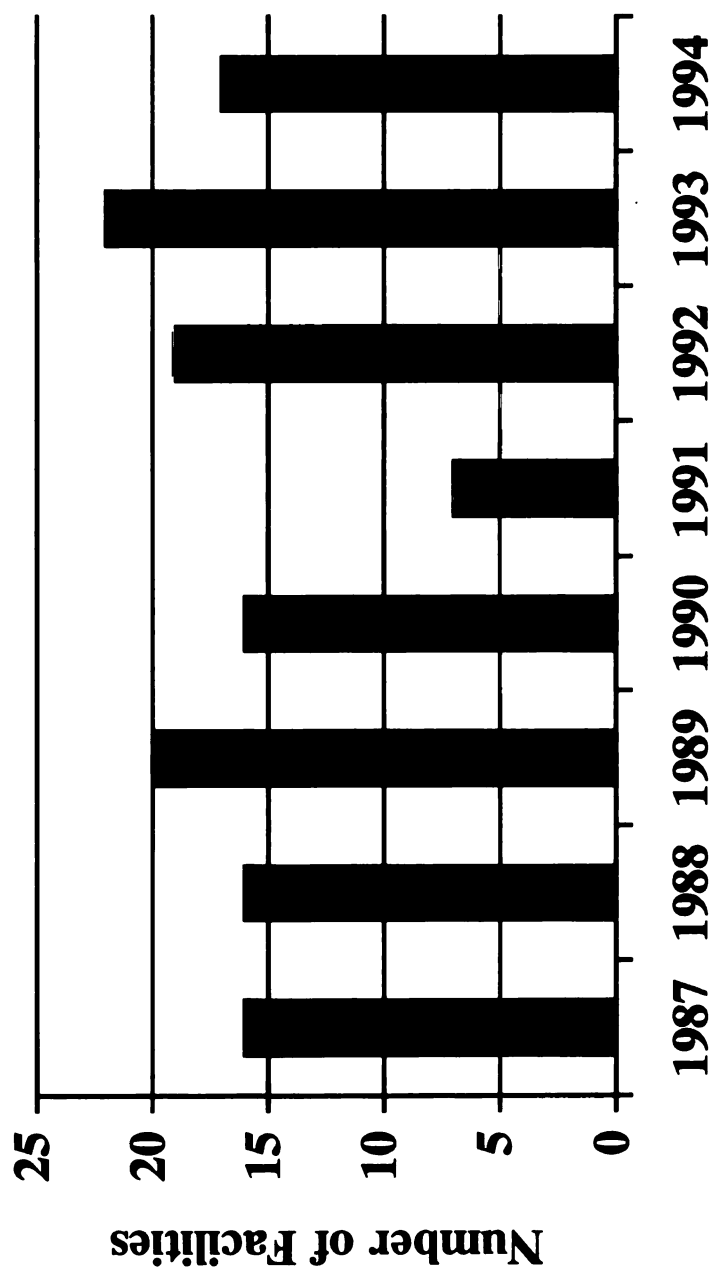


Figure 2. Absolute Compliance: All Sections by Reporting Year
Number of Facilities Reporting (N=55)

ABSOLUTE COMPLIANCE

All Sections

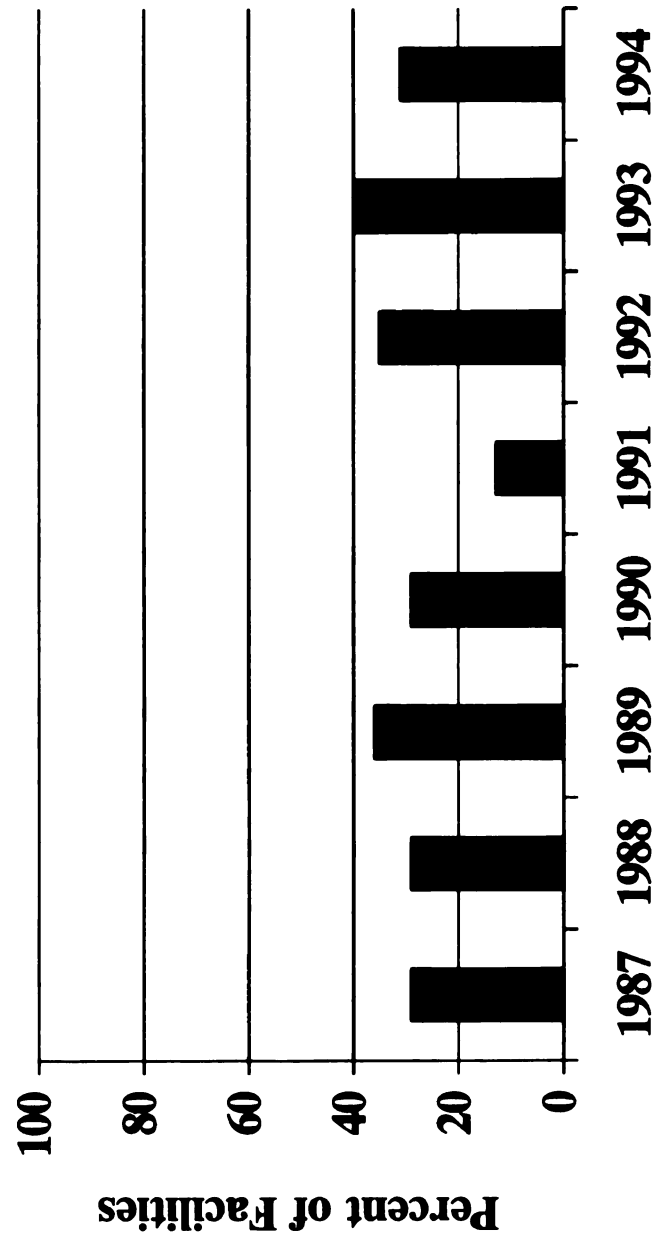


Figure 3. Absolute Compliance: All Sections by Reporting Year
Percent of Facilities Reporting (N=55)

Compliance by Section

The data were also analyzed for various possible patterns that might exist within/for each section. The results of those analyses are presented below.

Section 311

The data that DEQ provided suggest that 16 facilities complied fully and voluntarily with this section of the act. It was possible that a facility was not required to report by the initial deadline of October 17, 1987. In fact, DEQ reported receiving the required information from six facilities more than ten calendar days after the initial deadline, but before the deadline established for reporting under Section 312. Eight reports were reported as being received after reports submitted in compliance with Section 312. One was received after the 312 deadline, but the facility had not submitted any other reports, according to the DEQ.

By applying the allowable "WW", "ND", and "W+" factors, a total of 32 facilities appear to have complied. This means that either 29 percent or 50 percent of the facilities complied, depending on whether compliance was reckoned in an absolute sense or included all the possible BOTD factors. DEQ received the required information from 29 facilities (53 percent) within three months after the October 17, 1987 deadline. Of the 12 facilities for which DEQ reported receiving no information, one did file at

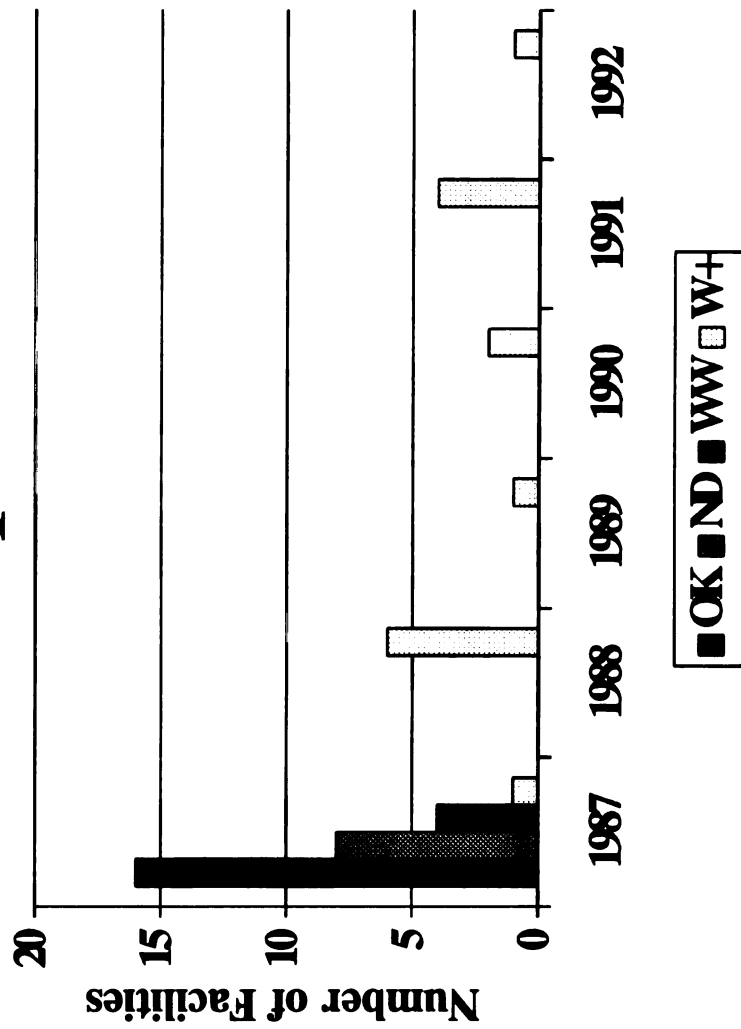
least one report for another section in at least one year. Table 3 below portrays the compliance with this section:

Table 3. Section 311 - Compliance by Category/Year (N=55).

CODE	YEAR	NUMBER OF FACILITIES	PERCENT OF FACILITIES
OK		16	29
ND		8	15
WW		4	7
W+			
	1987	1 (1-OK)	2
	1988	6 (3-OK)	11
	1989	1	2
	1990	2	4
	1991	4	7
	1992	1	2
NI		12	22
NRR		3	NOT COUNTED
NF		6	NOT COUNTED
TOTAL			

Figures 4 and 5, on pages 104 and 105 respectively, also present this information. More details of the Section 311 data analysis are found in Appendix J.

SECTION 311 Compliance



**Figure 4. Section 311 Compliance - With BOTD Factors
Number of Facilities Reporting (N=55)**

SECTION 312 Compliance

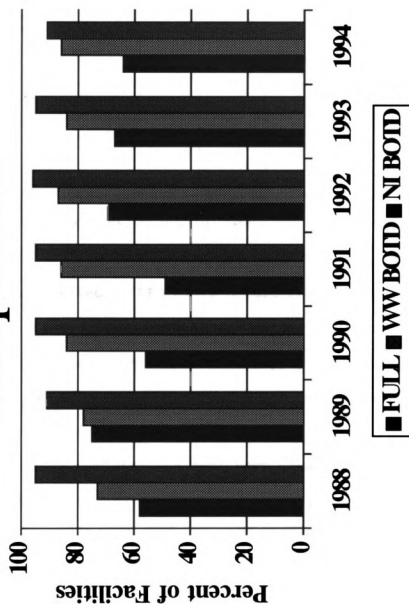


Figure 5. Section 312 Compliance - With BOTD Factors
Percent of Facilities Reporting (N=55)

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Ta

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Section 312

Table 4 below presents a summary of the analysis of the DEQ's reported data for Section 312.

Table 4. Section 312 - Compliance by Category/Year. (N=55)

BOTD	1988	1989	1990	1991	1992	1993	1994
NI	14	7	6	5	5	6	4
NF	6	6	6	6	6	6	6
NRR	3	3	3	3	3	3	3
OK	32	41	31	27	38	37	35
WW	8	2	15	20	11	9	12
W+	1	5	3	3	1	3	4
T	64	64	64	64	64	64	64

In analyzing the information DEQ provided for this section, any facility whose Tier I or Tier II inventory information for a particular year was received by DEQ on or before the deadline, even though a facility submitted both forms and one was reported as being received late, was counted as "OK." Applying that standard, the data results in the percentages of compliance in first row of Table 5 on page 107--a range of 49 percent to 75 percent. The results of applying the "WW" BOTD, are seen in the second row at the bottom of the table--a range of 73 percent to 87 percent compliance. By applying the allowable "NI" BOTD factors, the results improved to from 91 percent to 95 percent as shown in the last row. The exceptions were the four instances in which a facility filed no report for Section 312 in one year, but did file the Form R report for Section 313 in the same year, indicated by an "**". Nonetheless, the results fluctuated from

year to year, regardless of the BOTD factor applied, and no consistency in compliance was observed, nor was a steady increase or decrease.

Table 5. Section 312 Compliance Calculated By Year with No BOTD Factors, with "WW" and "NI" BOTD Factors. Number and Percent of Facilities Reporting. (N=55)

BOTD CODE APPL	1988	1989	1990	1991	1992	1993	1994
NONE	32 =58%	41 =75%	31 =56%	27 =49%	38 =69%	37 =67%	35 =64%
WW	40*=73%	43 =78%	46 =84%	47*=86%	48 =87%	46*=84%	47*=86%
NI	54*=95%	50 =91%	52 =95%	52*=95%	53 =96%	51*=95%	50*=91%

Figures 6 and 7, on pages 108 and 109 also show these results.

More details of the Section 312 data analysis are found in

Appendix K.

SECTION 312 Compliance

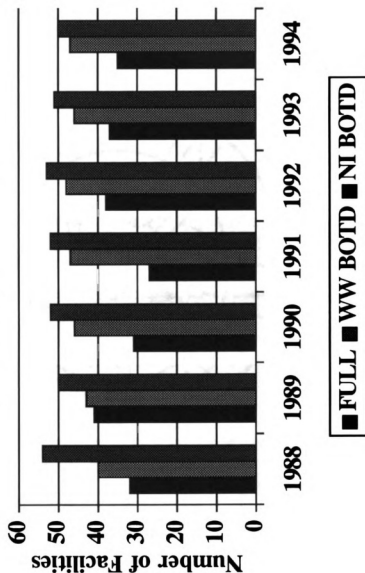


Figure 6. Section 312 Compliance by Year. Number of Facilities with No BOTD Factors, with WW and NI BOTD Factors (N=55)

SECTION 312 Compliance

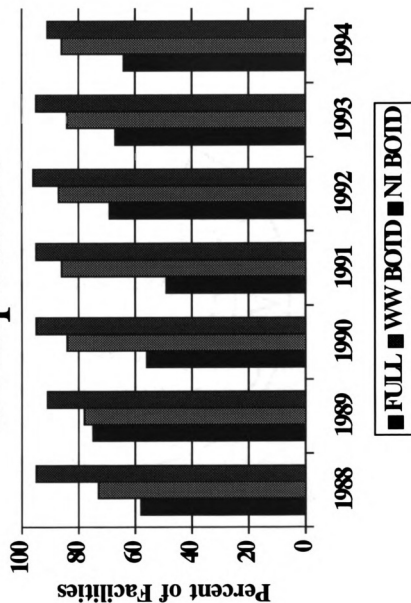


Figure 7. Section 312 Compliance by Year. Percent of Facilities Reporting with No BOTD Factors, with WW and NI BOTD Factors. (N=55)

Section 313

Table 6 presents a summary of the results of analyzing the data DEQ provided about reporting for this section of EPCRA.

Table 6. Section 313 - Compliance by Category/Year (N=55)

CAT	1988	1989	1990	1991	1992	1993	1994
NI	23	26	20	19	20	21	19
NF	6	6	6	6	6	6	6
NRR	3	3	3	3	3	3	4
OK	18	22	26	11	27	30	25
WW	10	6	0	12	7	1	8
W+	4	1	9	13	1	3	2
T	64	64	64	64	64	64	64

In reviewing compliance with this section, one facility was described by DEQ as "no longer required to report," as of 1994. With no BOTD factors applied, the compliance percentages ranged from 20 percent to 55 percent, shown in the first row of Table 7 on page 111. By applying the "WW" BOTD, the compliance percentages improved in all but one case--from 42 to 62 percent, shown in the second row of Table 7. The "NI" BOTD is particularly pertinent for this section because of the number of facilities which may not actually be required to report because of the volume/ quantities of the substances "processed or manufactured" there. Applying it, the range of compliance improved substantially, from 76 to 98 percent, shown in the last row of Table 7 on page 111. However, again no consistency from year to year and no pattern of increase or decrease in compliance from year to year was observed.

Table 7. Section 313 Compliance By Year with No BOTD Factors, with "WW" and "NI" BOTD Factors. Number and Percent of 55 Facilities Reporting. (N=55)

BOTD	1988	1989	1990	1991	1992	1993	1994
NO BOTD	18=33%	22=40%	26=47%	11=20%	27=49%	30=55%	25=45%
WW	28=51%	28=51%	26=47%	23=42%	34=62%	31=56%	33=61%
NI	51=93%	54=98%	46=84%	42=76%	54=98%	52=95%	52=96%

Figures 8 and 9, on pages 112 and 113 respectively, also present these results graphically. More details of the Section 313 data analysis are found in Appendix L.

SECTION 313 Compliance

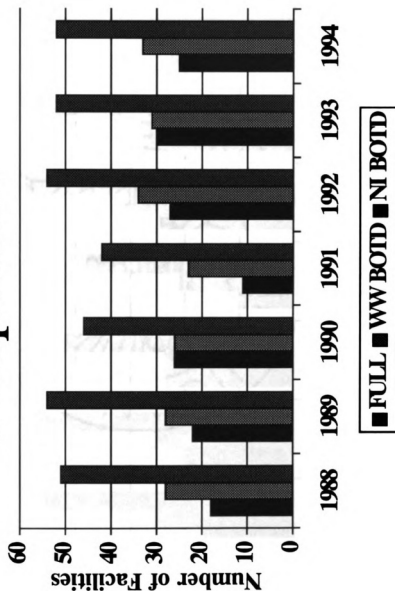


Figure 8. Section 313 Compliance by Year. Number of Facilities Reporting with No BOTD Factors, with WW and NI BOTD Factors. (N=55)

SECTION 313

Compliance

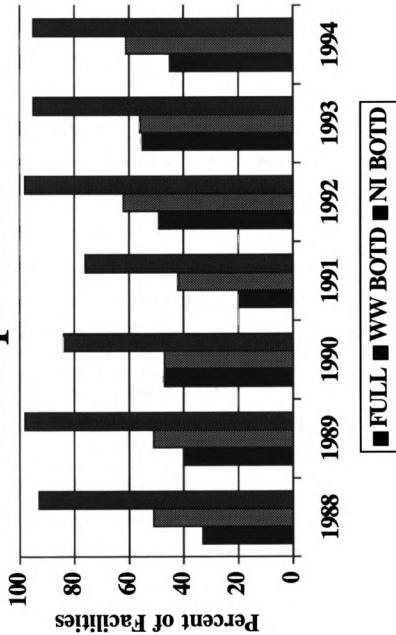


Figure 9. Section 313 Compliance by Year. Percent of Facilities Reporting with No BOTD Factors, with WW and NI BOTD Factors By Year. (N=55)

Ranking Analyses

Two rankings of compliance analyses were performed with the data provided by DEQ--one prioritizing the facilities on the basis of the number of sections/years they received an absolutely OK rating, the other prioritizing them by applying all the allowable "Benefit Of The Doubt" factors.

OK Compliance Ranking

In this analysis a total of 15 "OK's" was the maximum possible score. "WW" and "ND" were ranked as functionally equivalent, "W+" as next, followed by "NI." The BOTD factors were prioritized in the following order.

OK = Recorded by DEQ as received on or before the statutory deadline.

WW = Recorded by DEQ as received within 10 calendar days of the statutory deadline.

W+ = 311 allowed if submitted before first 312 submission; 312 and 313 not allowed

ND = 311 allowed

NI = 311 not allowed; 312 and 313 allowed, but 312 only if 313 not submitted in the same year.

NF = Not found

NRR = Not required to report

This analysis may have produced some aberrations, because the fact that a facility submitted no information for a particular section in a given year did not necessarily mean that it was not complying. It may simply have meant that they were not required to report anything on that section for that particular year.

Table 8 on page 116 presents the results of ranking the

facilities' compliance by prioritizing with the number of "OK" reports given the highest priority. Appendix M also shows the compliance characteristics, including the instances in which a facility's report was marked received more than 10 calendar days after the due date and the instances in which no information was received.

BOTD Ranking

In the other ranking analysis, all of the BOTD factors were applied and the facilities prioritized as follows:

OK = Allowed

WW = Allowed

ND = 311 Allowed

NI = 311 Not Allowed; 312 and 313 Allowed, but 312 only if 313 not submitted in the same year.

W+ = 311 Allowed if Submitted before first 312 submission; 312 and 313 Not Allowed

NF = Not Included

NRR = Not Included

Table 9 on page 117 presents the results of this ranking.

Combined Ranking Analyses

Table 10 presents the combined results of the "OK" and "BOTD" ranking analyses.

Table 8. "OK" Compliance Ranking

COMPLIANCE RANK	FACILITY CODE (S)
1	20,39
2	51
3	31
4	41
5	13
6	11
7	52
8	59
9	24
10	15,19,55
11	42
12	62
13	48
14	53
15	28
16	61
17	36
18	5
19	38
20	6
21	2
22	47
23	23
24	12
25	50
26	56
27	16

COMPLIANCE RANK	FACILITY CODE (S)
28	33
29	34
30	64
31	22
32	63
33	14
34	10
35	8
36	3
37	4
38	26
39	21
40	44
41	49
42	9
43	60
44	30
45	57
46	54
47	37
48	40
49	25
50	17
51	1
52	46
53 NOT FOUND	18,27,32, 43,45,58
54 NOT REQUIRED	7,29,35

Table 9. Benefit of the Doubt "BOTD" Compliance Ranking

COMP RANK	FACILITY CODE (S)
1	20,39
2	31
3	41
4	23
5	16
6	22
7	64
8	8
9	56
10	51
11	11
12	59
13	24
14	42
15	61
16	5
17	34
18	33
19	3
20	21
21	44
22	26
23	54
24	40
25	52
26	15,19,55
27	62

COMP RANK	FACILITY CODE (S)
28	48
29	38
30	14
31	12
32	63
33	4
34	49
35	53
36	2
37	6
38	50
39	60
40	13
41	28
42	47
43	57
44	37
45	30
46	25
47	36
48	17
49	9
50	1
51	46
52	10
53	18,27,32 43,45,58
54	7,29,35

Table 10. Combined Ranking Analyses--"OK" and "BOTD"

COMP RANK	OK FAC #	BOTD FAC #
1	20,39	20,39
2	51	31
3	31	41
4	41	23
5	13	16
6	11	22
7	52	64
8	59	8
9	24	56
10	15,19 55	51
11	42	11
12	62	59
13	48	24
14	53	42
15	28	61
16	61	5
17	36	34
18	5	33
19	38	3
20	6	21
21	2	44
22	47	26
23	23	54

COMP RANK	OK FAC #	BOTD FAC #
24	12	40
25	50	52
26	56	15,19 55
27	16	62
28	33	48
29	34	38
30	64	14
31	22	12
32	63	63
33	14	4
34	10	49
35	8	53
36	3	2
37	4	6
38	26	50
39	21	60
40	44	13
41	49	28
42	9	47
43	60	57
44	30	37
45	57	30
46	54	25

COMP RANK	OK FAC #	BOTD FAC #
47	37	36
48	40	17
49	25	9
50	17	1
51	1	46
52	46	10
53	18,27 32,43 45,58	18,27 32,43 45,58
54	7,29, 35	7,29, 35

Appendix M provides full details of the "OK" and "BOTD" ranking analyses. Each facility's data record form also includes both rankings.

Table 11. Number of Facilities Submitting Reports for All Sections/Years; Percent of Facilities Reporting (N=55)

COMPLIANCE CATEGORIES	NUMBER	PERCENT
1 - All information received by due date (DD)	0	0
2 - All information received within ten calendar days of due date (WW)	5	9
3 - All information received, some more than ten calendar days after due date	17	1
4 - Information not received in all categories/years; information that was received came in by due date	4	7
5 - Information not received in all categories/years; information that was received came in within ten calendar days of due date	5	9
6 - Information not received in all categories/years; some information that was received came in more than ten calendar days after due date	24	4
7 - Not required to report	3	Not counted
8 - Not found by deq at address provided by the CMA	6	Not counted

Compliance Categorization Analyses

Two analyses of the DEQ data were conducted using sets of categories--one a differentiated numerical one and the other a sorting by three symbols to indicate the final category of compliance.

Numerical Compliance Categories

In this analysis the number of facilities complying were calculated according to the categories in Table 11 above. This table illustrates the finding that, according to the

strictest interpretation of the data, 40 percent of the facilities submitted complete information late and that 60 percent were both incomplete and late. Figures 10 and 11, on pages 121 and 122 respectively, also chart these findings.

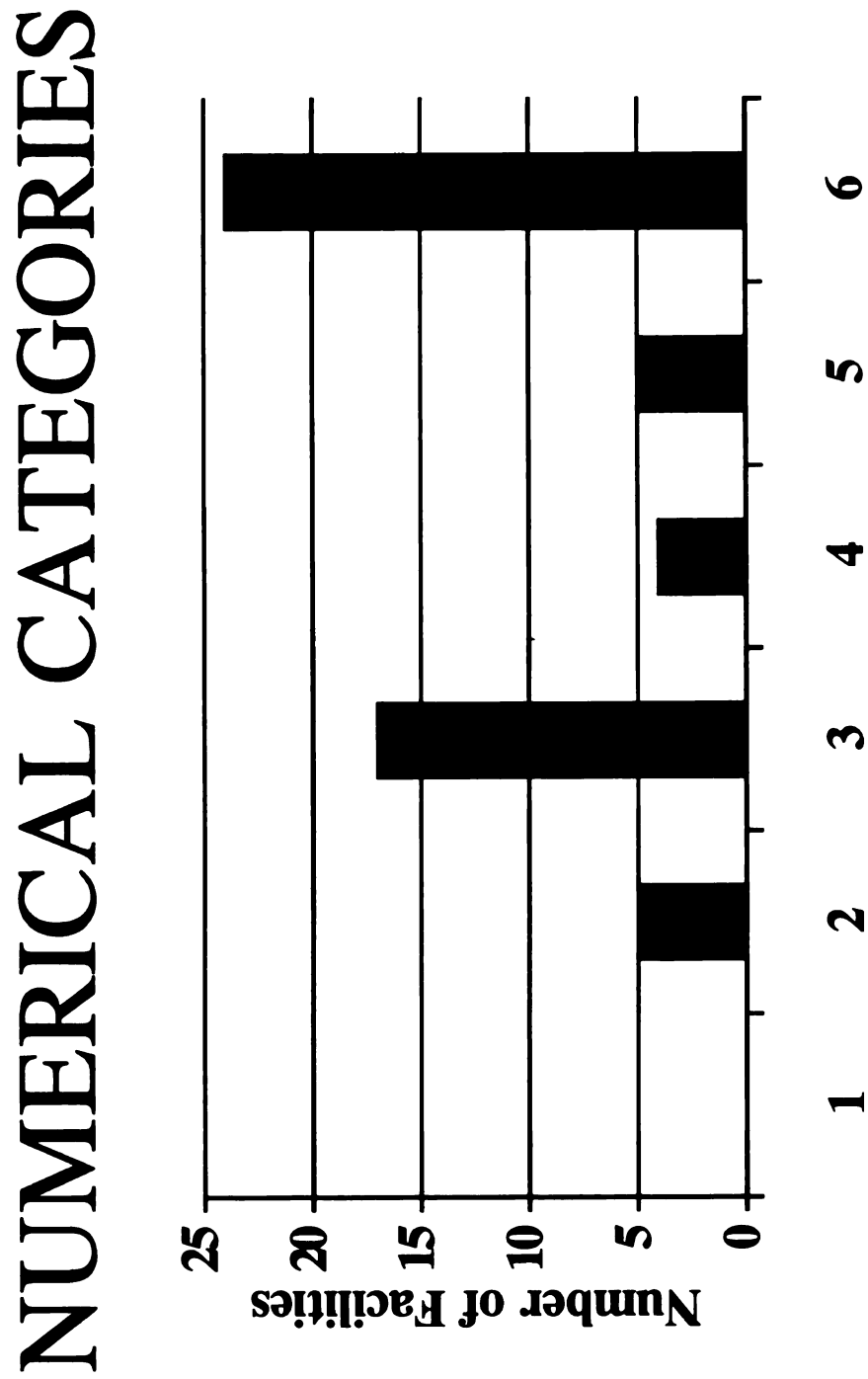


Figure 10. Numerical Categories - Number of Facilities Reporting (N=55)

NUMERICAL CATEGORIES

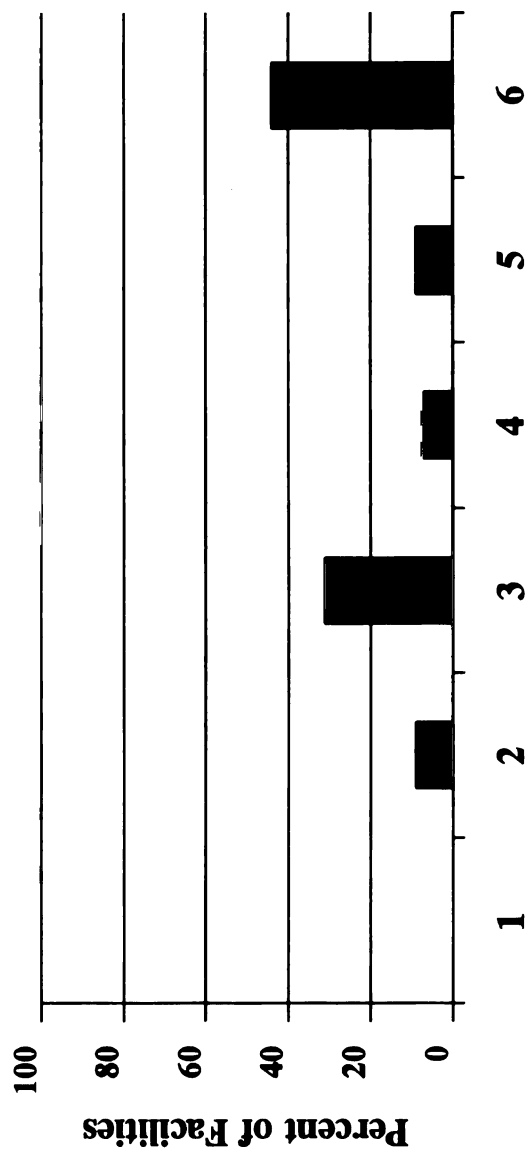


Figure 11. Numerical Categories - Percent of Facilities Reporting (N=55)

Final Compliance Categorization

Taking all the allowable "Benefit of the Doubt" (BOTD) compliance factors into account, each facility was assigned to a final category. Eleven facilities or 20 percent, received the "+" designation, indicating full compliance by applying all the allowable BOTD factors. Twenty-eight facilities were categorized as "=", indicating that they had actually or were assumed to have possibly submitted all the required reports, but that some were reportedly received late (more than 10 calendar days after the filing deadline). Sixteen received the "-" designation, indicating that they had not submitted all the required reports.

Table 12 on page 124 presents the results of the final categorization.

**Table 12. Final Categorization of Facilities' Compliance .
(N=55)**

"+" 11 FACILITIES 20 PERCENT	"=" 28 FACILITIES 51 PERCENT	"-" 16 FACILITIES 29 PERCENT
8	2	1
16	3	9
20	4	10
22	5	13
23	6	17
24	11	25
31	12	28
39	14	30
41	15	36
56	19	37
64	21	40
	26	46
	33	47
	34	57
	38	59
	42	60
	44	
	48	
	49	
	50	
	51	
	52	
	53	
	54	
	55	
	61	
	62	
	63	

Figures 12, 13 and 14, on pages 125, 126 and 127

respectively, display the results.

FINAL CATEGORIZATION RESULTS

	CATEGORY	NUMBER	PERCENTAGE
●			
●	+	11	20
●	=	20	51
●	--	16	29
	SUBMITTED		

Figure 12. Final Categories. Number and Percent of Facilities Reporting. (N=55)

FINAL CATEGORIZATION

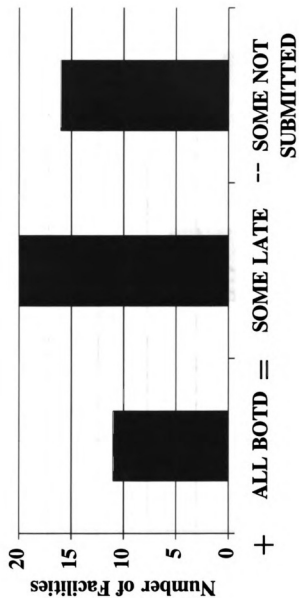


Figure 13. Final Categories. Number of Facilities Reporting.
(N=55)

FINAL CATEGORIZATION

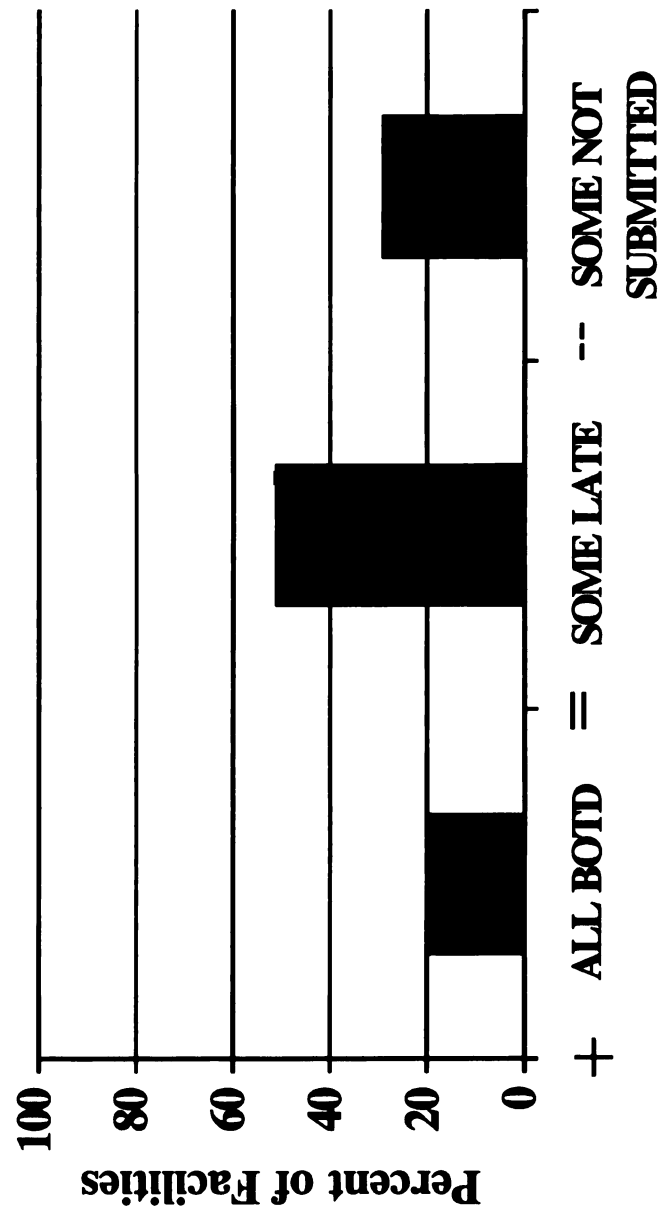


Figure 14. Final Categories - Percent of Facilities Reporting.
(N=55)

Still another analysis calculated the number of facilities agreeing to participate in follow up interviews, shown in Table 13 on page 129 and in Figure 15 on page 130. Because participation in the follow up interviews was entirely voluntary, no facility was credited or discredited for its involvement in this phase of the study. Rather the information was simply used to perform another analysis, described below.

Table 13. Number and Percent of Facilities Responding to Requests for Follow up Interviews (N=64 Facilities Contacted)

INTERVIEW RESPONSE CATEGORIES	NUMBER	PERCENTAGE
A - Responded to initial letter; both RC and EPCRA participated	4	6
Aa - Responded to follow up letter; both RC and EPCRA participated	3	5
B - Responded to initial letter; RC participated; EPCRA did not	0	0
Bb - Responded to follow up letter; RC participated; EPCRA did not	2	3
C - Responded to initial letter; EPCRA participated; RC did not	0	0
Cc - Responded to follow up letter; EPCRA participated; RC did not	0	0
D - Responded to initial letter from plant or other level; did not participate, with comment	12	19
Dd - Responded to initial letter from plant or other level; did not participate, no comment	2	3
E - Responded to follow up letter; did not participate, with comment	8	13
Ee - Responded to follow up letter; did not participate, no comment	8	13
F - Did not respond to either letter	22	34
Ff - Did not receive receipt for initial letter, or letter returned	3	5

The categories in Tables 11 and 13 above were also used to analyze the relationship between reporting compliance and willingness to be interviewed about the compliance record, presented in Table 14 on page 131.

PARTICIPATION CATEGORIES

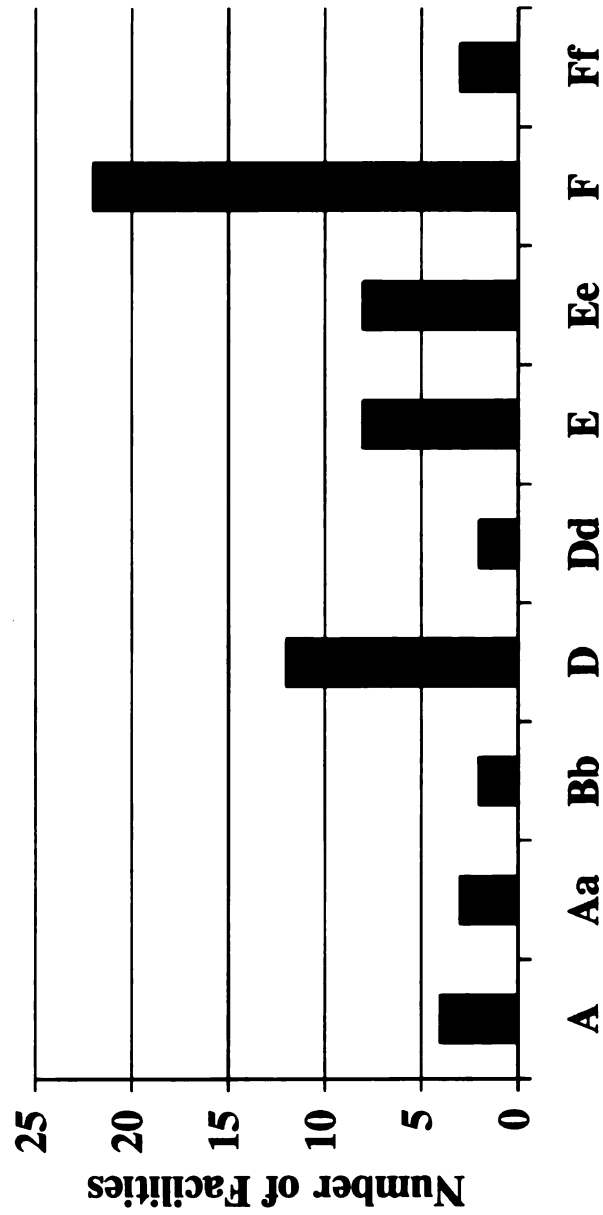


Figure 15. Number of Facilities Participating. (N=55)

Table 14. Matrix of Compliance/Participation (N=64)

COMPLIANCE → RESPONSE/PARTICIPATION ↓	1 AI OK	2 AI WW	3 AI W+	4 NI OK	5 NI WW	6 NI W+	7 NRR	8 NF	TO TAL
A - Responded to initial letter; both RC and EPCRA participated	0	2	1	1	0	0	0	0	4
Aa - Responded to follow up letter; both RC and EPCRA participated	0	0	2	0	0	1	0	0	3
B - Responded to initial letter; RC participated; EPCRA did not	0	0	0	0	0	0	0	0	0
Bb - Responded to follow up letter; RC participated; EPCRA did not	0	0	2	0	0	0	0	0	2
C - Responded to initial letter; EPCRA participated; RC did not	0	0	0	0	0	0	0	0	0
Cc - Responded to follow up letter; EPCRA participated; RC did not	0	0	0	0	0	0	0	0	0
D - Responded to initial letter from plant or other level; did not participate, with comment	0	1	4	1	0	5	2	0	12
Dd - Responded to initial letter from plant or other level; did not participate, no comment	0	0	0	0	0	2	0	0	2
E - Responded to follow up letter; did not participate, with comment	0	0	3	0	1	3	1	0	8
Ee - Responded to follow up letter; did not participate, no comment	0	1	1	1	1	3	0	1	8
F - Did not respond to either letter	0	1	3	0	3	9	0	4	22
Ff - Did not receive receipt for initial letter, or letter returned	0	0	1	1	0	1	0	1	3
TOTALS	0	5	17	4	5	24	3	6	64

Thirty-one facilities that did not provide all reports affirmatively declined to be interviewed or did not respond to either letter, including eighteen of the 24 facilities with a "6"

classification for reporting. However, the table also suggests that there was no absolute correlation between a facility's reporting behavior and its willingness to be interviewed about it. Note that while two of the facilities with the best overall compliance record were immediately willing to participate in the follow up interviews, two declined to participate and one did not respond to either letter. By contrast, one facility with a pretty low absolute compliance record was willing to discuss it in an interview. Of note is the fact that one of the Michigan facilities in both this and the PIRG study which had a nearly perfect record of filing EPCRA reports also answered all of PIRG's questions about Responsible Care[®]. However, the same facility declined to participate in the follow up interview phase of the study.

Corporate Compliance

As noted in Chapter 3, the facilities were finally grouped according to the corporation to which they apparently belonged to analyze whether patterns of compliance might exist within those corporations. This analysis was desirable because it is the corporation which belongs to the Chemical Manufacturers Association, and it is at the corporate level that the commitment to Responsible Care[®] is initially made. By grouping a corporation's Michigan facilities in this way, one might expect to find a pattern of compliance with EPCRA that would parallel

the corporation's degree of commitment to or implementation of Responsible Care^R. Appendix N presents those findings.

Again, though, very little consistency was observed in the reporting results among the facilities apparently owned by the same corporation.

Follow up Interview Findings

Facility representatives were offered the opportunity to explain the compliance performance of their facility as reflected by the DEQ data entered in its facility data reporting form. Some of the EPCRA compliance officials had not been in their current positions for all the reporting years, but explained some of the difficulties their facilities had encountered, particularly in early years of the statute. One commented that this study had prompted him to check with DEQ and compare notes on their records of compliance. The Responsible Care^R coordinators said very little about the EPCRA compliance records or declined to comment since this was not in their area of specific responsibility. Details of the facility representatives' responses to this question are found in Appendix O.

INDEPENDENT VERIFICATION/COMPLIANCE AUDITING

As mentioned in Chapter 3, it was not possible to obtain or review any independent audits of the facilities Responsible Care^R or EPCRA compliance reports, because it appears that none have been conducted. However, both experts and facility representatives were asked for their perspectives on the possibility that such audits will become part of establishing the credibility of the Responsible Care^R program or some future amendments to EPCRA.

In the follow up interviews, some mentioned that their companies, through a separate division, conduct internal audits that cover certain aspects of compliance with EPCRA and other statutes and/or their Responsible Care^R performance. Some commented on the CMA's discussion of possibly requiring such audits of its members.

Most of those interviewed think that verification of the CMA facilities' self-evaluations on Responsible Care^R is probably necessary to establish the program's credibility. In fact, CMA itself adopted the Management Systems Verification Protocol in April 1996 and is recruiting member companies to participate in it. Making participation in such verification mandatory, as the Canadian Chemical Producers Association has already done,¹⁷⁵ may be inevitable, too.

¹⁷⁵Sharon Hamilton, Canadian Chemical Producers Association, Personal Communication, December 18, 1996.

Verification of the information provided in compliance with ECPRA would be quite costly, and it was not proposed by those interviewed in this study.

Chapter 5

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

This study explored the ongoing debate on the issue of whether corporations can be expected to behave ethically on environmental issues. That is to say, can a corporation or industry association have the conscience and commitment to follow the moral imperative "do no harm and, if possible, do good?"¹⁷⁶

APPROACH

An empirical approach was used in attempting to answer the question of whether participation in an industry association's code of environmental ethics would be a reliable predictor of its members' compliance with environmental statutes. The hypothesis tested was:

Will members of an industry association which, as a condition of membership, must subscribe to a code of environmental ethics, be, at a minimum, complying voluntarily with existing environmental statutes?

The specific research question was, would the Michigan facilities of Chemical Manufacturers Association members, which must subscribe to CMA's Responsible Care^R program (including its

¹⁷⁶Newton and Schmidt, *Wake Up Calls*, 12.

Guiding Principles and Codes of Management Practices) be complying voluntarily with information reporting requirements of sections 311, 312 and 313 of the federal Emergency Planning and Community Right-to-Know Act of 1986 from 1987 through 1994--the statute's and the program's first eight years of implementation.

METHODOLOGY

The study consisted of four phases: (1) conducting interviews with experts on the Responsible Care[®] program and EPCRA; (2) collecting pertinent EPCRA compliance data about CMA members' Michigan facilities from the Michigan Department of Environmental Quality (DEQ); (3) interviewing Responsible Care[®] coordinators and EPCRA compliance officials from the facilities in question; (4) analyzing the compliance data and the interviews.

FINDINGS

The findings of this study were quite interesting, very instructive, and somewhat inconclusive.

The experts interviewed were interested in the relationship between Responsible Care[®] and EPCRA and offered perspectives that tracked closely with their backgrounds and experience with one or the other or both--ranging from almost complete disillusionment to real enthusiasm. The information and insight they provided,

the materials they supplied and the referrals they made were used to assist with other phases of the study.

The data obtained from DEQ was reasonably complete, providing the requested information on 89 percent of the facilities on the original CMA list. The data had some limitations, notably that it was not possible to tell whether a particular facility was required to report on a particular section in a particular year, making it necessary to develop a number of Benefit of the Doubt (BOTD) factors, in addition to the basic compliance categories necessary to analyze it.

This study found, from analyzing the DEQ data, that no facility achieved a perfect record of compliance in an absolute sense. However, by applying all of the legitimate BOTD factors, it appears that Chester Bowles, noted in Chapter 1, may have been right in his predictions of voluntary compliance behavior. Twenty percent of the facilities studied did voluntarily comply with the information reporting requirements of the three sections of EPCRA. However, while developing and applying the BOTD factors improved the appearance of facilities' performance, the fact that it did not necessarily reflect the reality is of concern.

The study found no significant change in performance of the individual facilities or the group as a whole over the course of the period in question--1987-1994, except in 1992, when the March 1 reporting deadline for Section 312 fell on a Saturday. It also

found no consistency of performance among facilities that were apparently part of the same company or corporation.

Finally, there was no absolute correlation between a facility's performance on the criteria established for EPCRA compliance and the willingness of its Responsible Care[®] coordinator and/or EPCRA compliance official to participate in the follow up interviews.

CONCLUSIONS

What does apparent compliance with Sections 311, 312, and 313 of EPCRA for these specific years, or lack thereof, mean in evaluating the worth of a voluntary program such as Responsible Care[®] or the ethical practices of a particular facility, corporation or industry association?

Although the data suggest certain degrees of relative compliance, the conclusion to be drawn from this particular study is that the question of whether CMA members' Michigan facilities are, in fact, complying fully with these three sections of EPCRA is not yet completely answered. The hypothesis needs further testing as described in the next section on recommendations.

Another reasonable conclusion is that the question is still important in several respects and that it both deserves and requires further study.

The issue deserves to be studied because the implications of Responsible Care[®] and EPCRA are too important to ignore. If

implementing Responsible Care[®] means that members of the Chemical Manufacturers Association improve their compliance with EPCRA and other environmental statutes and develop pollution prevention and risk management programs that go above and beyond what is required in law, the public and the environment may gain substantially. If, in complying with EPCRA, CMA members learn enough about their own operations to develop additional incentive to achieve their Responsible Care[®] goals, the public and the environment may also gain, as demonstrated by the Monsanto experience in Florida, cited in Chapter 2.

On the other hand, the companies, the public and the environment are likely to lose if neither Responsible Care[®] performance nor EPCRA compliance is complete. As things stand now, verified information about performance in the program is unavailable and analysis of data on compliance with the statute is incomplete.

As deadlines for fully implementing the Responsible Care[®] program approach at the turn of the century, it will be important for the CMA to implement a rigorous examination of its members' performance in the program, as well as encourage independent verification of what has been accomplished and learned. Otherwise, the public credibility that the organization is so anxious to achieve will remain elusive.

Inasmuch as the CMA itself uses the information from EPCRA's "Form R" reports to assess progress on Responsible Care[®]'s

Pollution Prevention Code and several elements of EPCRA were borrowed from its Community Awareness and Emergency Response Code,¹⁷⁷ it also seems important to assure complete compliance with the statute. While CMA members cannot change their past performance, they can work toward improving the future if they commit to compiling and reporting the required information.

The experts interviewed concurred that conducting private and public business as was usual in the past is no longer satisfactory, if it ever was. The public's right to a sustainable environment, as well as its right-to-know, are now established in law and are being accepted in fact, if the Chemical Manufacturers Association's well-publicized public commitment in Responsible Care[®] is any indication. However, "the price of liberty" is still "eternal vigilance,"¹⁷⁸ and CMA will find it difficult to avoid public scrutiny of its performance. Analyzing the information provided through EPCRA can play an important part in the public's perception of Responsible Care[®].

It appears that the Responsible Care[®] program is sufficiently mature to warrant serious examination of CMA members' performance in the program. The subject of CMA members' Michigan facilities' compliance with EPCRA will also require

¹⁷⁷CMA, 1994.

¹⁷⁸John Philpot Curran, *Speech Upon the Right of Election*, 1790. Quoted in *Bartlett's Familiar Quotations*, John Bartlett. Boston: Little Brown and Company. 13th and Centennial Edition. 1955. 420.

further study to reach sounder conclusions about this beginning of an empirical approach to evaluating Responsible Care^R.

Responses to the questions asked in the follow up interviews from this study suggest that Michigan facilities' Responsible Care^R coordinators view independent verification in both realms as an important and likely, if not inevitable, development. Now is not too soon to start.

Finally, it is important that the public officials responsible for developing and implementing Michigan's and the nation's environmental programs and policies pay close attention both to the implementation of Responsible Care^R and to compliance with EPCRA. As proposals emerge for such programs as those contained in the new Michigan statute on Environmental Audit Privilege and Immunity,¹⁷⁹ they will need to consider very carefully whether such programs are likely to yield the constitutionally mandated results of environmental protection. Studies such as this one and the others recommended below could definitely enlighten such policy debates and get closer to the point of ascertaining whether subscribing to a corporate/industry code of environmental ethics does indeed entitle the views of such corporate "citizens" to more consideration in shaping public policy.

¹⁷⁹MCL 324.10148.

RECOMMENDATIONS

To test this study's hypothesis further, the following questions need to be answered:

(1) Were the Michigan facilities for which DEQ received no reports not required to report? Were the Michigan facilities for which DEQ received only one report not required to report?

(2) Were the facilities for which DEQ received no report for particular sections/years not required to report for those sections/years? Were the facilities that submitted late reports for Section 311 not required to report by the initial deadline?

More difficult to answer, but also important to a fuller understanding of this issue, are questions about compliance with other sections of EPCRA. For example, obtaining information about facilities' participation in their Local Emergency Planning Committee's efforts under Section 303 and compliance with the reporting emergency releases of toxic substances of Section 304 would enable a fuller analysis of compliance with EPCRA and would enable further consideration of implementation of Responsible Care's "CAER" code. Examining the information provided on the "Tier I", "Tier II", and "Form R" reports would enable analysis of implementing Responsible Care's "Pollution Prevention" code.

Given the limitations of the geographic scope of this study, expanding it to other states and a more complete, possibly even a truly random, sample of CMA members' facilities would present a truer picture of EPCRA compliance and Responsible Care's

implementation as described by the companies themselves. One way of approaching this would be to use the sample developed by Nash and Howard (1995), obtain the EPCRA compliance information for those facilities, then analyze to see if a correlation exists between EPCRA compliance and implementation of Responsible Care^R.

Another possible way would be to use the sample developed by The PIRGs for their study, obtain the EPCRA compliance data for those facilities and analyze to see if a correlation exists between the response to that survey and the facilities' EPCRA compliance.

Most important to the process of evaluating Responsible Care^R as a program of corporate environmental ethics and CMA members' compliance with EPCRA is to develop some means of independent verification of the information provided for each. To develop public confidence in both the program and the statute, such auditing is as important as financial auditing is to investors' confidence in a company's fiscal position. Some models are developed and waiting to be implemented. It is not too early to start; perhaps it is not too late either.

The essential public policy questions remain: What is the facilities' record of compliance with existing statutes, as well as their performance on their own standards? What role should these companies be afforded in the development of environmental policy and law? The public has a right to know more about both in order to make informed choices.



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RESPONSIBLE CARE[®] AND EPCRA:
CHEMICAL MANUFACTURERS ASSOCIATION (CMA)
MEMBERS' MICHIGAN FACILITIES' VOLUNTARY COMPLIANCE WITH
THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT (EPCRA)

VOLUME II

By

Carol Young Swinehart

A THESIS

Submitted to
Michigan State University
in partial fulfillment of the requirements
for the degree of

MASTER OF SCIENCE

Department of Resource Development

1996

APPENDIX A

APPENDIX A

THE GUIDING PRINCIPLES OF RESPONSIBLE CARE[®]

1. To recognize and respond to community concerns about chemicals and our operations.
2. To develop and produce chemicals that can be manufactured, transported, used and disposed of safely.
3. To make health, safety and environmental considerations a priority in our planning for all existing and new products and processes.
4. To report promptly to officials, employees, customers and the public, information on chemical-related health or environmental hazards and to recommend protective measures.
5. To counsel customers on the safe use, transportation and disposal of chemical products.
6. To operate our plants and facilities in a manner that protects the environment and the health and safety of our employees and the public.
7. To extend knowledge by conducting or supporting research on the health, safety and environmental effects of our products, processes and waste materials.
8. To work with others to resolve problems created by past handling and disposal of hazardous substances.
9. To participate with government and others in creating responsible laws, regulations and standards to safeguard the community, workplace and environment.
10. To promote the principles and practices of Responsible Care[®] by sharing experiences and offering assistance to others who produce, handle, use, transport or dispose of chemicals.

from "Responsible Care[®]: A Public Commitment," a brochure from Chemical Manufacturers Association, Washington, DC. 1993.

APPENDIX B

APPENDIX B

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 Selected Statements from Statute: SECTION 311

Material Safety Data Sheets

(a) Basic requirement

(1) Submission of MSDS or list

The owner or operator of any facility which is required to prepare or have available a material safety data sheet for a hazardous chemical under the Occupational Safety and Health Act of 1970 and regulations promulgated under that Act [29 USCA secs 651 et seq.] shall submit a material safety data sheet for each such chemical, or a list of such chemicals as described in paragraph (2), to each of the following:

(A) The appropriate local emergency planning committee.

(B) The SERC.

(C) The fire department with jurisdiction over the facility.

(2) Contents of list

(3) Treatment of mixtures

(b) Thresholds

(c) Availability of MSDS on request

(d) Initial submission and updating

(1) The initial material safety data sheet or list required under this section with respect to a hazardous chemical shall be provided before the later of--

(A) 12 months after October 17, 1986, or

(B) 3 months after the owner or operator of a facility is required to prepare or have available a msds for the chemical under OSHA and regulations promulgated under that Act.

(2) Within 3 months following discovery by an owner or operator of significant new information concerning an aspect of a hazardous chemical for which a msds was previously submitted to the lepc under subsection (a) of this section, a revised sheet shall be provided to each person.

(e) hazardous chemical defined

APPENDIX C

APPENDIX C

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 Selected Statements from Statute: SECTION 312

Emergency and hazardous chemical inventory forms

(a) Basic requirement

(1) The owner or operator of any facility which is required to prepare or have available a material safety data sheet for a hazardous chemical under OSHA and regulations promulgated under that Act shall prepare and submit an emergency and hazardous chemical inventory form (hereafter in this chapter referred to as an "inventory form") to each of the following:

- (A) The appropriate local emergency planning committee.
- (B) The SERC.
- (C) The fire department with jurisdiction over the facility.

(2) The inventory form containing tier I information (as described in subsection (d)(1) of this section) shall be submitted on or before March 1, 1988, and annually thereafter on March 1, and shall contain data with respect to the preceding calendar year. The preceding sentence does not apply if an owner or operator provides, by the same deadline and with respect to the same calendar year, tier II information (as described in subsection (d)(2) of this section) to the recipients described in paragraph (1).

(b) Thresholds

(c) Hazardous chemicals covered

(d) Contents of this form

(e) Availability of tier II information

(f) Fire department access

(g) Format of forms

APPENDIX D

APPENDIX D

EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT OF 1986 Selected Statements from Statute: SECTION 313

Toxic chemical release forms

(a) Basic requirement

The owner or operator of a facility subject to the requirements of this section shall complete a toxic chemical release form as published under subsection (g) of this section for each toxic chemical listed under subsection (c) of this section that was manufactured, processed, or otherwise used in quantities exceeding the toxic chemical threshold quantity established by subsection (f) of this section during the preceding calendar year at such facility. Such form shall be submitted to the Administrator and to an official or officials of the State designated by the Governor on or before July 1, 1988, and annually thereafter on July 1 and shall contain data reflecting releases during the preceding calendar year.

(b) Covered owners and operators of facilities

(1) In general

(A) 10 or more fulltime employees
SICC 20-39 (as in effect on July 1, 1985)
and that manufactured or used a toxic chemical listed under subsection (c) of this section in excess of the quantity of that toxic chemical established under subsection (f) of this section during the calendar year for which a release form is required under this section.

(c) Toxic chemicals covered

(d) Revisions by Administrator

(e) Petitions

(f) Threshold for reporting

(1) The threshold amounts for purposes of reporting toxic chemicals under this section are as follows:

(A) With respect to a toxic chemical used at a facility,
10,000 pounds of the toxic chemical per year.

(B) With respect to a toxic chemical manufactured or
processed at a facility--

(i) For the toxic chemical release form required to be submitted under this section on or before July 1, 1988, 75,000 pounds of the toxic chemical per year.

(ii) For the form required to be submitted on or before July 1, 1989, 50,000 pounds of the toxic chemical per year.

(iii) For the form required to be submitted on or before July 1, 1990, and for each form thereafter, 25,000 pounds of the toxic chemical per year.

(g) Form

(h) Use of release form

(i) Modifications in reporting frequency

(j) EPA management of data

(k) Report

(l) Mass balance study

APPENDIX E

APPENDIX B

QUESTIONS ASKED BY INTERVIEWERS FOR The PIRGS' TRUST US. DON'T TRACK US. REPORT (1992)

1. Can you tell me the names and quantities of chemicals that potentially cause cancer or birth defects that you brought into the facility last year?
2. Can you tell me what chemicals that may cause cancer or birth defects workers are exposed to at the facility?
3. Do you make products at the facility that contain chemicals that are toxic or could cause cancer or birth defects?
4. Can you tell me the names and amounts of toxic chemicals that go into the products you produce at the facility?
5. Can you tell me the neighborhoods through which you ship toxic chemicals or hazardous wastes? Can you send me a map or a schedule?
6. Have you had any accidents involving the transportation of toxic or hazardous chemicals to or from your facility in the past 5 years?
7. Has your facility made public its accident risk reduction plans?
8. Have you made available to the public internal emergency management plans, including worst case scenarios, for accidental chemical releases? (They might tell you they have done it for "credible case" scenarios, but we want worst case.)
9. Does your facility conduct toxics use reduction or source reduction planning? (They may say they do pollution prevention planning. Try to get them to explain what that means.) If YES, have you made available to the public your facility's toxics use reduction or source reduction plans or goals?¹

¹ Hartmann, Carolyn. 1992. Don't Track Us. Trust Us.: An Investigation of the Chemical Industry's Responsible Care[®] Campaign. The PIRGS.

APPENDIX F

APPENDIX F

QUESTIONS FOR INTERVIEWS OF EXPERTS ON THE RESPONSIBLE CARE[®] PROGRAM OF THE CHEMICAL MANUFACTURERS ASSOCIATION AND/OR THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

1. Please state your title and describe your duties and responsibilities as they relate to Responsible Care[®] and EPCRA. How did you acquire (for example, through education, experience or responsibility) this expertise?
2. Please provide any background documents you or your organization has on Responsible Care[®] and EPCRA as they relate to each other. Please elaborate on these materials orally at this time.
3. Please provide any background documents you or your organization has specifically on the implementation of Responsible Care[®] and EPCRA in Michigan, as they relate to each other. Please elaborate on these materials orally at this time.
4. Please describe your perspective(s) on Responsible Care[®] and EPCRA, and elaborate especially on how they relate to each other. Comment on how each has been implemented, and particularly on how participation in the Responsible Care[®] program has/has not influenced Michigan CMA members' compliance with EPCRA. Describe specific instances/examples that support your perspective.
5. Are you aware of any independent audits of EPCRA compliance conducted on Michigan members of the Chemical Manufacturers Association or independent verification of performance of these companies on Responsible Care[®] Guiding Principles and Codes of Management Practice? If so, please provide the name(s), address(es), and phone/fax number(s) of individuals that may be contacted about such an audit(s).

**QUESTIONS FOR INTERVIEWS ON THE RESPONSIBLE CARE[®] PROGRAM OF THE
CHEMICAL MANUFACTURERS ASSOCIATION AND/OR THE EMERGENCY PLANNING
AND COMMUNITY RIGHT-TO-KNOW ACT WITH RESPONSIBLE CARE[®]
COORDINATORS AND EPCRA COMPLIANCE OFFICIALS IN MICHIGAN CMA
MEMBER PLANTS.**

1. Please state your title and describe your job duties and responsibilities for Responsible Care[®] and/or EPCRA. How did you acquire (for example, through education, experience or responsibility) this expertise?
2. What relationship, if any, do you see between the CMA Responsible Care[®] program and EPCRA?
3. How does your plant implement the Responsible Care[®] program? Please be as specific as possible, particularly about any efforts/activities that require you to go beyond compliance with any existing statutes, especially EPCRA.
4. What steps has your plant taken in complying with the Emergency Planning and Community Right-to-Know Act of 1986 that are not explicitly required by the law? Please be as specific as possible.
5. The record of your plant's compliance with EPCRA for 1988-1994 has been provided to you. Please explain this performance.
6. Are you aware of any independent verification/audit(s) of the information your company submitted for compliance with Responsible Care[®] or EPCRA? If so, please provide the name(s), address(es), and phone/fax number(s) of individuals I may contact about such an audit(s).

APPENDIX G

MICHIGAN STATE UNIVERSITY

APPENDIX G - SAMPLE LETTERS AND CONSENT FORMS

November 30, 1995

Title III Unit
Environmental Assistance Division
Department of Environmental Quality
P.O. Box 30457
Lansing, MI 48909-7957

Dear Mr. _____:

I am writing to inform you about a research project at Michigan State University and to enlist your cooperation in conducting it.

For the past three years, as part of my master's degree program in MSU's Department of Resource Development, I have been studying corporate codes of environmental ethics and their relationship to the development of environmental policy and law. From my review of the existing literature and conversations with some knowledgeable people, the Responsible Care[®] program of the Chemical Manufacturers Association (CMA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) seem to be especially relevant to this issue. The working hypothesis which I have developed and propose to test in my research is: "An industry/trade association member that subscribes to a code of environmental ethics will, at a minimum, comply with existing environmental laws." On the following pages you will find a description of the research project designed to test this hypothesis.

To conduct this research satisfactorily, I need to access EPCRA compliance records for Michigan CMA members for 1988-1994. I will contact you soon by phone to make arrangements for obtaining this information. I hope you will cooperate in this project.



COLLEGE OF
**AGRICULTURE
AND NATURAL
RESOURCES**

**Resource
Development**

Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222

517/355-3421
FAX: 517/353-8994

November 30, 1995
Page Two

Thank you for your consideration of this request. If you have any questions, please call me at (517) 353-9723.

Sincerely,

Carol Y. Swinehart
Associate Investigator

Eckhart Dersch
Professor
Department of Resource Development

Enclosures

**RESEARCH PROJECT DESCRIPTION AND CONSENT FORM
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY**

This project will partially evaluate part of the Responsible Care[®] Program of Guiding Principles and Codes of Management Practice by measuring the voluntary compliance of CMA members that have plant sites in Michigan with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

The proposed project consists of four segments, planned to be conducted using only the student's personal financial resources. Segment I consists of interviewing a few selected individuals who have expertise in Responsible Care[®] and/or with EPCRA from a national or state perspective. Segment II involves obtaining from the Michigan Department of Environmental Quality, EPCRA compliance data for CMA members that have plant sites in Michigan for the years 1988-1994. Segment III consists of categorizing the companies according to size and selecting, primarily at random, a few with which to conduct followup interviews with their Responsible Care[®] coordinators and EPCRA compliance officials. Segment IV consists of contacting any individuals/organizations identified as having conducted independent audits of information supplied by CMA members for compliance with EPCRA or Responsible Care[®], questioning the auditors, Responsible Care[®] coordinators and/or EPCRA compliance officials about those audits, and including some analysis of that information and their response to it.

All of the interviews will be conducted in confidence, and notes from the interviews coded to protect the interviewee's identity. The key to the code will be known only to the associate investigator on this project, and at the conclusion of this study the code sheet will be destroyed, so no one will be able to trace the identity of the interviewee. References that would identify specific individuals, agencies or companies will be disguised in the writing of the thesis document and otherwise protected according to MSU standards for ethical research involving the use of human subjects.

The object of this research is to further enlighten the theoretical debate about the value of corporate codes of environmental ethics. CMA could benefit from an independent review of this type because if member companies are complying with EPCRA, this research may validate the Responsible Care[®] approach. If the companies are not in compliance, the Responsible Care[®] program may be perceived as a less than adequate corporate code of environmental ethics. In either case,

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM -- Page Two
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY

representatives of selected companies will have the opportunity to explain their company's record and comment on information obtained from any independent auditors and on the relationship between the Responsible Care[®] program and EPCRA.

Publicity about this research will, at a minimum, consist of publication of the finished thesis. If you wish to receive a summary of the findings from this project, please return the enclosed postcard.

I have read and understand the above description of the research project on corporate/industry codes of environmental ethics and by my signature on this form I agree to participate voluntarily in this project by providing Ms. Swinehart access to EPCRA compliance data for the identified companies.

I understand that the following risks are involved in participating in this project:

If CMA member companies with plant sites in Michigan are not complying with the Emergency Planning and Community Right-to-Know Act of 1986, the Responsible Care[®] program may be perceived as a less than adequate corporate code of environmental ethics. This could possibly lead to a loss of credibility for CMA and the member company in the community where they operate.

I understand that any information I provide may be used in the writing of reports on this research.

SIGNED: _____ DATE: _____

NAME: _____ TITLE: _____
Please print or type Please print or type

ORGANIZATION NAME: _____

ORGANIZATION ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____ FAX: _____

RETURN THIS FORM TO CAROL Y. SWINEHART BY FAX AT (517) 353-6496
by December 10, 1995. If you have any questions about this project, please call Ms. Swinehart at (517) 353-9723.

MICHIGAN STATE
U N I V E R S I T Y

157

December 1, 1995

Vice President - Responsible Care[®]
Chemical Manufacturers Association
2501 M Street, NW
Washington, DC 20037

Dear Mr. _____:

I am writing to inform you about a research project at Michigan State University and to enlist your cooperation and the participation of CMA member companies in conducting it.

For the past three years, as part of my master's degree program in MSU's Department of Resource Development, I have been studying corporate codes of environmental ethics and their relationship to the development of environmental policy and law. From my review of the existing literature and conversations with some knowledgeable people, the Responsible Care[®] program of the Chemical Manufacturers Association (CMA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) seem to be especially relevant to this issue. The working hypothesis which I have developed and propose to test in my research is: "An industry/trade association member that subscribes to a code of environmental ethics will, at a minimum, comply with existing environmental laws." On the following pages you will find a description of the research project designed to test this hypothesis and a consent form for your participation in it.



COLLEGE OF
**AGRICULTURE
AND NATURAL
RESOURCES**

**Resource
Development**

Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222

517 / 355-3421
FAX: 517 / 353-8994

I hope you will cooperate in this project. If so, I would need to conduct an approximately one hour personal interview with you about Responsible Care[®] and EPCRA if my travel takes me to Washington, DC, if your travel brings you to Michigan or a telephone interview to be scheduled at our mutual convenience. In any case, **please return the attached form to me by fax at (517) 353-6496 by December 15, 1995.**

It would be most helpful if you would contact Michigan CMA member companies about this project and encourage their participation in it if they are chosen for a follow up interview. **Please indicate your decision on this matter, also on the fax form, by December 15, 1995.**

CMA VP
November 27, 1995
Page Two

Thank you for your consideration of this request. If you have any questions about this project, please feel free to call me at (517) 353-9723.

Sincerely,

Carol Y. Swinehart
Associate Investigator

Eckhart Dersch
Professor
Department of Resource Development

Enclosures

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM
CMA Responsible Care® Vice President

This project will evaluate part of the Responsible Care® Program of Guiding Principles and Codes of Management Practice by measuring the voluntary compliance of CMA members that have plant sites in Michigan with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

The proposed project consists of four segments, planned to be conducted using only the student's personal financial resources. Segment I consists of interviewing a few selected individuals who have expertise in Responsible Care® and/or with EPCRA from a national or state perspective, using the attached questionnaire. Segment II involves obtaining from the Michigan Department of Environmental Quality, EPCRA compliance data for CMA members that have plant sites in Michigan for the years 1988-1994. Segment III consists of categorizing the companies according to size and selecting, primarily at random, a few with which to conduct followup interviews with their Responsible Care® coordinators and EPCRA compliance officials, using the other attached questionnaire. Segment IV consists of contacting any individuals/organizations identified as having conducted independent audits of information supplied by CMA members for compliance with EPCRA or Responsible Care® and including some analysis of that information.

All of the interviews will be conducted in confidence, and notes from the interviews coded to protect the interviewee's identity. The key to the code will be known only to the associate investigator on this project, and at the conclusion of this study the code sheet will be destroyed, so no one will be able to trace the identity of the interviewee. References that would identify specific individuals, agencies or companies will be disguised in the writing of the thesis document and otherwise protected according to MSU standards for ethical research involving the use of human subjects.

The object of this research is to further enlighten the theoretical debate about the value of corporate codes of environmental ethics. CMA could benefit from an independent review of this type because if member companies are complying with EPCRA, this research may validate the Responsible Care® approach. If the companies are not in compliance, the Responsible Care® program may be perceived as a less than adequate corporate code of environmental ethics. CMA and its members companies could lose credibility. In either case,

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM -- Page Two
CMA Responsible Care[®] Vice President

representatives of selected companies will have the opportunity to explain their company's record and comment on information obtained from any independent auditors and on the relationship between the Responsible Care[®] program and EPCRA.

Publicity about this research will, at a minimum, consist of publication of the finished thesis. If you wish to receive a summary of the findings from this project, please return the enclosed postcard.

I have read and understand the above description of the research project on corporate/industry codes of environmental ethics and by my signature on this form I agree to participate voluntarily in this project as follows:

I will be available for an approximately one hour long interview about Responsible Care[®] and/or the Emergency Planning and Community Right-to-Know Act in person or by telephone at a mutually agreed upon time. The following places/dates/times are preferred:

PLACE	DATE	TIME
_____	_____	_____
_____	_____	_____
_____	_____	_____

I or my designee will contact Chemical Manufacturers Association members with plant sites in Michigan and will encourage them to participate in this research project if they are selected for an interview.

I understand that the following risks are involved in participating in this project:

If CMA member companies with plant sites in Michigan are not complying with the Emergency Planning and Community Right-to-Know Act of 1986, the Responsible Care[®] program may be perceived as a less than adequate corporate code of environmental ethics. This could possibly lead to a loss of credibility for CMA and the member company in the community where they operate.

I understand that my identity in the interview in which I participate will be kept confidential, but that any other information I provide may be used in the writing of reports on this research.

SIGNED: _____ DATE: _____

NAME: _____ TITLE: _____
Please print or type Please print or type

ORGANIZATION NAME: _____

ORGANIZATION ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____ FAX: _____

**RETURN THIS FORM TO CAROL Y. SWINEHART BY FAX AT (517) 353-6496
by December 15, 1995. If you have any questions about this
project, please call Ms. Swinehart at (517) 353-9723.**

QUESTIONS FOR INTERVIEWS OF CMA VICE PRESIDENT FOR RESPONSIBLE CARE[®] ON THE RESPONSIBLE CARE[®] PROGRAM OF THE CHEMICAL MANUFACTURERS ASSOCIATION AND/OR THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT

1. Please state your title and describe your duties and responsibilities as they relate to Responsible Care[®] and EPCRA. How did you acquire (for example, through education, experience or responsibility) this expertise?
 2. Please provide any background documents you or your organization has on Responsible Care[®] and EPCRA as they relate to each other. Please elaborate on these materials orally at this time.
 3. Please provide any background documents you or your organization has specifically prepared on the implementation of Responsible Care[®] and EPCRA in Michigan, as they relate to each other. Please elaborate on these materials orally at this time.
 4. Please describe your perspective(s) on Responsible Care[®] and EPCRA, and elaborate especially on how they relate to each other. Comment on how each has been implemented, and particularly on how participation in the Responsible Care[®] program has/has not influenced Michigan CMA members' compliance with EPCRA. Describe specific instances/examples that support your perspective.
 5. Are you aware of any independent audits of EPCRA compliance conducted on Michigan members of the Chemical Manufacturers Association or independent verification of performance of these companies on Responsible Care[®] Guiding Principles and Codes of Management Practice? If so, please provide the name(s), address(es), and phone/fax number(s) of individuals that may be contacted about such an audit(s).
- .

November 29, 1995

EXPERT NAME AND ADDRESS

Dear Expert:

I am writing to inform you about a research project at Michigan State University and to enlist your cooperation in conducting it.

For the past three years, as part of my master's degree program in MSU's Department of Resource Development, I have been studying corporate codes of environmental ethics and their relationship to the development of environmental policy and law. From my review of the existing literature and conversations with some knowledgeable people, the Responsible Care[®] program of the Chemical Manufacturers Association (CMA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) seem to be especially relevant to this issue. The working hypothesis which I have developed and propose to test in my research is: "A industry/trade association member that subscribes to a code of environmental ethics will, at a minimum, comply with existing environmental laws." On the following pages you will find a description of the research project designed to test this hypothesis and a place to indicate your informed consent to participate.



COLLEGE OF
AGRICULTURE
AND NATURAL
RESOURCES

Resource
Development

Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222

517 / 355-3421

FAX: 517 / 353-8994

I hope you, as a person with considerable knowledge about Responsible Care[®] and/or EPCRA, will cooperate in this project. If so, I would like to conduct a personal interview with you about Responsible Care[®] and/or EPCRA at our mutual convenience. An alternative to this would be a telephone interview, also to be scheduled at our mutual convenience.

Expert Last Name
November 29, 1995
Page Two

Thank you for your consideration of this request. If you have any questions about this project, please feel free to call me at (517) 353-9723. In any case, please return the attached form to me by fax at (517) 353-6496 by **December 10, 1995.**

Sincerely,

Carol Y. Swinehart
Associate Investigator

Eckhart Dersch
Professor
Department of Resource Development

Enclosures

**RESEARCH PROJECT DESCRIPTION AND CONSENT FORM
EPCRA/RESPONSIBLE CARE[®] EXPERT**

This project proposes to evaluate part of the Responsible Care[®] Program of Guiding Principles and Codes of Management Practice by measuring the voluntary compliance of CMA members that have plant sites in Michigan with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

The proposed project consists of four segments, planned to be conducted using only the student's personal financial resources. Segment I consists of interviewing a few selected individuals who have expertise in Responsible Care[®] and/or with EPCRA from a national or state perspective, using the attached questionnaire. Segment II involves obtaining from the Michigan Department of Environmental Quality EPCRA compliance data for CMA members that have plant sites in Michigan for the years 1988-1994. Segment III consists of categorizing the companies according to size and selecting, primarily at random, a few with which to conduct followup interviews with their Responsible Care[®] coordinators and EPCRA compliance officials. Segment IV consists of contacting any individuals/organizations identified as having conducted independent audits of information supplied by CMA members for compliance with EPCRA or Responsible Care[®], questioning Responsible Care[®] coordinators and/or EPCRA compliance officials about those audits, and including some analysis of that information and their response to it.

All of the interviews will be conducted in confidence, and notes from the interviews coded to protect the interviewee's identity. The key to the code will be known only to the associate investigator on this project, and at the conclusion of this study the code sheet will be destroyed, so no one will be able to trace the identity of the interviewee. References to specific individuals, agencies or companies will be disguised in the writing of the thesis document and otherwise protected according to MSU standards for ethical research involving the use of human subjects.

The object of this research is to further enlighten the theoretical debate about the value of corporate codes of environmental ethics. CMA could benefit from an independent review of this type because if member companies are complying with EPCRA, this research may validate the Responsible Care[®] approach. If they are not, the Responsible Care[®] program may be perceived as a less than adequate corporate code of environmental ethics. In either case, representatives of selected companies will have the opportunity to explain their company's record and comment on the relationship between the Responsible Care[®] program and EPCRA.

**RESEARCH PROJECT DESCRIPTION AND CONSENT FORM -- Page Two
EPCRA/RESPONSIBLE CARE[®] EXPERT**

Publicity about this research will consist, at a minimum, of publication of the finished thesis. If you wish to receive a summary of the findings from this project, please return the enclosed postcard.

I have read and understand the above description of the research project on EPCRA and corporate/industry codes of environmental ethics proposed by Carol Y. Swinehart, and by my signature on this form I agree to participate voluntarily in this project as follows:

I will be available for an approximately one hour long interview about Responsible Care[®] and/or the Emergency Planning and Community Right-to-Know Act in person or by telephone at a mutually agreed upon date and time. My preferences are as follows:

I understand that my identity and that of my organization in the interview in which I participate will be kept confidential, but that any other information I provide may be utilized by the investigator in writing reports on this research.

SIGNED: _____ DATE: _____

NAME: _____ TITLE: _____
Please print or type Please print or type

ORGANIZATION NAME: _____

ORGANIZATION ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____ FAX: _____

**RETURN THIS FORM TO CAROL Y. SWINEHART BY FAX AT (517) 353-6496
by December 10, 1995. If you have any questions about this
project, please call Ms. Swinehart at (517) 353-9723.**

**QUESTIONS FOR INTERVIEWS OF EXPERTS ON THE RESPONSIBLE CARE[®]
PROGRAM OF THE CHEMICAL MANUFACTURERS ASSOCIATION AND/OR THE
EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT**

1. Please state your title and describe your duties and responsibilities as they relate to Responsible Care[®] and EPCRA. How did you acquire (for example, through education, experience or responsibility) this expertise?
2. Please provide any background documents you or your organization has on Responsible Care[®] and EPCRA as they relate to each other. Please elaborate on these materials orally at this time.
3. Please provide any background documents you or your organization has specifically on the implementation of Responsible Care[®] and EPCRA in Michigan, as they relate to each other. Please elaborate on these materials orally at this time.
4. Please describe your perspective(s) on Responsible Care[®] and EPCRA, and elaborate especially on how they relate to each other. Comment on how each has been implemented, and particularly on how participation in the Responsible Care[®] program has/has not influenced Michigan CMA members' compliance with EPCRA. Describe specific instances/examples that support your perspective.
5. Are you aware of any independent audits of EPCRA compliance conducted on Michigan members of the Chemical Manufacturers Association or independent verification of performance of these companies on Responsible Care[®] Guiding Principles and Codes of Management Practice? If so, please provide the name(s), address(es), and phone/fax number(s) of individuals that may be contacted about such an audit(s).

MICHIGAN STATE
U N I V E R S I T Y

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December 15, 1995

Plant Manager Name and Address

Dear Plant Manager:

I am writing to inform you about a research project at Michigan State University and to enlist your plant's cooperation in it.

For the past three years, as part of my master's degree program in MSU's Department of Resource Development, I have been studying corporate codes of environmental ethics and their relationship to the development of environmental policy and law. From my review of the existing literature and conversations with some knowledgeable people, the Responsible Care[®] program of the Chemical Manufacturers Association (CMA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) seem to be especially relevant to this issue. The working hypothesis which I have developed and propose to test in my research is: "An industry/trade association member that subscribes to a code of environmental ethics will, at a minimum, comply with existing environmental laws." On the following pages you will find a description of the research project designed to test this hypothesis and a consent form for your participation in it.



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Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222

517 / 355-3421
FAX: 517 / 353-8994

I hope you will be willing to cooperate in this project. First, I need the names of your plant's Responsible Care[®] Coordinator and EPCRA compliance official. If your company is selected for a followup interview, I will need to conduct an approximately one hour personal interview with each of them, using the questions on the attached page. Second, are you aware of any independent verification/audit(s) of the information your company submitted for compliance with Responsible Care[®] or EPCRA? If so, provide the name(s), address(es), and phone/fax number(s) of individuals I may contact about such an audit(s), also on the attached consent form.

Plant Manager
December 15, 1995
Page Two

Thank you for your consideration of this request. If you have any questions about this project, please feel free to call me at (517) 353-9723. In any case, **please return the attached form to me by fax at (517) 353-6496 by January 15, 1996.**

Sincerely,

Carol Y. Swinehart
Associate Investigator

Eckhart Dersch
Professor
Department of Resource Development

Enclosures

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM
Michigan CMA Member Company Plant Manager

This project proposes to evaluate part of the Responsible Care[®] Program of Guiding Principles and Codes of Management Practice by measuring the voluntary compliance of CMA member companies that have plant sites in Michigan with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

The proposed project consists of four segments, planned to be conducted using only the student's personal financial resources. Segment I consists of interviewing a few selected individuals who have expertise in Responsible Care[®] and/or with EPCRA from a national or state perspective. Segment II involves obtaining from the Michigan Department of Environmental Quality EPCRA compliance data for CMA member companies that have plant sites in Michigan for the years 1988-1994. Segment III consists of categorizing the companies according to size and selecting, primarily at random, a few with which to conduct followup interviews with their Responsible Care[®] coordinators and EPCRA compliance officials, using the attached questionnaire. Segment IV consists of contacting any individuals/organizations identified as having conducted independent audits of information supplied by CMA member companies for compliance with EPCRA or Responsible Care[®] and including some analysis of that information.

All of the interviews will be conducted in confidence, and notes from the interviews coded to protect the interviewee's identity. The key to the code will be known only to the associate investigator on this project, and at the conclusion of this study the code sheet will be destroyed, so no one will be able to trace the identity of the interviewee. References that would identify specific individuals, agencies or companies will be disguised in the writing of the thesis document and otherwise protected according to MSU standards for ethical research involving the use of human subjects.

The object of this research is to further enlighten the theoretical debate about the value of corporate codes of environmental ethics. CMA could benefit from an independent review of this type because, if member companies are complying with EPCRA, this research may validate the Responsible Care[®] approach. If the companies are not complying, the Responsible Care[®] program may be perceived as a less than adequate corporate code. CMA could lose credibility, along with member companies in the communities where they operate. In either case, the Responsible Care[®] program and EPCRA.

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM -- Page Two
Michigan CMA Member Company Plant Manager

representatives of selected companies will have the opportunity to explain their company's record and comment on information revealed in independent audits and on the relationship between

Publicity about this research will, at a minimum, consist of publication of the finished thesis. If you wish to receive a summary of the findings from this project, please return the enclosed postcard.

I have read and understand the above description of the research project on corporate/industry codes of environmental ethics and by my signature on this form I agree to participate voluntarily in this project as follows:

I am providing below the names, addresses and phone numbers of the Responsible Care[®] Coordinator and EPCRA compliance official for this plant and the name(s) of independent auditor(s) that have verified this plant's performance on Responsible Care[®] or EPCRA:

Responsible Care[®] Coordinator

NAME _____

ADDRESS _____

CITY _____ ZIP _____ PHONE _____

EPCRA Compliance Official

NAME _____

ADDRESS _____

CITY _____ ZIP _____ PHONE _____

Independent Auditor(s) -- Use Extra Paper if Necessary

NAME _____

ADDRESS _____

CITY _____ ZIP _____ PHONE _____

I understand that the following risks are involved in participating in this project:

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM -- Page Three
Michigan CMA Member Company Plant Manager

If CMA member companies with plant sites in Michigan are not complying with the Emergency Planning and Community Right-to-Know Act of 1986, the Responsible Care[®] program may be perceived as a less than adequate corporate code of environmental ethics. This could possibly lead to a loss of credibility for CMA and the member company in the community where they operate.

I understand that my identity will be kept confidential, but that any other information I provide may be used in the writing of reports on this research.

SIGNED: _____ DATE: _____

NAME: _____ TITLE: _____
Please print or type Please print or type

FACILITY NAME: _____

FACILITY ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____ FAX: _____

RETURN THIS FORM TO CAROL Y. SWINEHART BY FAX AT (517) 353-6496
by January 15, 1996. If you have any questions about this
project, please call Ms. Swinehart at (517) 353-9723.

**QUESTIONS FOR INTERVIEWS ON THE RESPONSIBLE CARE[®] PROGRAM OF THE
CHEMICAL MANUFACTURERS ASSOCIATION AND/OR THE EMERGENCY PLANNING
AND COMMUNITY RIGHT-TO-KNOW ACT WITH RESPONSIBLE CARE[®]
COORDINATORS AND EPCRA COMPLIANCE OFFICIALS IN MICHIGAN CMA
MEMBER PLANTS.**

1. Please state your title and describe your job duties and responsibilities for Responsible Care[®] and/or EPCRA. How did you acquire (for example, through education, experience or responsibility) this expertise?
2. What relationship, if any, do you see between the CMA Responsible Care[®] program and EPCRA?
3. How does your company's Michigan plant(s) implement the Responsible Care[®] program? Please be as specific as possible, particularly about any efforts/activities that require you to go beyond compliance with any existing statutes, especially EPCRA.
4. What steps has your company's Michigan plant(s) taken in complying with the Emergency Planning and Community Right-to-Know Act of 1986 that are not explicitly required by the law? Please be as specific as possible.
5. Your company's Michigan plant sites were/were not in compliance with EPCRA for _____ years during 1988-1994. Explain this performance.
6. Are you aware of any independent verification/audit(s) of the information your company submitted for compliance with Responsible Care[®] or EPCRA? If so, please provide the name(s), address(es), and phone/fax number(s) of individuals I may contact about such an audit(s).
7. An independent audit of your performance on Responsible Care[®] and/or EPCRA was conducted in ____ (year). It revealed the following information:

Please comment on this information.

MICHIGAN STATE
UNIVERSITY

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January 24, 1996

Public Information Coordinator
Environmental Assistance Division
Michigan Department of
Environmental Quality
P.O. Box 30457
Lansing, MI 48909-7957

Dear :

Thanks very much for your call yesterday and your willingness to assist me with collecting the data I need for my master's research project.

Attached is the list of 64 Michigan facilities for which I need data on compliance with the Emergency Planning and Community Right-to-Know Act for the years 1988-1994. Please provide me with information on sections 311, 312 (Tier I or Tier II), and 313.

I have also created a table for each facility (see the attached example). If using something like this would assist you in providing the information I am requesting, please call me at 353-9723 and I'll mail or fax them to you.

Thank you again for your assistance with this project. I believe your efforts will help me enormously, and I look forward to receiving what you provide.

Sincerely,

Carol Y. Swinehart
Associate Investigator

Attachments



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Resource
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Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222
517 / 355-3421
FAX: 517 / 353-8994

February 12, 1996

Plant Manager Name and Address

Dear Plant Manager:

In mid-December, we sent you a certified letter, requesting your cooperation in a research project in the Department of Resource Development at Michigan State University. The letter explained the research project in detail, and we requested that you fax a consent form to Carol Swinehart at (517) 353-6496, along with a form identifying two members of your staff--the Responsible Care Coordinator and the EPCRA Compliance Official--by January 15, 1996.

Someone at your plant signed the return receipt for the letter, but no one has yet responded to the request for cooperation. Although January 15 has passed, we would still appreciate your cooperation in this project.

Please remember that your participation and that of your employees in this project is entirely voluntary, and any information you or they provide will be kept strictly confidential. By returning the consent form and the identification form, you are simply indicating that these people are available to be **interviewed** about the EPCRA compliance data that we already have for your plant or their knowledge of the Responsible Care Program of the Chemical Manufacturers Association, as well as any linkage between these two. We included a list of the basic questions in the letter sent to you in December.



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Michigan State University
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East Lansing, Michigan
48824-1222

517 / 355-3421
FAX: 517 / 353-8994

**Plant Manager
February 11, 1996
Page Two**

To help us proceed with this project, please fax the enclosed form to Carol Swinehart at (517) 353-6496 by February 23, 1996. Your timely response will be greatly appreciated.

Sincerely,

**Carol Y. Swinehart
Associate Investigator**

**Eckhart Dersch
Professor
Department of Resource Development**

Enclosure

RESPONSIBLE CARE[®]/EPCRA PROJECT FOLLOWUP RESPONSE FORM
Department of Resource Development
Michigan State University
East Lansing, MI 48824-1222
(517) 353-9723/FAX (517) 353-6496

NAME: _____ **TITLE:** _____
 Please print or type Please print or type

FACILITY NAME: _____

FACILITY ADDRESS: _____

CITY: _____ **STATE:** _____ **ZIP:** _____

TELEPHONE: _____ **FAX:** _____

SIGNED: _____ **DATE:** _____

PLEASE CHECK ALL THE FOLLOWING THAT APPLY:

____ I received and read your letter dated December 15, 1995, and the accompanying materials and consent forms.

____ Our plant will participate in your project.

____ I will fax the original consent and identification forms to you. If our staff members are chosen to be interviewed, please call them at the phone numbers indicated on those forms.

____ Please send another package of project materials to me at the ____ address ____ fax number above, and I will return them by fax as soon as possible.

____ Our plant will not be participating in your project.

COMMENTS: _____

RETURN THIS FORM TO CAROL Y. SWINEHART BY FAX AT (517) 353-6496 by February 23, 1996. If you have any questions about this project, please call Ms. Swinehart at (517) 353-9723.

February 28 , 1996

Plant Manager Name and Address

Dear Plant Manager:

Thank you for responding to our followup letter of February 12, 1996. As you request, the following letter and enclosed materials are duplicates of the material sent to your company's plant in December, 1995, except for the response date. Please return the enclosed forms by **March 8, 1996**. Thank you for your willingness to participate in this project. We look forward to receiving your reply.

I am writing to inform you about a research project at Michigan State University and to enlist your plant's cooperation in it.

For the past three years, as part of my master's degree program in MSU's Department of Resource Development, I have been studying corporate codes of environmental ethics and their relationship to the development of environmental policy and law. From my review of the existing literature and conversations with some knowledgeable people, the Responsible Care[®] program of the Chemical Manufacturers Association (CMA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) seem to be especially relevant to this issue. The working hypothesis which I have developed and propose to test in my research is: "An industry/trade association member that subscribes to a code of environmental ethics will, at a minimum, comply with existing environmental laws." On the following pages you will find a description of the research project designed to test this hypothesis and a consent form for your participation in it.

I hope you will be willing to cooperate in this project. First, I need the names of your plant's Responsible Care[®] Coordinator and EPCRA compliance official. If your company is selected for a followup interview, I will need to conduct an approximately one hour personal interview with each of them, using the questions on the attached page. Second, are you aware of any independent verification/audit(s) of the information your company submitted for compliance with Responsible Care[®] or EPCRA?



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East Lansing, Michigan
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FAX: 517 / 353-8994

Plant Manager
February 28, 1996
Page Two

If so, provide the name(s), address(es), and phone/fax number(s) of individuals I may contact about such an audit(s), also on the attached consent form.

Thank you for your consideration of this request. If you have any questions about this project, please feel free to call me at (517) 353-9723. In any case, **please return the attached form to me by fax at (517) 353-6496 by March 8, 1996.**

Sincerely,

Carol Y. Swinehart
Associate Investigator

Eckhart Dersch
Professor
Department of Resource Development

Enclosures

7-11-2019

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May 6, 1996

RC/EPCRA Name and Address

Dear RC Coordinator or EPCRA Compliance Official:

I am writing to inform you about a research project at Michigan State University and to enlist your participation in it.

For the past three years, as part of my master's degree program in MSU's Department of Resource Development, I have been studying corporate codes of environmental ethics and their relationship to the development of environmental policy and law. From my review of the existing literature and conversations with some knowledgeable people, the Responsible Care[®] program of the Chemical Manufacturers Association (CMA) and the Emergency Planning and Community Right-to-Know Act (EPCRA) seem to be especially relevant to this issue.

The working hypothesis which I have developed and propose to test in my research is: "An industry/trade association member that subscribes to a code of environmental ethics will, at a minimum, comply with existing environmental laws." On the following pages you will find a description of the research project designed to test this hypothesis.

Your plant has been chosen for followup interviews in this project, and you were suggested as an appropriate person to interview about Responsible Care[®] and/or EPCRA. I need to conduct an approximately one hour telephone interview with you during June, 1996, using the attached questionnaire. I will fax the EPCRA compliance information on your plant supplied by the Michigan Department of Environmental Quality before we talk.



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Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222

517 / 355-3421

FAX: 517 / 353-8994

May 6, 1996

Page Two

Thank you for your consideration of this request. If you have any questions about this project, please call me at (517) 353-9723. In any case, please return the attached form to me by fax at (517) 353-6496 by May 24.

Sincerely,

**Carol Y. Swinehart
Associate Investigator**

**Eckhart Dersch
Professor**

Enclosures

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM

Responsible Care[®] Coordinator/EPCRA Compliance Official

This project proposes to partially evaluate the Responsible Care[®] Program of Guiding Principles and Codes of Management Practice by measuring the voluntary compliance of CMA members that have plant sites in Michigan with the Emergency Planning and Community Right-to-Know Act (EPCRA) of 1986.

The proposed project consists of four segments, planned to be conducted using primarily the student's personal financial resources. Segment I consists of interviewing a few selected individuals who have expertise in Responsible Care[®] and/or with EPCRA from a national or state perspective. Segment II involves obtaining from the Michigan Department of Environmental Quality EPCRA compliance data for CMA members that have plant sites in Michigan for the years 1988-1994. Segment III consists of categorizing the companies according to size and selecting, primarily at random, a few with which to conduct followup interviews with their Responsible Care[®] coordinators and EPCRA compliance officials, using the attached questionnaire. Segment IV consists of contacting any individuals/organizations identified as having conducted independent audits of information supplied by CMA members for compliance with EPCRA or Responsible Care[®] and including some analysis of that information.

All of the interviews will be conducted in confidence, and notes from the interviews coded to protect the interviewee's identity. The key to the code will be known only to the associate investigator on this project, and at the conclusion of this study the code sheet will be destroyed, so no one will be able to trace the identity of the interviewee. References that would identify specific individuals, agencies or companies will be disguised in the writing of the thesis document and otherwise protected according to MSU standards for ethical research involving the use of human subjects.

The object of this research is to further enlighten the theoretical debate about the value of corporate codes of environmental ethics. CMA could benefit from an independent review of this type because, if member companies are complying with EPCRA, this research may validate the Responsible Care[®] approach. If the companies are not complying, the Responsible Care[®] program may be perceived as a less than adequate corporate code. This could possibly lead to a loss of credibility for CMA and member companies in the community where they operate. In either case, representatives of selected companies will have the opportunity to explain their company's record and comment information from any known independent audit(s) and on the relationship between the Responsible Care[®] program and EPCRA.

Publicity about this research will consist, at a minimum, of publication of the finished thesis. If you wish to receive a summary of the findings from this project, please return the enclosed postcard.

RESEARCH PROJECT DESCRIPTION AND CONSENT FORM
Responsible Care[®] Coordinator/EPCRA Compliance Official – Page Two

I have read and understand the above description of the research project on corporate/industry codes of environmental ethics and by my signature on this form I agree to participate voluntarily in this project as follows:

I will ___ will not ___ be available for an approximately one hour long interview about Responsible Care[®] and/or the Emergency Planning and Community Right-to-Know Act in person or by telephone at a mutually agreed upon time within the month of June. I prefer the following dates and times.

I understand that the following risks are involved in participating in this project:

If CMA member companies with plant sites in Michigan are not complying with the Emergency Planning and Community Right-to-Know Act of 1986, the Responsible Care[®] program may be perceived as a less than adequate corporate code of environmental ethics. This could possibly lead to a loss of credibility for CMA and member companies in the communities where they operate.

I understand that my identity in the interview in which I participate will be kept confidential, but that any other information I provide may be used in the writing of reports on this research.

SIGNED: _____ DATE: _____

NAME: _____ TITLE: _____
 Please print or type Please print or type

ORGANIZATION NAME: _____

ORGANIZATION ADDRESS: _____

CITY: _____ STATE: _____ ZIP: _____

TELEPHONE: _____ FAX: _____

RETURN THIS FORM TO CAROL Y. SWINEHART BY FAX AT (517) 353-6496 by May 24, 1996. If you have any questions about this project, please call Ms. Swinehart at (517) 353-9723.

QUESTIONS FOR INTERVIEWS ON THE RESPONSIBLE CARE[®] PROGRAM OF THE CHEMICAL MANUFACTURERS ASSOCIATION AND/OR THE EMERGENCY PLANNING AND COMMUNITY RIGHT-TO-KNOW ACT WITH RESPONSIBLE CARE[®] COORDINATORS AND EPCRA COMPLIANCE OFFICIALS IN MICHIGAN CMA MEMBER PLANTS.

1. Please state your title and describe your job duties and responsibilities for Responsible Care[®] and/or EPCRA. How did you acquire (for example, through education, experience or responsibility) this expertise?
2. What relationship, if any, do you see between the CMA Responsible Care[®] program and EPCRA?
3. How does your plant implement the Responsible Care[®] program? Please be as specific as possible, particularly about any efforts/activities that require you to go beyond compliance with any existing statutes, especially EPCRA.
4. What steps has your plant taken in complying with the Emergency Planning and Community Right-to-Know Act of 1986 that are not explicitly required by the law? Please be as specific as possible.
5. The record of your plant's compliance with EPCRA for 1988-1994 has been provided to you. Please explain this performance.
6. Are you aware of any independent verification/audit(s) of the information your company submitted for compliance with Responsible Care[®] or EPCRA? If so, please provide the name(s), address(es), and phone/fax number(s) of individuals I may contact about such an audit(s).

June 10, 1996

RC Coordinator
EPCRA Compliance Official Name and Address

Dear RC Coordinator/EPCRA Compliance Official:

Thank you for your willingness to participate in an interview for the EPCRA/Responsible Care[®] master's research project at Michigan State University. Per our recent telephone conversation, I plan to call you on _____ for the interview in your capacity as _____ for the _____ plant at _____.

You have indicated that, at that time, you will be prepared to respond to the questions I sent to you last month with the introductory letter and consent form. Another copy of the questions is enclosed with this letter for your convenience.

Also enclosed is a table with the information I requested from the Michigan Department of Environmental Quality about the dates on which this facility voluntarily submitted information in compliance with the Emergency Planning and Community Right-to-Know Act of 1986. I hope you will take the opportunity review this information before your interview.



COLLEGE OF
AGRICULTURE
AND NATURAL
RESOURCES

Resource
Development

Michigan State University
323 Natural Resources
East Lansing, Michigan
48824-1222

517 / 355-3421
FAX: 517 / 353-8994

If you have any questions about this interview or the project, please call me at (517) 353-9723.

Sincerely,

Carol Y. Swinehart
Associate Investigator

Eckhart Dersch
Professor

Enclosures
Questions for Interview
Data Table

APPENDIX H

LIST OF FACILITIES CONTACTED

AlliedSignal
1200 Zug Island Road
Detroit, MI 48209

Ashland Chemical Company
Distribution Services
12001 Toepfer Road
Warren, MI 48089

Ashland Chemical Company
Distribution Services
2011 Turner Street
Lansing, MI 48906

Baxter Diagnostics, Inc.
1953 South Harvey Street
Muskegon, MI 49442

BASF Corporation
471 Howard Avenue
Holland, MI 49424

BASF Corporation
13000 Levan Street
Livonia, MI 48150

BASF Corporation
3301 Bourke Avenue
Detroit, MI 48238

BASF Corporation
1609 Biddle Avenue
Wyandotte, MI 48192

BOC Gases
A Division of BOC Group
Acetylene Plant
780 State Circle
Ann Arbor, MI 48108-1648

Chemfil Corporation
1330 Piedmont Avenue
Troy, MI 48083

Ci
49
Ea

Cyt
27
P.O.
Kal

Cyt
P.O.
Esc

CHEM
1339
Roma

CHEM
P.O.
2940
Wyoma

Dow C
Corpe
Midd

Dow
3901
Midd

Dow
1635
P.O.
Hem

Dow
103
Fre

Dow
P.O.
Midd

DuPont
1555 J
Flint,

Ciba-Geigy Corporation
4917 Dawn Avenue
East Lansing, MI 48823

Cytec Industries, Inc.
2715 Miller Road
P.O. Box 3309
Kalamazoo, MI 49003

Cytec Industries, Inc.
P.O. Box 545
Escanaba, MI 49829

CHEMCENTRAL-Detroit
13395 Huron River Drive
Romulus, MI 48174-0906

CHEMCENTRAL-Grand Rapids
P.O. Box 9188
2940 Stafford Avenue, SW
Wyoming, MI 49509-0188

Dow Corning Corporation
Corporate Center
Midland, MI 48686-0994

Dow Corning Corporation
3901 South Saginaw Road
Midland, MI 48686-0995

Dow Corning Corporation
1635 North Gleaner Road
P.O. Box 127
Hemlock, MI 48626

Dow Corning Corporation
10330 Hercules Drive
Freeland, MI 48623

Dow Corning Corporation
P.O. Box 995
Midland, MI 48686-0995

DuPont Auto Products-Flint
1555 James P. Cole Blvd.
Flint, MI 48502

DuPont Auto Products
Mt. Clemens
400 Groesbeck Highway
Mt. Clemens, MI 48043

DuPont Auto Products-Troy
Troy Lab
945 Stephenson Highway
Troy, MI 48007

DuPont-Flouoroproducts
Montague Works
6270 Wilkes Road
Montague, MI 49437

Elf Atochem North America, Inc.
17168 West Jefferson Avenue
Riverview, MI 48192-4270

Enthone-OMI, Inc.
21441 Hoover Road
Warren, MI 48089

Essex Specialty Products
1250 Harmon Road
Auburn Hills, MI 48626

Essex Specialty Products, Inc.
190 Uran Street
Hillsdale, MI 49242

Exxon Chemical Company
37567 Interchange Drive
Farmington Hills, MI 48335-1027

Exxon Chemical Company
26777 Central Park Blvd.
Southfield, MI 48076-4172

Georgia-Pacific Corporation
4113 Four Mile Road
Box 1771
Grayling, MI 49738

Great Lakes Chemical Corp.
P.O. Box 207
Adrian, MI 49221

Hemlock Semiconductor Corp.
12334 Geddes Road
P.O. Box 187
Hemlock, MI 48626-0080

Henkel Corp.-Parker Amchem
32100 Stephenson Highway
Madison Heights, MI 48071

Henkel Corp.-Parker Amchem
23343 Sherwood
Warren, MI 48091

Hercules Incorporated
Kalamazoo Plant
P.O. Box 118
Kalamazoo, MI 49004-0118

Hoechst Celanese Corporation
1195 Centre Road
Auburn Hills, MI 48326

ICI Americas Inc.
6555 Fifteen Mile Road
Sterling Heights, MI 48312

Jones Chemicals, Inc.
P.O. Box 38
Wyandotte, MI 48192

Liquid Carbonic Industries
Detroit Facility
12820 Evergreen Road
Detroit, MI 48223

Liquid Carbonic Industries
Smith's Creek Facility
4685 Gratiot Road
Smith's Creek, MI 48074

Liquid Carbonic Industries
8831 Inkster Road
Taylor, MI 48180

McGean-Rohco, Inc.
Livonia Plant Facility
38521 Schoolcraft Road
Livonia, MI 48150

Monsanto Company
Trenton Plant
5045 West Jefferson
Trenton, MI 48183

Montell North America, Inc.
2727 Alliance Drive
Lansing, MI 48910

Morton International, Inc.
2910 Waterview Drive
Rochester Hills, MI 48309

Morton International, Inc.
180 Sixth Street
Manistee, MI 49660

Nalco Chemical Company
Adco Products, Inc.
4401 Page Avenue, Box 457
Michigan Center, MI 49254

Novacor Chemicals Ltd.
Genesis Polymers
2250 Busha Highway
Marysville, MI 48040

PPG Industries, Inc.
961 Division Street
Adrian, MI 49221

PVS Nolwood Chemicals, Inc.
8970 Hubbell Avenue
Detroit, MI 48228

PVS Technologies, Inc.
Detroit
10900 Harper Avenue
Detroit, MI 48213

PVS-Nolwood Chemicals, Inc.
Bulk Terminal
11001 Harper Avenue
Detroit, MI 48213

Silbond Corporation
9901 Sandcreek Highway
Weston, MI 49289

Solvay Automotive
2565 West Maple Road
Troy, MI 48084

The Dow Chemical Company
4675 East Wilder Road
Bay City, MI 48706

The Dow Chemical Company
Ludington Plant
South Madison Street
Ludington, MI 49431

The Dow Chemical Company
Midland Plant
47 Building
Midland, MI 48667

The Dow Chemical Company
Boride Products, Inc.
2879 Aero Park Drive
Traverse City, MI 49684

Van Waters & Rogers Inc.
7025 Dutton Industrial Drive
Dutton, MI 49316

Van Waters & Rogers Inc.
27001 Trolley Industrial Dr.
Taylor, MI 48180

Wacker Silicones Corporation
3301 Sutton Road
Adrian, MI 49221-9397

Zeeland Chemicals, Inc.
215 North Centennial Street
Zeeland, MI 49464

3M
4100 James Savage Road
Midland, MI 48640

APPENDIX H

APPENDIX I

APPENDIX I - FACILITY DATA RECORDS

Figure 16. Sample Facility Data Form

COMPLIANCE SUMMARY	COMPLIANCE CATEGORY	PARTICIPAT'N CATEGORY	SECTION COMP	YEAR COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) ND (1) WW (1) W+ (1) NI (6)	6	D	0	1	40	35	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	COMPLIANCE CATEGORY
1987	ND				ND
1988		2/28/89		NI	OK/NI
1989			3/1/90	NI	OK/NI
1990			4/5/91	NI	W+/NI
1991		3/2/92 sa		NI	WW/NI
1992		3/1/93		NI	OK/NI
1993			2/25/94	NI	OK/NI
1994			2/16/95	6/30/95	OK/OK
CAT TOTAL	ND	OK (2) WW (1)	OK (3) W+ (1)	OK (1) NI (6)	OK (6) ND (1) WW (1) W+ (1) NI (6)

OK = report recorded as received by DEQ on or before the statutory deadline.

WW = report recorded as received by DEQ within ten calendar days of the statutory deadline.

NI = no report received by DEQ.

W+ = report was recorded as received by DEQ received more than ten calendar days after the statutory deadline.

ND = no date recorded by DEQ on form received from facility.

NRR = not required to report.

NF = not found by DEQ.

■ = received after statutory deadline.

1

COMP SUMM	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (2) W+ (2) NI (11) X	6	F	0	0	51	51	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	NI				NI
1988					NI
1989					NI
1990					NI
1991			9/29/92 su		W+/NI
1992			4/5/93 m		W+/NI
1993			2/28/94		OK/NI
1994			2/16/95		OK/NI
CAT TOTL	NI		OK (2) W+ (2) NI (3)	NI (7)	OK (2) W+ (2) NI (11) X

2

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (9) WW (3) W+ (3)	3	E	0	2	21	36	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988		2/28/89		1/5/89	OK/OK
1989	10/23/89 sa	5/3/90 th		6/28/90	W+/OK
1990		3/4/91 f		6/19/91	WW/OK
1991			2/27/92	9/24/92 w	OK/W+
1992			2/12/93	6/23/93	OK/OK
1993			2/2/94	7/6/94 f	OK/WW
1994			2/23/95	7/6/95 sa	OK/WW
CAT TOTL	W+	OK (1) WW (1) W+ (1)	OK (4)	OK (4) WW (2) W+ (1)	OK (9) WW (3) W+ (3)

3

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (5) WW (1) W+ (2) - 311 NI (7)	6	D	0	0	36	19	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988	12/14/88 sa	2/28/89			OK/NI
1989		3/1/90			OK/NI
1990			3/8/91 f		WW/NI
1991			2/18/92		OK/NI
1992			1/6/93		OK/NI
1993			2/2/94		OK/NI
1994			3/15/95 w		W+/NI
CAT TOTL	W+	OK (2)	OK (3) WW (1) W+ (2)	NI (7)	OK (5) WW (1) W+ (2) NI (7)

4

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (5) WW (1) W+ (2) NI (7)	6	F	0	0	37	33	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988			2/16/89		OK/NI
1989			2/8/90		OK/NI
1990			3/12/91 f		W+/NI
1991	11/08/91 sa		3/2/92 su		WW/NI
1992			3/1/93		OK/NI
1993			2/23/94		OK/NI
1994			2/23/95		OK/NI
CAT TOTL	W+		OK (5) WW (1) W+ (1)	NI (7)	OK (5) WW (1) W+ (2) NI (7)

5

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (9) WW (4) W+ (2) - 311	3	D	0	3	18	16	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988	2/19/88 sa		2/27/89	7/6/89 sa	OK/WW
1989			1/12/90	6/28/90	OK/OK
1990			3/4/91 f	7/1/91	WW/OK
1991			3/2/92 su	9/4/92 w	WW/OK
1992			3/2/93 m	6/29/93	WW/OK
1993			2/16/94	6/28/94	OK/OK
1994			2/22/95	6/28/95	OK/OK
CAT TOTL	W+ (1)		OK (4) WW (3)	OK (5) WW (1) W+ (1)	OK (9) WW (4) W+ (2)

6

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (9) ND (1) W+ (3) NI (2)	6	F	1	2	20	37	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988			2/28/89	7/19/89 sa	OK/W+
1989			3/1/90		OK/NI
1990			2/27/91	7/1/91	OK/OK
1991			2/27/92	7/1/92	OK/OK
1992			2/26/93		OK/NI
1993			3/1/94	10/25/94 f	OK/W+
1994			2/28/95	1/8/96 sa	OK/W+
CAT TOTL	ND		OK (7)	OK (2) W+ (3) NI (2)	OK (9) ND (1) W+ (3) NI (2)

7

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NRR	7	F	NA	NA	54	54	NRR

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

8

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (5) WW (2) ND (1) NI (7)	5	F	0	0	35	8	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988			2/27/89		OK/NI
1989			3/1/90		OK/NI
1990			3/1/91		OK/NI
1991			3/3/92 su		WW/NI
1992			3/1/93		OK/NI
1993			3/3/94 tu		WW/NI
1994			2/17/95		OK/NI
CAT TOTL	ND		OK (5) WW (2)	NI (7)	OK (5) WW (2) ND (1) NI (7)

9

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (5) W+ (2) NI (4) X	6	Ee	0	1	42	49	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	NI				NI
1988					NI
1989			6/12/90 th		W+/NI
1990			3/1/91	11/27/91 m	OK/W+
1991			3/2/92 su	7/2/92 w	WW/WW
1992			3/5/93 m	7/7/93 th	WW/WW
1993			2/28/94	7/1/94	OK/OK
1994			2/28/95	7/3/95	OK/WW
CAT TOTL	NI		OK (3) WW (2) W+ (1) NI (1)	OK (1) WW (3) W+ (1) NI (2)	OK (4) WW (5) W+ (2) NI (4)

10

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) WW (3) W+ (2) NI (4) -3X	6	Aa	1	2	34	52	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/15/87				OK
1988			3/3/89 w	7/5/89 sa	WW/WW
1989			3/1/90		OK/NI
1990			3/1/91	7/1/91	OK/OK
1991			3/6/92 su	8/7/92 w	WW/W+
1992				7/1/93	NI/OK
1993				10/24/94 f	NI/W+
1994				6/30/95	NI/OK
CAT TOTL	OK		OK (2) WW (2) NI (3)	OK (3) WW (1) W+ (2) NI (1)	OK (6) WW (3) W+ (2) NI (4)

11

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK(12) WW(2) W+(1)	3	A	1	5	6	11	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/16/87				OK
1988			2/28/89	3/26/90 sa	OK/W+
1989			3/1/90	6/28/90	OK/OK
1990			2/28/91	6/26/91	OK/OK
1991			3/2/92 su	6/25/92	WW/OK
1992			2/22/93	6/23/93	OK/OK
1993			2/28/94	6/22/94	OK/OK
1994			3/3/95 w	6/30/95	WW/OK
CAT TOTL	OK		OK(5) WW(2)	OK(6) W+(1)	OK(12) WW(2) W+(1)

12

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (8) WW (4) W+ (2) NI (1)	6	F	1	2	24	31	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/14/87				OK
1988			2/28/89	7/5/89 sa	OK/WW
1989			3/1/90	7/10/90 su	OK/W+
1990			3/4/91 f	6/17/91	WW/OK
1991			3/2/92 su	9/2/92 w	WW/W+
1992			2/25/93	8/9/93 th	OK/W+
1993			3/1/94		OK/NI
1994			2/27/95	6/21/95	OK/OK
CAT TOTL	OK		OK (5) WW (2)	OK (2) WW (1) W+ (3) NI (1)	OK (8) WW (4) W+ (2) NI (1)

13

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (13) WW (1) NI (1) X	5	F	2	6	5	40	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	9/23/87				OK
1988				6/12/89	NI/OK
1989			2/8/90	6/20/90	OK/OK
1990			2/6/91	6/24/91	OK/OK
1991			1/24/92	7/7/92 w	OK/WW
1992			1/19/93	5/24/93	OK/OK
1993			2/24/94	6/23/94	OK/OK
1994			2/28/95	6/26/95	OK/OK
CAT TOTL	OK		OK (6) NI (1)	OK (6) WW (1)	OK (13) WW (1) NI (1)

14

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) WW (7) W+ (2)	3	Aa	0	2	33	30	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/19/87 sa				WW
1988			2/15/89	7/1/89	OK/OK
1989			6/12/90 th	7/9/90 su	W+/WW
1990			3/1/91	11/27/91 m	OK/W+
1991			3/2/92 su	7/2/92 w	WW/WW
1992			3/5/93 m	7/7/93 th	WW/WW
1993			2/28/94	7/1/94	OK/OK
1994			2/28/95	7/3/95 sa	OK/WW
CAT TOTL	WW		OK (4) WW (2) W+ (1)	OK (2) WW (4) W+ (1)	OK (6) WW (7) W+ (2)

15

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (11) WW (2) W+ (2)	3	F	1	5	10	26	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/16/87				OK
1988			3/1/89	6/30/89	OK/OK
1989			3/13/90 th	7/10/90 su	W+/WW
1990			3/5/91 f	7/1/91	WW/OK
1991			2/27/92	9/1/92 w	OK/W+
1992			3/1/93	7/1/93	OK/OK
1993			2/24/94	6/28/94	OK/OK
1994			2/27/95	6/28/95	OK/OK
CAT TOTL	OK		OK (5) WW (1) W+ (1)	OK (5) WW (1) W+ (1)	OK (11) WW (2) W+ (2)

16

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (7) ND (1) NI (7)	4	A	1	0	27	5	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988			2/22/89		OK/NI
1989			3/1/90		OK/NI
1990			2/27/91		OK/NI
1991			2/28/92		OK/NI
1992			2/25/93		OK/NI
1993			2/16/94		OK/NI
1994			2/28/95		OK/NI
CAT TOTL	ND		OK (7)	NI (7)	OK (7) ND (1) NI (7)

17

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (3) WW (1) W+ (1) NI (10) X	6	D	0	0	50	48	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988					NI/NI
1989					NI/NI
1990			3/28/91 f		W+/NI
1991			3/3/92 su		WW/NI
1992			1/28/93		OK/NI
1993			1/5/94		OK/NI
1994			2/22/95		OK/NI
CAT TOTL	NI		OK (3) WW (1) W+ (1) NI (2)	NI (7)	OK (3) WW (1) W+ (1) NI (10) X

18

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NF	8	F	0	0	53	53	NF

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

19

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (11) WW (2) W+ (2)	3	E	1	4	10	26	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/15/87				OK
1988			3/1/89	7/5/89 f	OK/WW
1989			2/28/90	6/28/90	OK/OK
1990			2/14/91	6/20/92	OK/W+
1991			2/25/92	9/1/92 w	OK/W+
1992			3/1/93	6/30/93	OK/OK
1993			2/16/94	7/1/94	OK/OK
1994			3/3/95 w	6/30/95	WW/OK
CAT TOTL	OK		OK (6) WW (1)	OK (4) WW (1) W+ (2)	OK (11) WW (2) W+ (2)

20

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (14) WW (1)	2	A	2	7	1	1	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/16/87				OK
1988			2/22/89	6/27/89	OK/OK
1989			2/23/90	6/18/90	OK/OK
1990			2/26/91	6/19/91	OK/OK
1991			2/26/92	6/30/92	OK/OK
1992			2/25/93	6/21/93	OK/OK
1993			3/2/94 tu	7/1/94	WW/OK
1994			2/14/95	6/29/95	OK/OK
CAT TOTL	OK		OK (6) WW (1)	OK (7)	OK (14) WW (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (3) W+ (1) NI (7)	6	D	0	0	39	20	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988			3/2/89 w		WW/NI
1989			3/1/90		OK/NI
1990			3/4/91 f		WW/NI
1991	11/8/91 sa		3/2/92 su		WW/NI
1992			2/12/93		OK/NI
1993			2/28/94		OK/NI
1994			2/24/95		OK/NI
CAT TOTL	W+		OK (4) WW (3)	NI (7)	OK (4) WW (3) W+ (1) NI (7)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) WW (2) NI (7)	4	D	0	0	31	6	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/22/87 sa				WW
1988		2/4/89			OK/NI
1989		1/5/90			OK/NI
1990		3/4/91 th			WW/NI
1991		2/18/92			OK/NI
1992		1/11/93			OK/NI
1993		2/24/94			OK/NI
1994		2/23/95			OK/NI
CAT TOTL	WW	OK (6) WW (1)		NI (7)	OK (6) WW (2) NI (7)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (8) WW (7)	2	A	1	3	23	4	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/15/87				OK
1988			2/24/89	6/30/89	OK/OK
1989			3/1/90	6/29/90	OK/OK
1990			3/5/91 f	7/1/91	WW/OK
1991			3/2/92 su	7/2/92 w	WW/WW
1992			3/2/93 m	7/1/93	WW/OK
1993			3/3/94 tu	7/1/94	WW/OK
1994			3/6/95 w	7/3/95 sa	WW/WW
CAT TOTL	OK		OK (2) WW (5)	OK (5) WW (2)	OK (8) WW (7)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (11) WW (1) W+ (1) 311 NI (2)	6	Dd	0	4	9	13	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988	6/9/88 sa		3/6/89 w	6/22/89	WW/OK
1989			3/1/90		OK/NI
1990			2/15/91		OK/NI
1991			1/31/92	6/29/92	OK/OK
1992			2/3/93	6/22/93	OK/OK
1993			1/31/94	6/8/94	OK/OK
1994			2/14/95	6/15/95	OK/OK
CAT TOTL	W+		OK (6) WW (1)	OK (5) NI (2)	OK (11) WW (1) W+ (1) NI (2)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (1) NI (14) X	4	Ff	0	0	49	46	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988					NI/NI
1989			2/27/90		OK/NI
1990					NI/NI
1991					NI/NI
1992					NI/NI
1993					NI/NI
1994					NI/NI
CAT TOTL	NI		OK (1) NI (6)	NI (7)	OK (1) NI (14)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (1) W+ (2) 311 NI (8)	6	E	0	0	38	22	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987			1		W+
1988	11/11/88 SA		2/24/89		OK/NI
1989			3/6/90 th		WW/NI
1990					NI/NI
1991			2/10/92		OK/NI
1992			2/14/94		OK/NI
1993			2/14/94		OK/NI
1994			5/19/95 w		W+/NI
CAT TOTL	W+		OK (4) WW (1) W+ (1) NI (1)	NI (7)	OK (4) WW (1) W+ (2) NI (8)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NF	8	F	0	0	53	53	NF

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (10) WW (3) NI (2) X	5	Ee	0	4	15	41	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988				7/5/89 sa	NI/WW
1989			3/1/90	6/25/90	OK/OK
1990			2/26/91	6/5/91	OK/OK
1991			2/27/92	6/29/92	OK/OK
1992			3/3/93 m	6/21/93	WW/OK
1993			2/28/94	7/1/94	OK/OK
1994			3/3/95 w	6/22/95	WW/OK
CAT TOTL	NI		OK (4) WW (2) NI (1)	OK (6) WW (1)	OK (10) WW (3) NI (2) X

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NRR	7	D	0	0	54	54	NRR

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (3) NI (8) X	5	E	0	0	44	45	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988			2/27/89		OK/NI
1989		2/22/90			OK/NI
1990		1/25/91			OK/NI
1991		3/2/92 su			WW/NI
1992			3/1/93		OK/NI
1993			3/2/94 tu		WW/NI
1994			3/2/95 w		WW/NI
CAT TOTL	NI	OK (2) WW (1)	OK (2) WW (2)		OK (4) WW (3) NI (8) X

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (13) WW (1) ND (1)	2	D	1	6	3	2	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988			3/1/89	6/30/89	OK/OK
1989			3/1/90	6/29/90	OK/OK
1990			3/1/91	6/24/91	OK/OK
1991			2/14/92	7/7/92 w	OK/WW
1992			2/18/93	5/7/93	OK/OK
1993			2/10/94	6/9/94	OK/OK
1994			2/16/95	6/2/95	OK/OK
CAT TOTL	ND		OK (7)	OK (6) WW (1)	OK (13) WW (1) ND (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NF	8	F	0	0	53	53	NF

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (7) WW (7) W+ (1)	3	Ff	1	2	28	18	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/15/87				OK
1988			3/2/89 w	7/5/89 sa	WW/WW
1989			2/27/90	7/3/90	OK/WW
1990			3/4/91 f	7/1/91	WW/OK
1991			3/2/92 su	7/15/92 w	WW/W+
1992			3/1/93	7/1/93	OK/OK
1993			3/2/94 tu	7/1/94	WW/OK
1994			2/28/95	7/3/95 sa	OK/WW
CAT TOTL	OK		OK (3) WW (4)	OK (3) WW (3) W+ (1)	OK (7) WW (7) W+ (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (7) WW (4) ND (1) W+ (1) NI (2)	6	F	0	2	29	17	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988			3/1/89		OK/NI
1989			3/1/90		OK/NI
1990			3/1/91	10/10/91 m	OK/W+
1991			3/2/92 su	7/6/92 w	WW/WW
1992			3/1/93	6/22/93	OK/OK
1993			2/10/94	6/22/94	OK/OK
1994			3/3/95 w	7/3/95 sa	WW/WW
CAT TOTL	ND		OK (5) WW (2)	OK (2) WW (2) W+ (1) NI (2)	OK (7) WW (4) ND (1) W+ (1) NI (2)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NRR	7	E	0	0	54	54	NRR

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (10) W+ (1) NI (4) X	6	Ee	0	4	17	47	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988					NI/NI
1989		2/14/90			OK/NI
1990		2/14/91	5/1/91 f	6/21/91	OK/OK
1991		2/18/92		8/28/92 w	OK/W+
1992			2/26/93	6/29/93	OK/OK
1993			2/28/94	7/1/94	OK/OK
1994			2/27/95	6/30/94	OK/OK
CAT TOTL	NI	OK (3)	OK (3) NI (1)	OK (4) W+ (1) NI (2)	OK (10) W+ (1) NI (4) X

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (3) WW (4) NI (8) X	6	E	0	0	47	44	-

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988			3/3/89 w		WW/NI
1989			2/27/90		OK/NI
1990			3/5/91 f		WW/NI
1991			2/25/92		OK/NI
1992			3/9/93 m		WW/NI
1993			3/1/94		OK/NI
1994			3/7/95 w		WW/NI
CAT TOTL	NI		OK (3) WW (4)	NI (7)	OK (3) WW (4) NI (8) X

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (9) WW (3) W+ (2) NI (1)	6	F	0	3	19	29	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGOR Y
1987					W+
1988			3/1/89	7/5/89 sa	OK/WW
1989			3/1/90	6/28/90	OK/OK
1990	3/1/90 sa		3/1/91	7/1/91	OK/OK
1991			3/2/92 su	6/26/92	WW/OK
1992			3/1/93	7/2/93 th	OK/WW
1993			5/31/94 tu		W+/NI
1994			2/22/95	6/28/95	OK/OK
CAT TOTL	W+		OK (5) WW (1) W+ (1)	OK (4) WW (2) NI (1)	OK (9) WW (3) W+ (2) NI (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (14) WW (1)	2	F	2	7	1	1	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/16/87				OK
1988			2/27/89	6/14/89	OK/OK
1989			2/28/90	5/15/90	OK/OK
1990			3/6/91 f	7/1/91	WW/OK
1991			2/19/92	6/30/92	OK/OK
1992			2/10/93	7/1/93	OK/OK
1993			2/23/94	6/22/94	OK/OK
1994			2/7/95	6/27/95	OK/OK
CAT TOTL	OK		OK (6) WW (1)	OK (7)	OK (14) WW (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
W+ (1) NI (14)	6	Ff	0	0	48	24	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988					NI/NI
1989					NI/NI
1990	1/17/90 sa				NI/NI
1991					NI/NI
1992					NI/NI
1993					NI/NI
1994					NI/NI
CAT TOTL	W+		NI (7)	NI (7)	W+ (1) NI (14)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (13) WW (2)	2	Ee	1	6	4	3	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/14/87				OK
1988			2/28/89	6/29/89	OK/OK
1989			2/26/90	6/18/90	OK/OK
1990			3/5/91 f	7/1/91	WW/OK
1991			2/25/92	7/2/92 w	OK/WW
1992			3/1/93	7/1/93	OK/OK
1993			2/28/94	6/27/94	OK/OK
1994			1/11/95	6/28/95	OK/OK
CAT TOTL	OK		OK (6) WW (1)	OK (6) WW (1)	OK (13) WW (2)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (10) WW (4) W+ (1)	3	F	1	4	11	14	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/14/87				OK
1988			2/28/89	6/13/89	OK/OK
1989			3/1/90	6/12/90	OK/OK
1990			3/1/91	6/26/91	OK/OK
1991			2/26/92	7/6/92 w	OK/WW
1992			3/1/93	7/2/93 th	OK/WW
1993			3/25/94 tu	7/1/94	W+/OK
1994			3/3/95 w	7/3/95 sa	WW/WW
CAT TOTL	OK		OK (5) WW (1) W+ (1)	OK (4) WW (3)	OK (10) WW (4) W+ (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NF	8	F	0	0	53	53	NF

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (1) W+ (1) NI (9)	6	D	1	1	40	21	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/16/87				OK
1988			4/1/89 w		W+/NI
1989					NI/NI
1990		3/1/91			OK/NI
1991					NI/NI
1992		3/1/93	3/1/93		OK/NI
1993		3/3/94 tu	3/3/94 tu		WW/NI
1994		3/1/95	3/1/95		OK/NI
CAT TOTL	OK	OK (3) WW (1)	W+ (1) NI (2)	NI (7)	OK (4) WW (1) W+ (1) NI (9)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NF	8	F	0	0	53	53	NF

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
W+ (1) NI (14) X	6	F	0	0	52	51	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988					NI/NI
1989					NI/NI
1990					NI/NI
1991					NI/NI
1992					NI/NI
1993					NI/NI
1994			3/13/95 w		W+/NI
CAT TOTL	NI		W+ (1) NI (6)	NI (7)	W+ (1) NI (14) X

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (9) WW (3) NI (3) X	6	Dd	0	4	22	42	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988					NI/NI
1989			3/5/90 th	7/10/90 su	WW/WW
1990			2/26/91	6/20/91	OK/OK
1991			2/21/92	7/2/92 w	OK/WW
1992			2/24/93	6/30/93	OK/OK
1993			2/24/94	6/20/94	OK/OK
1994			2/24/95	6/19/95	OK/OK
CAT TOTL	NI		OK (5) WW (1) NI (1)	OK (4) WW (2) NI (1)	OK (9) WW (3) NI (3) X

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (10) WW (2) W+ (2) NI (1)	6	F	0	3	13	28	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988			2/21/89	6/30/89	OK/OK
1989			2/27/90		OK/NI
1990			2/27/91	6/26/91	OK/OK
1991			3/2/92 su	6/25/92	WW/OK
1992	8/5/92 sa		3/1/93	7/8/93 th	OK/WW
1993			2/28/94	6/28/94	OK/OK
1994			2/27/95	8/30/95 sa	OK/W+
CAT TOTL	W+		OK (6) WW (1)	OK (4) WW (1) W+ (1) NI (1)	OK (10) WW (2) W+ (2) NI (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (2) W+ (2) NI (7)	6	E	1	1	41	34	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/14/87				OK
1988			3/3/89 w		WW/NI
1989			2/21/90		OK/NI
1990			4/11/91 f		W+/NI
1991			4/6/92 su		W+/NI
1992			2/12/93		OK/NI
1993			3/7/94 tu		WW/NI
1994			3/1/95		OK/NI
CAT TOTL	OK		OK (3) WW (2) W+ (2)	NI (7)	OK (4) WW (2) W+ (2) NI (7)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (8) WW (4) W+ (3)	3	D	0	3	25	38	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/18/87 sa				WW
1988			3/2/89 w	7/24/89 sa	WW/W+
1989			6/28/90 th	6/12/90	W+/OK
1990			1/28/91	6/3/91	OK/OK
1991			3/2/92 su	9/4/92 w	WW/W+
1992			2/9/93	6/30/93	OK/OK
1993			2/7/94	6/23/94	OK/OK
1994			2/28/95	7/3/95 sa	OK/WW
CAT TOTL	WW		OK (4) WW (2) W+ (1)	OK (4) WW (1) W+ (2)	OK (8) WW (4) W+ (3)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (14) W+ (1)	3	Ee	2	7	2	10	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/15/87				OK
1988			2/28/89	7/1/89	OK/OK
1989			3/1/90	6/19/90	OK/OK
1990			2/28/91	6/27/91	OK/OK
1991			2/26/92	8/24/92 w	OK/W+
1992			3/1/93	6/30/93	OK/OK
1993			3/1/94	6/21/94	OK/OK
1994			2/22/95	6/26/95	OK/OK
CAT TOTL	OK		OK (7)	OK (6) W+ (1)	OK (14) W+ (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (12) ND (1) W+ (2)	3	F	1	5	7	25	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988			2/24/89	6/27/89	OK/OK
1989			2/28/90	6/12/90	OK/OK
1990			2/28/91	6/26/91	OK/OK
1991			2/24/92	8/31/92 w	OK/W+
1992			3/1/93	7/1/93	OK/OK
1993			2/23/94	8/8/94 f	OK/W+
1994			3/1/95	6/28/95	OK/OK
CAT TOTL	ND		OK (7)	OK (5) W+ (2)	OK (12) ND (1) W+ (2)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (10) WW (2) W+ (3)	3	Bb	0	3	14	35	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/21/87 sa				WW
1988			2/24/89	5/18/89	OK/OK
1989			3/1/90	6/28/90	OK/OK
1990			3/1/91	12/03/91 m	OK/W+
1991			2/27/92	6/30/92	OK/OK
1992			3/2/93 m	6/16/93	WW/OK
1993			3/11/94 tu	5/26/94	W+/OK
1994			3/15/95 w	6/22/95	W+/OK
CAT TOT	WW		OK (4) WW (1) W+ (2)	OK (6) W+ (1)	OK (10) WW (2) W+ (3)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (3) WW (1) ND (1) W+ (1) NI (9)	6	D	0	0	46	23	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988					NI/NI
1989					NI/NI
1990			3/1/91		OK/NI
1991			4/2/92 su		W+/NI
1992			3/1/93		OK/NI
1993			2/7/94		OK/NI
1994			3/3/95 w		WW/NI
CAT TOTL	ND		OK (3) WW (1) W+ (1) NI (2)	NI (7)	OK (3) WW (1) ND (1) W+ (1) NI (9)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (11) WW (2) W+ (2)	3	Bb	1	4	10	26	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988			2/24/89	7/5/89 f	OK/WW
1989			2/22/90	6/13/90	OK/OK
1990			2/27/91	7/12/91 m	OK/W+
1991	1/7/91 sa		1/23/92	7/2/92 w	OK/WW
1992			2/5/93	6/21/93	OK/OK
1993			1/18/94	7/1/94	OK/OK
1994			1/20/95	5/23/95	OK/OK
CAT TOTL	W+		OK (7)	OK (4) WW (2) W+ (1)	OK (11) WW (2) W+ (2)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (7) WW (7) W+ (1)	3	E	O	2	26	9	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988	2/25/88 sa	3/6/89 w		7/5/89 sa	WW/WW
1989			3/1/90	6/25/90	OK/OK
1990			3/5/91 f	6/24/91	WW/OK
1991			3/3/92 su	7/2/92 w	WW/WW
1992			3/2/93 m	7/1/93	WW/OK
1993			3/1/94	6/28/94	OK/OK
1994			3/3/95 w	6/30/95	WW/OK
CAT TOTL	W+	WW (1)	OK (2) WW (4)	OK (5) WW (2)	OK (7) WW (7) W+ (1)

57

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) WW (2) NI (9) X	5	F	0	0	45	43	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988					NI/NI
1989			3/1/90		OK/NI
1990			3/1/91		OK/NI
1991			3/3/92 su		WW/NI
1992			3/1/93		OK/NI
1993			3/3/94 tu		WW/NI
1994			2/17/95		OK/NI
CAT TOTL	NI		OK (4) WW (2) NI (1)	NI (7)	OK (4) WW (2) NI (9) X

58

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
NF	8	Be	0	0	53	53	NF

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313
1988				
1989				
1990				
1991				
1992				
1993				
1994				

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (12) W+ (1) 311 NI (1) X NRR (1)	6	F	0	6	8	12	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988	1/25/88 sa	2/6/89		6/19/89	OK/OK
1989		2/9/90		5/29/90	OK/OK
1990		2/7/91	4/25/91 f	6/7/91	OK/OK
1991		2/7/92		6/30/92	OK/OK
1992		1/19/93	9/21/93 m	5/14/93	OK/OK
1993				6/28/94	NI/OK
1994		2/16/95		NRR	OK/NRR
CAT TOTL	W+	OK (6) NI (1)		OK (6) NRR (1)	OK (12) W+ (1) 311 NI (1) X NRR (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (4) W+ (3) NI (8) X	6	Ee	0	0	43	39	--

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					NI
1988				8/29/91 sa	NI/W+
1989				8/29/91 su	NI/W+
1990				8/29/91 m	NI/W+
1991				6/22/92	NI/OK
1992				6/21/93	NI/OK
1993				6/28/94	NI/OK
1994				6/15/95	NI/OK
CAT TOTL	NI		NI (7)	OK (4) W+ (3)	OK (4) W+ (3) NI (8) X

61

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (9) WW (5) W+ (1)	3	Aa	0	3	16	15	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987					W+
1988			2/27/89	6/30/89	OK/OK
1989			3/1/90	6/12/90	OK/OK
1990			3/5/91 f	6/24/91	WW/OK
1991	2/25/91 sa		3/3/92 su	7/2/92 w	WW/WW
1992			3/2/93 m	7/1/93	WW/OK
1993			3/1/94	6/28/92?	OK/OK
1994			3/3/95 w	6/30/95	WW/OK
CAT TOTL	W+		OK (3) WW (4)	OK (6) WW (1)	OK (9) WW (5) W+ (1)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (10) WW (3) W+ (2)	3	D	1	4	12	27	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	10/16/87				OK
1988			2/24/89	6/27/89	OK/OK
1989			3/1/90	7/9/90 su	OK/WW
1990			2/20/91	11/19/91 m	OK/W+
1991			2/6/92	8/31/92 w	OK/W+
1992			3/2/93 m	7/7/93 th	WW/WW
1993			2/28/94	6/28/94	OK/OK
1994			2/23/95	6/30/95	OK/OK
CAT TOTL	OK		OK (6) WW (1)	OK (3) WW (2) W+ (2)	OK (10) WW (3) W+ (2)

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COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) WW (6) W+ (3)	3	D	0	1	32	32	=

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	11/13/87 sa				W+
1988			3/1/89	7/5/89 sa	OK/WW
1989			3/1/90	6/28/90	OK/OK
1990			3/5/91 f	12/2/91 m	WW/W+
1991			2/18/92	7/31/92 w	OK/W+
1992			3/2/93 m	7/2/93 th	WW/WW
1993			3/3/94 tu	7/1/94	WW/OK
1994			3/3/95 w	6/30/95	WW/OK
CAT TOTL	W+		OK (3) WW (4)	OK (3) WW (2) W+ (2)	OK (6) WW (6) W+ (3)

64

COMPLIANCE SUMMARY	COMP CAT	PART CAT	SECTION COMP	YEARS COMP	OK RANK	BOTD RANK	FINAL CAT
OK (6) ND (1) NI (8)	4	Ee	0	0	30	7	+

YEAR	SECTION 311	SECTION 312 TIER I	SECTION 312 TIER II	SECTION 313	CATEGORY
1987	ND				ND
1988					NI/NI
1989			2/28/90		OK/NI
1990			3/1/91		OK/NI
1991			1/21/92		OK/NI
1992			1/13/93		OK/NI
1993			12/28/93		OK/NI
1994			2/28/95		OK/NI
CAT TOTL	ND		OK (6) NI (1)	NI (7)	OK (6) ND (1) NI (8)

APPENDIX J

APPENDIX J

EPCRA Section 311 Data Analysis

Table 15. Noncompliance Dates/Categories by Facility

FACILITY #	DATE [WW]	CATEGORY
1		NI
2	10/23/89	W+
3	12/14/88	W+
4	11/8/91	W+
5	2/19/88	W+
6		ND
7		NRR
8		ND
9		NI
10		OK
11		OK
12		OK
13		OK
14	10/19/87	WW
15		OK
16		ND
17		NI
18		NF
19		OK
20		OK
21	11/8/91	W+
22	10/22/87	WW
23		OK

Table 15 (Cont'd)

24	6/9/88	W+
25		NI/NRR?
26	11/11/88	W+
27		NRR
28		NI
29		NRR
30		NI
31		ND
32		NF
33		OK
34		ND
35		NRR
36		NI
37		NI
38	3/1/90	W+
39		OK
40	1/17/90	W+
41		OK
42		OK
43		NF
44		OK
45		NF
46		NI
47		NI

Table 15 (Cont'd)

48	8/5/92	W+
49		OK
50	10/18/87	WW
51		OK
52		ND
53	10/21/87	WW
54		ND
55	1/7/91	W+
56	2/25/88	W+
57		NI
58		NF
59	1/25/88	W+
60		NI
61	2/25/91	W+
62		OK
63	11/13/87	W+
64		ND

=====

OK =	16
WW =	4
W+ =	15
ND =	7
NI =	12
NF =	6
NRR =	3
I =	1

TOTAL = 64

Table 16. EPCRA Section 311 Compliance by Years
[NOT RECEIVED BY DUE DATE]

FAC #	SA 1987	1988	1989	1990	1991	1992
1	NI					
2			10/23/89			
3		12/14/88				
4					11/8/91	
5		2/19/88				
6	ND					
7	NRR					
8	ND					
9	NI					
10	10/15/87					
11	10/16/87					
12	10/14/87					
13	9/23/87					
14	10/19/87					
15	10/16/87					
16	ND					
17	NI					
18	NF					
19	10/15/87					
20	10/16/87					
21					11/8/91	
22	10/22/87					
23	10/15/87					
24		6/9/88				
25	NI					
26		11/11/88				
27	NRR					

Table 16 (Cont'd)

FAC #	SA 1987	1988	1989	1990	1991	1992
28	NI					
29	NRR					
30	NI					
31	ND					
32	NF					
33	10/15/87					
34	ND					
35	NRR					
36	NI					
37	NI					
38				3/1/90		
39	10/16/87					
40				1/17/90		
41	10/14/87					
42	10/14/87					
43	NF					
44	10/16/87					
45	NF					
46	NI					
47	NI					
48						8/5/92
49	10/14/87					
50	10/18/87					
51	10/15/87					
52	ND					
53	10/21/87					

Table 16 (Cont'd)

FAC #	SA 1987	1988	1989	1990	1991	1992
54	ND					
55					1/7/91	
56		2/25/88				
57	NI					
58	NF					
59		1/25/88				
60	NI					
61					2/25/91	
62	10/16/87					
63	11/13/87					
64	ND					

APPENDIX K

APPENDIX K

EPCRA Section 312 Data Analysis

Table 17. Noncompliance Dates/Categories by Facility

FACILITY #	TIER I	TIER II	CATEGORY
1		NI-89 NI-90 NI-91 9/29/92 4/5/93	NI (3) -W+ (2)
2	5/3/90 3/4/91		C-W+ (1) WW (1)
3		3/8/91 3/15/95	C-W+ (2)
4		3/12/91 3/2/92	C-W+ (1) WW (1)
5		3/4/91 3/2/92 3/2/93	C-WW (3)
6			OK
7			NRR
8		3/3/92 3/3/94	C-WW (3)
9		NI-89 3/2/92 3/5/93	NI (1) -W+ (1) WW (2)
10		3/3/89 3/6/92 NI-93 NI-94 NI-95	NI (3) -WW (2)
11		3/2/92 3/3/95	C-WW (2)
12		3/4/91 3/2/92	C-WW (2)
13		NI-89	NI (1)

Table 17 (Cont'd)

14	6/12/90 3/2/92 3/5/93	C-W+ (1) WW (2)
15	3/13/90 3/5/91	C-W+ (1) WW (1)
16		OK
17	NI-89 NI-90 3/28/91 3/3/92	NI (2) -W+ (1) WW (1)
18		NF
19	3/3/95	C-WW (1)
20	3/2/94	C-WW (1)
21	3/2/89 3/4/91 3/2/92	C-WW (3)
22	3/4/91	C-WW (1)
23	3/5/91 3/2/92 3/2/93 3/3/94 3/6/95	C-WW (5)
24	3/6/89	C-WW (1)
25	NI 89 NI 91 NI 92 NI 93 NI 94 NI 95	NI (6)
26	3/6/90 NI-91 5/19/95	NI (1) -W+ (1) WW (1)
27		NRR

Table 17 (Cont'd)

28		NI-89 3/3/93 3/3/95	NI (1) -WW (2)
29			NRR
30	3/3/92	3/2/94 3/2/95	C-WW (3)
31			ND
32			NF
33		3/2/89 3/4/91 3/2/92 3/2/94	C-WW (4)
34		3/2/92 3/3/95	C-WW (2)
35			NRR
36	NI-89	[5/1/91]	NI (1)
37		3/3/89 3/5/91 3/9/93 3/7/95	C-W+ (1) WW (3)
38		3/2/92 5/31/94	C-W+ (1) WW (1)
39		3/6/91	C-WW (1)
40			NI
41		3/5/91	C-WW (1)
42		3/25/94 3/3/95	C-W+ (1) WW (1)
43			NF
44		4/1/89 NI-90 NI-92 3/3/94	NI (2) -W+ (1) WW (1)
45			NF

Table 17 (Cont'd)

46		NI-89 NI-90 NI-91 NI-92 NI-93 NI-94 3/13/95	NI (6) -W+ (1)
47		NI-89 3/5/90	NI (1) -WW (1)
48		3/2/92	C-WW (1)
49		3/3/89 4/11/91 4/6/92 3/7/94	C-W+ (2) WW (1)
50		3/2/89 3/2/92	C-W+ (1) WW (2)
51			OK
52			OK
53		3/2/93 3/11/94 3/15/95	C-W+ (2) WW (1)
54		NI-89 NI-90 4/2/92 3/3/95	NI (1) -W+ (1) WW (2)
55			OK
56	3/6/89	3/5/91 3/3/92 3/2/93 3/3/95	C-WW (5)
57		NI-89 3/3/92 3/3/94	NI (1) -WW (2)
58			NF
59		[4/25/91] [9/21/93] NI-94	NI - (1)

Table 17 (Cont'd)

60			NI
61		3/5/91 3/3/92 3/2/93 3/3/95	C-WW (4)
62		3/2/93	C-WW (1)
63		3/5/91 3/2/93 3/3/94 3/3/95	C-WW (4)
64	NI-89		NI (1)

=====

OK =		6
C-WW=	20	
C-W+ =		11
NI-WW =		4
NI-W+ =		7
NI =	2	
NF =		6
NRR =		3
TOTAL =		64

Table 18. Dates Received by DEQ/Categories per Facility by Year

#	W 1988	TH 1989	F 1990	SU 1991	M 1992	TU 1993	W 1994
1	NI	NI	NI	9/29/92	4/5/93	2/28/94	2/16/95
2	2/28/89	5/3/90	3/4/91	2/27/92	2/12/93	2/2/94	2/23/95
3	2/28/89	3/1/90	3/8/91	2/18/92	1/6/93	2/4/94	3/15/95
4	2/16/89	2/8/90	3/12/91	3/2/92	3/1/93	2/23/94	2/23/95
5	2/27/89	1/12/90	3/4/91	3/2/92	3/2/93	2/16/94	2/22/95
6	2/28/89	3/1/90	2/27/91	2/27/92	2/26/93	3/1/94	2/28/95
7	NRR	NRR	NRR	NRR	NRR	NRR	NRR
8	2/27/89	3/1/90	3/1/91	3/3/92	3/1/93	3/3/94	2/17/95
9	NI	6/12/90	3/1/91	3/2/92	3/5/93	2/28/94	2/28/95
10	3/3/89	3/1/90	3/1/91	3/6/92	NI	NI	NI
11	2/28/89	3/1/90	2/28/91	3/2/92	2/22/93	2/28/94	3/3/95
12	2/28/89	3/1/90	3/4/91	3/2/92	2/25/93	3/1/94	2/27/95
13	NI	2/28/90	2/6/91	1/24/92	1/19/93	2/24/94	2/28/95
14	2/15/89	6/12/90	3/1/91	3/2/92	3/5/93	2/28/94	2/28/95
15	3/1/89	3/13/90	3/5/91	2/27/92	3/1/93	2/24/94	2/27/95
16	2/22/89	3/1/90	2/27/91	2/28/92	2/25/93	2/16/94	2/28/95
17	NI	NI	3/28/91	3/3/92	1/28/93	1/5/94	2/22/95
18	NF	NF	NF	NF	NF	NF	NF

Table 18 (Cont'd)

#	W 1988	TH 1989	F 1990	SU 1991	M 1992	TU 1993	W 1994
19	3/1/89	2/28/90	2/14/91	2/25/92	3/1/93	2/16/94	3/3/95
20	2/22/89	2/23/90	2/26/91	2/26/92	2/25/93	3/2/94	2/14/95
21	3/2/89	3/1/90	3/4/91	3/2/92	2/12/93	2/28/94	2/24/95
22	2/4/89	1/5/90	3/4/91	2/18/92	1/11/93	2/24/94	2/23/95
23	2/24/89	3/1/90	3/5/91	3/2/92	3/2/93	3/3/94	3/6/95
24	3/6/89	3/1/90	2/15/91	1/31/92	2/3/93	1/31/94	2/14/95
25	NI	2/27/90	NI	NI	NI	NI	NI
26	2/24/89	3/6/90	NI	2/10/92	2/14/93	2/14/94	5/19/95
27	NRR	NRR	NRR	NRR	NRR	NRR	NRR
28	NI	3/1/90	2/26/91	2/27/92	3/3/93	2/28/94	3/3/95
29	NRR	NRR	NRR	NRR	NRR	NRR	NRR
30	2/27/89	2/22/90	1/25/91	3/3/92	3/1/93	3/2/94	3/2/95
31	3/1/89	3/1/90	3/1/91	2/14/92	2/18/93	2/10/94	2/16/95
32	NF	NF	NF	NF	NF	NF	NF
33	3/2/89	2/27/90	3/4/91	3/2/92	3/1/93	3/2/94	2/28/95
34	3/1/89	3/1/90	3/1/91	3/2/92	3/1/93	2/10/94	3/3/95
35	NRR	NRR	NRR	NRR	NRR	NRR	NRR
36	NI	2/14/90	2/14/91 {5/1/91}	2/18/92	2/26/93	2/28/94	2/27/95
37	3/3/89	2/27/90	3/5/91	2/25/92	3/9/93	3/1/94	3/7/95
38	3/1/89	3/1/90	3/1/91	3/2/92	3/1/93	5/31/94	2/22/95

Table 18 (Cont'd)

#	W 1988	TH 1989	F 1990	SU 1991	M 1992	TU 1993	W 1994
39	2/27/89	2/28/90	3/6/91	2/19/92	2/10/93	2/23/94	2/7/95
40	NI	NI	NI	NI	NI	NI	NI
41	2/28/89	2/26/90	3/5/91	2/25/92	3/1/93	2/28/94	1/11/95
42	2/28/89	3/1/90	3/1/91	2/26/92	3/1/93	3/25/94	3/3/95
43	NF	NF	NF	NF	NF	NF	NF
44	4/1/89	NI	3/1/91	NI	3/1/93 3/1/93	3/3/94 3/3/94	3/1/95 3/1/95
45	NF	NF	NF	NF	NF	NF	NF
46	NI	NI	NI	NI	NI	NI	3/13/95
47	NI	3/5/90	2/26/91	2/21/92	2/24/93	2/24/94	2/24/95
48	2/21/89	2/27/90	2/27/91	3/2/92	3/1/93	2/28/94	2/27/95
49	3/3/89	2/21/90	4/11/91	4/6/92	2/12/93	3/7/94	3/1/95
50	3/2/89	6/28/90	1/28/91	3/2/92	2/9/93	2/7/94	2/28/95
51	2/28/89	3/1/90	2/28/91	2/26/92	3/1/93	3/1/94	2/22/95
52	2/24/89	2/28/90	2/28/91	2/24/92	3/1/93	2/23/94	3/1/95
53	2/24/89	3/1/90	3/1/91	2/27/92	3/2/93	3/11/94	3/15/95
54	NI	NI	3/1/91	4/2/92	3/1/93	2/7/94	3/3/95
55	2/24/89	2/22/90	2/27/91	1/23/92	2/5/93	1/18/94	1/20/95
56	3/6/89	3/1/90	3/5/91	3/3/92	3/2/93	3/1/94	3/3/95
57	NI	3/1/90	3/1/91	3/3/92	3/1/93	3/3/94	2/17/95
58	NF	NF	NF	NF	NF	NF	NF
59	2/6/89	2/9/90	2/7/91 [4/25/91]	2/7/92	1/19/93 [9/21/93]	NI	2/16/95

Table 18 (Cont'd)

#	W 1988	TH 1989	F 1990	SU 1991	M 1992	TU 1993	W 1994
60	NI	NI	NI	NI	NI	NI	NI
61	2/27/89	3/1/90	3/5/91	3/3/92	3/2/93	3/1/94	3/3/95
62	2/24/89	3/1/90	2/20/91	2/6/92	3/2/93	2/28/94	2/23/95
63	3/1/89	3/1/90	3/5/91	2/18/92	3/2/93	3/3/94	3/3/95
64	NI	2/28/90	3/1/91	1/21/92	1/13/93	12/28/93	2/28/95

APPENDIX L

APPENDIX L**EPCRA Section 313 Data Analysis****Table 19. Noncompliance Dates/Categories by Facility**

FACILITY #	DATES	CATEGORY
1		NI
2	9/24/92 7/6/94 7/6/95	C-W+ (1) WW (2)
3		NI
4		NI
5	7/6/89 9/4/92	C-W+ (1) WW (1)
6	7/19/89 NI-90 NI-93 10/25/94 1/8/96	NI (2) -W+ (3)
7		NRR
8		NI
9	NI-89 NI-90 11/27/91 7/2/92 7/7/93 7/3/95	NI (2) -W+ (1) WW (3)
10	7/5/89 NI-90 8/7/92 10/24/94	NI (1) -W+ (2) WW (1)
11	3/26/90	C-W+ (1)

Table 19 (Cont'd)

12	7/5/89 7/10/90 9/2/92 8/9/93 NI-94	NI (1) -W+ (3) WW (1)
13	7/7/92	C-WW (1)
14	7/9/90 11/27/91 7/2/92 7/7/93 7/3/95	C-W+ (1) WW (4)
15	7/10/90 9/1/92	C-W+ (1) WW (1)
16		NI
17		NI
18		NF
19	7/5/89 6/20/92 9/1/92	C-W+ (2) WW (1)
20		OK
21		NI
22		NI
23	7/2/92 7/3/95	C-WW (2)
24	NI-90 NI-91	NI - (2)
25		NI
26		NI
27		NRR
28	7/5/89	C-WW (1)
29		NRR

Table 19 (Cont'd)

30		NI
31	7/7/92	C-WW(1)
32		NF
33	7/5/89 7/3/90 7/15/92 7/3/95	C-W+(1) WW(3)
34	NI-89 NI-90 10/10/91 7/6/92 7/3/95	NI(2) -W+(1) WW(2)
35		NRR
36	NI-89 NI-90 8/28/92	NI(2) -W+(1)
37		NI
38	7/5/89 7/2/93 NI-94	NI(1) -WW(2)
39		OK
40		NI
41	7/2/92	C-WW(1)
42	7/6/92 7/2/93 7/3/95	C-WW(3)
43		NF
44		NI
45		NF
46		NI

Table 19 (Cont'd)

47	NI-89 7/10/90 7/2/92	NI (1) -WW (1)
48	NI-90 7/8/93 8/30/95	NI (1) -WW (2) W+ (1)
49		NI
50	7/24/89 9/4/92 7/3/95	C-W+ (2) WW (1)
51	8/24/92	C-W+ (1)
52	8/31/92 8/8/94	C-W+ (2)
53	12/3/91	C-W+ (1)
54		NI
55	7/5/89 7/12/92 7/2/92	C-W+ (1) WW (2)
56	7/5/89 7/2/92	C-WW (2)
57		NI
58		NF
59		OK
60	8/29/91 8/29/91 8/29/91	C-W+ (3)
61	7/2/92	C-WW (1)
62	7/9/90 11/19/91 8/31/92 7/7/93	C-W+ (2) WW (2)

Table 19 (Cont'd)

63	7/5/89	C-W+ (2)
	12/2/91	WW (2)
	7/31/92	
	7/2/93	

64		NI
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=====
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OK =	3
C-WW =	8
C-W+ =	15
NI =	19
NI () =	1
NI-WW =	2
NI-W+ =	7
NF =	6
<u>NRR =</u>	<u>3</u>
TOTAL =	64

Table 20. Dates Received by DEQ/Categories per Facility by Year

#	SA 1988	SU 1989	M 1990	W 1991	TH 1992	F 1993	SA 1994
1	NI	NI	NI	NI	NI	NI	NI
2	1/5/89	6/28/90	6/19/91	9/24/92	6/23/93	7/6/94	7/6/95
3	NI	NI	NI	NI	NI	NI	NI
4	NI	NI	NI	NI	NI	NI	NI
5	7/6/89	6/28/90	7/1/91	9/4/92	6/29/93	6/28/94	6/28/95
6	7/19/89	NI	7/1/91	7/1/92	NI	10/25/94	1/8/96
7	NRR	NRR	NRR	NRR	NRR	NRR	NRR
8	NI	NI	NI	NI	NI	NI	NI
9	NI	NI	11/27/91	7/2/92	7/7/93	7/1/94	7/3/95
10	7/5/89	NI	7/1/91	8/7/92	7/1/93	10/24/94	6/30/95
11	3/26/90	6/28/90	6/26/91	6/25/92	6/23/93	6/22/94	6/30/95
12	7/5/89	7/10/90	6/17/91	9/2/92	8/9/93	NI	6/21/95
13	6/12/89	6/20/90	6/24/91	7/7/92	5/24/93	6/23/94	6/26/95
14	7/1/89	7/9/90	11/27/91	7/2/92	7/7/93	7/1/94	7/3/95
15	6/30/89	7/10/90	7/1/91	9/1/92	7/1/93	6/28/94	6/28/95
16	NI	NI	NI	NI	NI	NI	NI
17	NI	NI	NI	NI	NI	NI	NI
18	NF	NF	NF	NF	NF	NF	NF
19	7/5/89	6/28/90	6/20/92	9/1/92	6/30/93	7/1/94	6/30/95
20	6/27/89	6/18/90	6/19/91	6/30/92	6/21/93	7/1/94	6/29/95
21	NI	NI	NI	NI	NI	NI	NI
22	NI	NI	NI	NI	NI	NI	NI

Table 20 (Cont'd)

#	SA 1988	SU 1989	M 1990	W 1991	TH 1992	F 1993	SA 1994
2 3	6/30/89	6/29/90	7/1/91	7/2/92	7/1/91	7/1/94	7/3/95
2 4	6/22/89	NI	NI	6/29/92	6/22/93	6/8/94	6/15/95
2 5	NI	NI	NI	NI	NI	NI	NI
2 6	NI	NI	NI	NI	NI	NI	NI
2 7	NRR	NRR	NRR	NRR	NRR	NRR	NRR
2 8	7/5/89	6/25/90	6/5/91	6/29/92	6/21/93	7/1/94	6/22/95
2 9	NRR	NRR	NRR	NRR	NRR	NRR	NRR
3 0	NI	NI	NI	NI	NI	NI	NI
3 1	6/30/89	6/29/90	6/24/91	7/7/92	5/7/93	6/9/94	6/2/95
3 2	NF	NF	NF	NF	NF	NF	NF
3 3	7/5/89	7/3/90	7/1/91	7/15/92	7/1/93	7/1/94	7/3/95
3 4	NI	NI	10/10/91	7/6/92	6/22/93	6/22/94	7/3/95
3 5	NRR	NRR	NRR	NRR	NRR	NRR	NRR
3 6	NI	NI	6/21/91	8/28/92	6/29/93	7/1/94	6/30/94
3 7	NI	NI	NI	NI	NI	NI	NI
3 8	7/5/89	6/28/90	7/1/91	6/26/92	7/2/93	NI	6/28/95
3 9	6/14/89	5/15/90	7/1/91	6/30/92	7/1/93	6/22/94	6/27/95
4 0	NI	NI	NI	NI	NI	NI	NI
4 1	6/29/89	6/18/90	7/1/91	7/2/92	7/1/93	6/27/94	6/28/95

Table 20 (Cont'd)

#	SA 1988	SU 1989	M 1990	W 1991	TH 1992	F 1993	SA 1994
4 2	6/13/89	6/12/90	6/26/91	7/6/92	7/2/93	7/1/94	7/3/95
4 3	NF	NF	NF	NF	NF	NF	NF
4 4	NI	NI	NI	NI	NI	NI	NI
4 5	NF	NF	NF	NF	NF	NF	NF
4 6	NI	NI	NI	NI	NI	NI	NI
4 7	NI	7/10/90	6/20/91	7/2/92	6/30/93	6/20/94	6/19/95
4 8	6/30/89	NI	6/26/91	6/25/92	7/8/93	6/28/94	8/30/95
4 9	NI	NI	NI	NI	NI	NI	NI
5 0	7/24/89	6/12/90	6/3/91	9/4/92	6/30/93	6/23/94	7/3/95
5 1	7/1/89	6/19/90	6/27/91	8/24/92	6/30/93	6/21/94	6/26/95
5 2	6/27/89	6/12/90	6/26/91	8/31/92	7/1/93	8/8/94	6/28/95
5 3	5/18/89	6/28/90	12/3/91	6/30/92	6/16/93	5/26/94	6/22/95
5 4	NI	NI	NI	NI	NI	NI	NI
5 5	7/5/89	6/13/90	7/12/91	7/2/92	6/21/93	7/1/94	5/23/95
5 6	7/5/89	6/25/90	6/24/91	7/2/92	7/1/93	6/28/94	6/30/95
5 7	NI	NI	NI	NI	NI	NI	NI
5 8	NF	NF	NF	NF	NF	NF	NF
5 9	6/19/89	5/29/90	6/7/91	6/30/92	5/14/93	6/28/94	NRR
6 0	8/29/91	8/29/91	8/29/91	6/22/92	6/21/93	6/28/94	6/15/95

Table 20 (Cont'd)

#	SA 1988	SU 1989	M 1990	W 1991	TH 1992	F 1993	SA 1994
6 1	6/30/89	6/12/90	6/24/91	7/2/92	7/1/93	6/28/92?	6/30/95
6 2	6/27/89	7/9/90	11/19/91	8/31/92	7/7/93	6/28/94	6/30/95
6 3	7/5/89	6/28/90	12/2/91	7/31/92	7/2/93	7/1/94	6/30/95
6 4	NI	NI	NI	NI	NI	NI	NI

APPENDIX M

APPENDIX M - COMPLIANCE RANKING ANALYSES

Table 21. OK Compliance Ranking

#'S Prioritized in the Following Order

OK = Recorded by DEQ as received on or before the statutory deadline.

WW = Recorded by DEQ as received within 10 calendar days of the statutory deadline.

ND = 311 allowed

NI = 311 not allowed; 312 and 313 allowed,
but 312 only if 313 not submitted in the same year.

W+ = 311 allowed if submitted before first 312 submission;
312 and 313 not allowed

NF = NOT FOUND

NRR = NOT REQUIRED TO REPORT

RANK	COMPLIANCE CHARACTERISTICS	311 W+/NI	FACILITY CODE(S)
1	14 OK 1 WW		20 39
2	14 OK 1 W+		51
3	13 OK 1 WW 1 ND		31
4	13 OK 2 WW		41
5	13 OK 1 WW 1 NI	312-1X	13
6	12 OK 2 WW 1 W+		11
7	12 OK 1 ND 2 W+		52
8	12 OK 1 W+ 1 NI 1 NRR	311 W+ 312-1X	59

Table 21 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	311 W+/ NI	FACILITY CODE (S)
9	11 OK 1 WW 1 W+ 2 NI	311 W+ 313-2	24
10	11 OK 2 WW 2 W+		15 19 55
11	10 OK 4 WW 1 W+		42
12	10 OK 3 WW 2 W+		62
13	10 OK 2 WW 1 NI 2 W+	311-W+X 313-1	48
14	10 OK 2 WW 3 W+		53
15	10 OK 3 WW 2 NI	311 312-1X	28
16	9 OK 5 WW 1 W+	311 W+X	61
17	10 OK 1 W+ 4 NI	311 312-1 313-2	36
18	9 OK 4 WW 2 W+	311 W+	5
19	9 OK 3 WW 2 W+ 1 NI	311 W+X 313-1	38

Table 21 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	311 W+/ NI	FACILITY CODE(S)
20	9 OK 1 ND 3 W+ 2 NI	313-2	6
21	9 OK 3 WW 3 W+	311 W+X	2
22	9 OK 3 WW 3 NI	311 312-1 313-1	47
23	8 OK 7 WW		23
24	8 OK 3 WW 3 W+ 1 NI	313-1	12
25	8 OK 4 WW 3 W+		50
26	7 OK 7 WW 1 W+	311 W+	56
27	7 OK 1 ND 7 NI	313-7	16
28	7 OK 7 WW 1 W+		33
29	7 OK 4 WW 1 ND 1 W+ 2 NI	313-2	34
30	6 OK 1 ND 8 NI	312-1 313-7	64

Table 21 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	311 W+/ NI	FACILITY CODE (S)
31	6 OK 2 WW 7 NI	313-7	22
32	6 OK 6 WW 3 W+		63
33	6 OK 7 WW 2 W+		14
34	6 OK 3 WW 2 W+ 4 NI	312-3X 313-1	10
35	5 OK 2 WW 1 ND 7 NI	313-7	8
36	5 OK 1 WW 2 W+ 7 NI	311 W+	3
37	5 OK 1 WW 2 W+ 7 NI	311 W+X 313-7	4
38	4 OK 1 WW 2 W+ 8 NI	311 W+ 312-1 313-7	26
39	4 OK 3 WW 1 W+ 7 NI	311 W+X 313-7	21

Table 21 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	311 W+/ NI	FACILITY CODE (S)
40	4 OK 1 WW 1 W+ 9 NI	312-2 313-7	44
41	4 OK 2 WW 2 W+ 7 NI	313-7	49
42	4 OK 5 WW 2 W+ 4 NI	311 312-1 313-2	9
43	4 OK 3 W+ 8 NI	311 312	60
44	4 OK 3 WW 8 NI	311 313-7	30
45	4 OK 2 WW 9 NI	311 312-1 313-7	57
46	3 OK 1 WW 1 ND 1 W+ 9 NI	312-2 313-7	54
47	3 OK 4 WW 8 NI	311 313-7	37
48	1 W+ 14 NI	311 W+X 312-7 313-7	40
49	1 OK 14 NI	311 312-6 313-7	25

Table 21 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	311 W+/ NI	FACILITY CODE(S)
50	3 OK 1 WW 1 W+ 10 NI	311 312-2 313-7	17
51	2 OK 2 W+ 11 NI	311 312-3 313-7	1
52	1 W+ 14 NI	311 312-6 313-7	46
53	NF		18 27 32 43 45 58
54	NRR		7 29 35

Table 22. BOTD Compliance Ranking

#'S Credited in the Following Order

OK = Allowed**WW** = Allowed**ND** = 311 Allowed**NI** = 311 Not Allowed; 312 and 313 Allowed, but 312 only if 313 not submitted in the same year.**W+** = 311 Allowed if Submitted before first 312 submission; 312 and 313 Not Allowed**NF** = Not Included**NRR** = Not Included

RANK	COMPLIANCE CHARACTERISTICS	BOTDS ALLOWED	FACILITY CODE(S)
1	14 OK 1 WW	WW (1)	20 39
2	13 OK 1 ND 1 WW	WW (1) ND (1)	31
3	13 OK 2 WW	WW (2)	41
4	8 OK 7 WW	WW (7)	23
5	7 OK 1 ND 7 NI	ND (1) NI (7)	16
6	6 OK 2 WW 7 NI	WW (2) NI (7)	22
7	6 OK 1 ND 8 NI	ND (1) NI (8)	64
8	5 OK 2 WW 1 ND 7 NI	WW (2) ND (1) NI (7)	8
9	7 OK 7 WW 1 W+	WW (7) W+ (311)	56

Table 22 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	BOTDS ALLOWED	FACILITY CODE (S)
10	14 OK 1 W+		51
11	12 OK 2 WW 1 W+	WW (2)	11
12	12 OK 1 NI 1 NRR 1 W+	NI (1)X NRR (1) W+ (311)	59
13	11 OK 1 WW 2 NI 1 W+	WW (1) NI (2) W+ (311)	24
14	10 OK 4 WW 1 W+	WW (4)	42
15	9 OK 5 WW 1 W+	WW (5)	61
16	9 OK 4 WW 2 W+	WW (4) 311 W+	5
17	7 OK 4 WW 1 ND 2 NI 1 W+	WW (4) ND (1) NI (2)	34
18	7 OK 7 WW 1 W+	WW (7)	33
19	5 OK 1 WW 7 NI 2 W+	NI (7) W+ (311)	3

Table 22 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	BOTDS ALLOWED	FACILITY CODE (S)
20	4 OK 3 WW 7 NI 1 W+	WW (3) NI (7)	21
21	4 OK 1 WW 9 NI 1 W+	WW (1) NI (9)	44
22	4 OK 1 WW 8 NI 2 W+	WW (1) NI (8) W+ (311)	26
23	3 OK 1 WW 1 ND 9 NI 1 W+	WW (1) ND (1) NI (9)	54
24	14 NI 1 W+	NI (14)	40
25	12 OK 1 ND 2 W+	ND (1)	52
26	11 OK 2 WW 2 W+	WW (2)	15 19 55
27	10 OK 3 WW 2 W+	WW (2)	62
28	10 OK 2 WW 1 NI 2 W+	WW (1) NI (1)	48

Table 22 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	BOTDS ALLOWED	FACILITY CODE (S)
29	9 OK 3 WW 1 NI 2 W+	WW (3) NI (1)	38
30	6 OK 7 WW 1 W+	WW (7)	14
31	8 OK 3 WW 1 NI 3 W+	WW (4) NI (1)	12
32	6 OK 6 WW 3 W+	WW (6) W+ (311)	63
33	5 OK 1 WW 7 NI 2 W+	WW (1) NI (7)	4
34	4 OK 2 WW 7 NI 2 W+	WW (2) NI (7)	49
35	10 OK 2 WW 3 W+	WW (2)	53
36	9 OK 3 WW 3 W+	WW (3)	2
37	9 OK 1 ND 2 NI 3 W+	ND (1) NI (2)	6
38	8 OK 4 WW 3 W+	WW (4)	50

Table 22 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	BOTDS ALLOWED	FACILITY CODE (S)
39	4 OK 8 NI 3 W+		60
40	13 OK 1 WW 1 NI-X	WW (1) NI (1) X	13
41	10 OK 3 WW 2 NI	WW (3)	28
42	9 OK 3 WW 3 NI	WW (3) NI (2)	47
43	4 OK 2 WW 9 NI-X	WW (2) NI (8)	57
44	3 OK 4 WW 8 NI	WW (4) NI (7)	37
45	4 OK 3 WW 8 NI	WW (3) NI (7)	30
46	1 OK 14 NI	NI (13)	25
47	10 OK 4 NI 1 W+	NI (3)	36
48	3 OK 1 WW 10 NI-X 1 W+	WW (1) NI (9)	17
49	5 OK 5 WW 4 NI 1 W+	WW (5) NI (3)	9

Table 22 (Cont'd)

RANK	COMPLIANCE CHARACTERISTICS	BOTDS ALLOWED	FACILITY CODE (S)
50	2 OK 11 NI 2 W+	NI (10)	1
51	14 NI 1 W+	NI (13)	46
52	6 OK 3 WW 4 NI 2 W+	WW (3) NI (1)	10
53	NF		18 27 32 43 45 58
54	NRR		7 29 35

APPENDIX N

APPENDIX N

Table 23. Corporate Groupings/Categories/Rankings

CORP NMBR	FCTY NMBR	FACLT RECORD	COMP CAT	PART CAT	SEC COMP	YRS COMP	OK RANK	BOTD RANK	FINAL CAT
1	41	OK (13) WW (2)	2	Ee	1	6	4	3	+
2	4	OK (5) WW (1) W+ (2) NI (7)	6	F	0	0	37	33	=
	21	OK (4) WW (3) W+ (1) NI (7)	6	D	0	0	39	20	=
3	63	OK (6) WW (6) W+ (3) 311	3	D	0	1	32	32	=
4	56	OK (7) WW (7) W+ (1) 311	3	E	0	2	26	9	+
	39	OK (14) WW (1)	2	F	2	7	1	1	+
	42	OK (10) WW (4) W+ (1)	3	F	1	4	11	14	=
	61	OK (9) WW (5) W+ (1)	3	Aa	0	3	16	15	=
5	2	OK (4) WW (2) W+ (1)	3	E	0	2	21	36	=
6	52	OK (12) ND (1) W+ (2)	3	F	1	5	7	25	=
	15	OK (11) ND (1) W+ (3)	3	F	1	5	10	26	=

Table 23 (Cont'd)

CORP NMBR	FCTY NMBR	FACLT Y RECORD	COMP CAT	INT CAT	SEC COMP	YRS COMP	OK RANK	BOTD RANK	FINAL CAT
7	10	OK (6) WW (3) W+ (2) NI (4) 3X	6	Aa	1	2	34	52	--
8	38	OK (9) WW (3) W+ (2) NI (1)	6	F	0	3	19	29	=
	64	OK (6) ND (1) NI (8)	4	Ee	0	0	30	7	+
9	22	OK (6) WW (2) NI (7)	4	D	0	0	34	6	+
	44	OK (4) WW (1) W+ (1) NI (9)	6	D	1	1	40	21	=
10	25	OK (1) NI (14)	4	Ff	0	0	49	46	--
	14	OK (6) WW (6) W+ (3)	3	Aa	0	2	33	30	=
	53	OK (9) WW (2) W+ (3)	3	Bb	0	3	14	35	=
	7	OKNRR	7	F	0	0	54	54	NRR
	9	OK (5) WW (5) W+ (1) NI (4) X	6	Ee	0	1	42	49	--
	20	OK (14) WW (1)	2	A	2	7	1	1	+

Table 23 (Cont'd)

CORP NMBR	FCTY NMBR	FACLT Y RECORD	COMP CAT	INT CAT	SEC COMP	YRS COMP	OK RANK	BOTD RANK	FINAL CAT
11	19	OK (12) WW (2) W+ (1)	3	E	1	4	10	26	=
	62	OK (10) WW (2) W+ (3)	3	D	1	4	12	27	=
	17	OK (3) WW (1) W+ (1) NI (10) X	6	D	0	0	50	48	--
	50	OK (8) WW (4) W+ (3)	3	D	0	3	25	38	=
12	48	OK (10) WW (1) W+ (3) NI (1)	6	F	0	3	13	28	=
13	33	OK (7) WW (7) W+ (1)	3	Ff	1	2	28	18	=
14	58	NF	8	Ee	0	0	53	53	NF
	5	OK (9) WW (4) W+ (2) 311	3	D	0	3	18	16	=
	49	OK (4) WW (2) W+ (2) NI (7)	6	E	1	1	41	34	=
	11	OK (12) WW (2) W+ (1)	3	A	1	5	6	11	=
	23	OK (8) WW (7)	2	A	1	3	23	4	+
	54	OK (3) WW (1) ND (1) W+ (1) NI (9)	6	D	0	0	46	23	=

Table 23 (Cont'd)

CORP NMBR	FCTY NMBR	FACLT RECORD	COMP CAT	INT CAT	SEC COMP	YRS COMP	OK RANK	BOTD RANK	FINAL CAT
15	35	NRR	7	E	0	0	54	54	NRR
	27	NF	7	F	0	0	53	53	NF
16	55	OK (11) WW (2) W+ (2)	3	Bb	1	4	10	26	=
17	34	OK (7) WW (4) ND (1) W+ (1) NI (2)	6	F	0	2	29	17	=
18	47	OK (9) WW (2) W+ (1) NI (3)	6	Dd	0	4	22	42	--
	28	OK (10) WW (3) NI (2)	5	Ee	0	4	15	41	--
19	31	OK (13) WW (1) ND (1)	2	D	1	6	3	2	+
20	18	NF	8	F	0	0	53	53	NF
21	16	OK (7) ND (1) NI (7)	4	A	1	0	27	5	+
22	45	NF	8	F	0	0	53	53	NF
23	3	OK (5) W+ (3) 311 NI (7)	3	D	0	0	36	19	=
	32	NF	8	F	0	0	53	53	NF
	46	OKW+ (1) NI (14) X	3	D	0	0	52	51	--
24	13	OK (13) WW (1) NI (1) X	5	F	2	6	5	40	--
25	51	OK (14) W+ (1)	3	Ee	2	7	2	10	=

Table 23 (Cont'd)

CORP NMBR	FCTY NMBR	FACLT Y RECORD	COMP CAT	INT CAT	SEC COMP	YRS COMP	OK RANK	BOTD RANK	FINAL CAT
26	29	NRR	8	F	0	0	54	54	NRR
27	43	NF	8	F	0	0	53	53	NF
	12	OK (8) WW (3) W+ (3) NI (1)	6	F	1	2	24	31	=
28	24	OK (11) WW (1) W+ (1) NI (2)	6	Dd	0	4	9	13	+
29	40	OKW+ (1) NI (14)	6	Ff	0	0	48	24	--
30	30	OK (4) WW (3) NI (8)	5	E	0	0	44	45	--
	57	OK (4) WW (2) NI (9) X	5	F	0	0	45	43	--
	8	OK (5) WW (2) ND (1) NI (7)	5	F	0	0	35	8	+
31	6	OK (9) ND (1) W+ (3) NI (2)	6	F	1	2	20	37	=
32	1	OKWW (2) W+ (2) NI (11) X	6	F	0	0	51	51	--
33	26	OK (4) WW (1) W+ (2) 311 NI (8)	6	E	0	0	38	22	=
	37	OK (3) WW (3) W+ (1) NI (8) X	6	E	0	0	47	44	--

Table 23 (Cont'd)

34	59	OK(12) W+(1) 311 NI(1)X NRR(1)	6	F	0	6	8	12	--
35	36	OK(10) W+(1) NI(4)X	6	Ee	0	4	17	47	--
36	60	OK(4) W+(3) NI(8)	6	Ee	0	0	43	39	--

APPENDIX O

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FACILITY REPRESENTATIVES' RESPONSES TO QUESTION 5.

5. The record of your plant's compliance with EPCRA for 1987-1994 has been provided to you. Please explain this performance.

EPCRA COMPLIANCE OFFICIAL RESPONSES

10 -- MI does not require the filing of Section I, Tier I forms, Tier II are preferred; have submitted them, though state does not appear to have received them, will resubmit; delays occurred when info for 1990 and 1992 were submitted to EPA, but not to state; self-audit revealed discrepancy and data was submitted late to state; will be resubmitting information for the other years. No other comments, except we should review with state what records they have.

11 -- Our 1987 data was a request from a local agency. We made pretty consistent submissions.

14 -- With the exception of 1989, all were submitted before the time required by law. We feel that we've complied with the deadline for submitting. No credit is given for improved reporting. It was paper intensive/crude, and the accuracy is not as great as what you can do with statistical tools. It's almost exclusively computerized analysis now, increased complexity. We don't want to reinvent paper analysis; must do auditing and testing, getting much more accurate and timely in what we do. Section 312 - ____ caught its own management problem before any agency called it to their attention. The process is now tighter; anomalies in reporting would not occur again. 313 - As we're going through the Clean Air Act, they set maximum quantities of substances. The release into the atmosphere; more scientific rigor into analyzing data that comes out of the physical stack.

Reporting and data collection - [We have different] ways to store, retrieve, and analyze data in a variety of ways to meet regulatory requirements. There is an emergency planning cross over. Also, risk management, process safety under OSHA, same thing with different procedures for EPA/RMP. It's a lot of the same data in a different format. A bit frustrating, especially for small businesses with threshold quantities. On environmental issues, we work both with regulators and legislators to help them understand different means to achieve the same goal. We can accomplish the same purpose with different methods. At least DNR and DEQ will LISTEN to suggestions on how to accomplish. From a CMA member company perspective, we often

have the same vision, but differ on means/methods. We open our doors, must continue to develop/foster trusting relationships. A lot of historical [baggage] does become involved.

16 -- The amounts we use are well below what's required for reporting emissions. We're actually exempt from filing as far as Section 313 is concerned; possibly for even 312. We're an R&D facility, but we've chosen to report it anyway, since I've documented it internally.

20 -- We try to meet the requirements of law in that respect; it doesn't change much from year to year; possibly some volume changes. We try to comply. We noticed one error on this year's forms; it probably wasn't a major area, but the information is passed along to other groups, so it was important to us to correct it; completely refilled the form and resubmitted it.

23 -- The data were submitted were registered mail and all were submitted on schedule.

25, 14, 53, 20 -- It's done in our MI plants, some of their normal annual reporting.

61 -- The first thing would be we submit 311 reports quarterly to the local fire department, the LEPC, and the SERC. That could be the reason you're not getting info from DEQ; I know at least as far back as 1992, possibly 1991. We feel because we're such a large and dynamic site, we feel it's best to do it quarterly, as much for our own benefit. Many times it doesn't change, but it's a good opportunity for me to get out and check. Sometimes we've dropped below threshold. That goes beyond compliance with the law, since we're required only to report changes. 312 - We as a policy tend to submit the data, postmarked by the date due; we make sure it's postmarked and sent registered/ certified mail; we always submit Tier II. We have a number of layers of review. We train all plant staff annually before completing the forms. That provides information, includes plant staff reviews, provides back to EPCRA.

I think it's beneficial for a service group to have, required or not, to have a grasp, a mechanism of quick access, to high (sic) quantities of (potentially) toxic, hazardous substances, another regulation, pollution prevention, source reduction, look at quickly, too. We're also using EPCRA info to check out prospective changes in regulations under the following laws: Clean Air Act - Maximum achievable Control Technology Standards; Clean Water Act - categorical treatment standards; standards by industry Resource Conservation and Recovery Act - new

regulations. We look at air, wastewater, waste streams and see what it would take to achieve compliance with proposed regulations.

RESPONSIBLE CARE COORDINATOR RESPONSES

11 -- I hadn't seen that data, but it appears that things are pretty much in order.

16(A) -- We did make submission for 1995; a step beyond the requirement.

16(B) -- I feel comfortable about our performance. The first year may be somewhat questionable, but it was our first year of operation. We haven't picked 1994 and am satisfied with their compliance.

25, 14, 53, 20 -- It's done in our MI plants as some of their normal annual reporting.

55 -- I have no comment; I don't submit the information.

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