

The Challenges in Implementing Responsible Care

SEP 708 Inquiry

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Abstract

The Responsible Care system was developed in 1985 by the Canadian Chemical Producer's Association (CCPA) in response to poor public perceptions of the chemical industry's manufacturing and safety standards. What began as a response to disaster, threat of government legislation and communication needs has become a global, industry supported environmental, health and safety management system. The global chemical industry has been forthcoming in its critical evaluation of its environmental performance and has dedicated itself to improvement. This inquiry addresses the need for improvement, especially in the area of transparency and accountability. Although the industry is open to criticism, it still requires more improvement in the area of implementing recommendations and monitoring its progress.

This inquiry poses the question "What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?" Eight possible answers to this question are explored, which cover topic areas including reporting standards, industry-wide performance metrics, independent third party evaluation, stakeholder engagement, improved sanctioning mechanisms, business case development, communication improvement, minimization of greenwashing, improved supply chain management strategies, adoption of sustainable manufacturing philosophies and congruency between political and social activities.

The first part of this inquiry provides a background on Responsible Care and the issues and challenges associated with the initiative. In section two, the central question is posed and each possible answer to the question is discussed including:

1. Self-reports of chemical firms are, in some cases, not standardized, accurate, or properly evaluated by an independent third party.
2. Responsible Care compliance is not properly enforced and sanctions for non-compliance are not delivered.
3. Firms are unaware of the business case for Responsible Care and the principles of sustainable development and industrial ecology.
4. Responsible Care lacks proper incentives to motivate firms to comply with all the codes of conduct. This can lead to the use of the system for public relations purposes and greenwash.
5. Communication issues within firms, between firms, and with the public hinder information gathering and dissemination, thereby hindering transparency.
6. Chemical firms are not subject to the same set of standards if they are not part of an industry association.
7. Actions of industry associations and chemical firms are not always harmonized with the principles of Responsible Care.
8. Limitations of voluntary environmental programs and the possibility of a certain degree of legislation to compliment the voluntary initiatives are not given due consideration.

This discussion includes an analysis and recommendation which aims to identify the problems affecting Responsible Care, in terms of transparency and accountability. In the final section of this inquiry, the analysis and recommendations are summarized and elaborated on.

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PART I: Introduction and Central Question

Background and Current Issues

Motivations for Responsible Care

Over the years, the chemical industry has experienced its share of disasters including the world's worst industrial disaster in Bhopal India, where 8000 people were killed in a chemical spill. The events in India and in other facilities across the world alerted the public and the media to the dangers that chemical production could impose on a community. "From 1980 to 1990, favourable opinion about the industry fell from 30 to 14 percent, and unfavourable public perceptions of the industry grew from 40 to 58 percent" (King & Lenox, 2000). The Responsible Care system was developed in 1985 by the Canadian Chemical Producer's Association (CCPA) in response to these poor public perceptions of the chemical industry's manufacturing and safety standards. It was also intended to circumvent the need for stricter government action and harsher laws to ensure public safety.

Industry Progress under Responsible Care

After more than 20 years of implementing Responsible Care, only 25% of people living near chemical facilities believe that the industry has their health and safety as a top priority (Prakash, 2000). This exists today in spite of promising numbers released by the chemical industry in this decade. From 2002 to 2003, firms cut their emissions of EPA TRI listed chemicals by 15% and by 77% since the 1988 legislation was put into place. While firms have increased production by 32%, emissions continue to decrease. This can be attributed to sustainable processes which have increased efficiency and at the same time decreased overall emissions. In terms of health and safety, between 2004 and 2005 operational safety performance increased by 16% and in terms of climate change, between 1999 and 2004, greenhouse gas emissions were cut by 24% (Kamalick, 2007).

Responsible Care Defined

Responsible Care is an environmental management system which is comprised of component parts including a set of guiding principles which outline the responsibilities of the firm, codes of conduct which outline management practices, a citizen advisory panel, annual self-evaluation and executive leadership groups (American Chemistry Council, 2007). According to the Responsible Care global website, the initiative "is the chemical industry's global voluntary initiative under which companies, through their national associations, work together to continuously improve their health, safety and environmental performance, and to communicate with stakeholders about their products and processes" (International Council of Chemical Associations, 2007). The CCPA builds on this definition, by emphasizing key aspects of the initiative such as product stewardship and lifecycle considerations, public accountability, continuous improvement, exceeding standards, and providing

a good example for other corporations to follow (Canadian Chemical Producer's Association, 2005a). The Responsible Care initiative is a product of a developing regulatory trend in North America and Europe that relies less on the command and control strategy used in previous decades and focuses more on creating partnerships and industry self-regulation.

Regulation versus Voluntary Cooperation

Although regulations are necessary, they are not sufficiently able to encourage firms to perform beyond that which is mandated by the law (Willard, 2005). A developing trend is the minimalist intervention strategy that is characterized by public-private partnerships which augment the regulations. This strategy aims to encourage corporate cultural change, rather than to seek compliance of end of pipe solutions such as pollution reduction using smokestack scrubbers (Hoffman, Riley, Troast, & Bazerman, 2002)

According to Willard, regulations need to be augmented by voluntary environmental programs (VEP), government incentives and prevention strategies. VEPs should not be a replacement for regulations, nor should regulations preclude the use of VEPs. The threat of regulation combined with facilitated partnerships can encourage manufacturers to develop stringent voluntary programs. The Responsible Care initiative is an example of a program created in anticipation of regulations, under a multi-stakeholder partnership approach. Its success caused it to be adopted globally and encouraged manufacturers to reduce hazardous emissions by 78% from 1992 to 2002 (Willard, 2005, p. 73). However, the system is not without criticism. Chemical companies and suppliers who have not adopted the program may be keeping the industry's reputation low. Some believe that the government should require Responsible Care to be implemented industry wide. While others believe that the program does not specifically address the adoption of sustainable principles such as the utilization of safer chemicals and biomimicry to avoid injuries and decrease environmental impacts (ENDS, 2005).

Many industrial firms are motivated by regulatory threats which can be costly if enforced. A voluntary program allows a company to be one step ahead of the regulations and continue a positive profit stream. It also allows the firm to achieve goals in a more flexible manner than a command and control policy allows (Prakash, 2000). According to Hoffmann, a system of cooperative regulation is "an opportunity for creating value for all interested parties in a setting that recognizes both their competing and complimentary interests. The goal is to maximize environmental gain while minimizing economic costs (both in legal confrontation and operation reconfiguration)." (Hoffman et al., 2002, p. 822).

Responsible Care's goals are in-line with Hoffman's analysis. However, for any environmental management system to be successful it must include mechanisms to ensure that it operates in a transparent manner. It should also ensure that firms will be held accountable to all the stakeholders affected by their operations (King and Lenox, 2000; Dudok van Heel, O., 2001).

Transparency and Accountability

According to John Elkington, in the near future, transparency will be the mechanism societies use to ensure their values are being represented in corporate decision-making. Reporting and disclosure will be demanded as information technology becomes integrated into the lives of all people on the planet (Elkington, 2004). One of the biggest criticisms of Responsible Care is its lack of transparency and its inability to hold firms who subscribe to the system accountable for their actions. In a review of the system, SustainAbility found that the lack of sanctions for non-compliance is one of the greatest challenges facing the successful management of Responsible Care (ENDS, 2005).

According to Prakash (2000), Responsible Care's critics have cited various cases in which chemical firms are not transparent, or have attempted to cover-up their non-compliance record. This includes the use of Responsible Care as a greenwashing and public relations tactic, rather than a system to improve environmental management practices. Another issue concerns the way environmental data is reported and a lack of reporting standards. In addition, the current data is based on self reports, in most cases, and is not verified by an independent third party. Currently there is a movement towards independent third party evaluation, but this does not occur across all firms or at regular intervals (Prakash, 2000). According to Tchopp (2005), there are many examples of companies that report on their environmental successes but not on their failures. This can give the public an incomplete picture of the company's social responsibility strategy.

The Responsible Care initiative is operated by national chemical industry organizations in participating countries. These associations are responsible for monitoring companies and ensuring compliance. Studies have found that this monitoring initiative has been sub-standard world wide. When a company is found to be in non-compliance, the industry organization they are a part of seldom issues any sanctions and almost never expels the company from the organization. For example, no member of the Chemical Manufacturer's Association in the United States has ever been expelled (Prakash, 2000). One reason for this may be that these industry associations rely on membership fees for their primary source of funding. If they were to expel members for non-compliance they would significantly reduce their funding base.

If Responsible Care standards are properly regulated, enforced and reported on, they could identify the degree to which a company's environmental and social performance is holistic and integrated. Positive performance on most reporting indicators would indicate the use of integrated strategies as opposed to narrowly focused ones that only perform well in certain isolated areas (Perrini & Tencati, 2006). The reporting of successes and failures is an important part of becoming a transparent and accountable company. A firm with good reporting and communication skills can achieve higher levels of transparency.

Communication Issues

Communication issues further complicate the problems surrounding monitoring and enforcement. External and internal company communication efforts have been criticized over the years. Externally companies are not forthcoming with their performance data while internally, workers feel that they not an important part of the Responsible Care Initiative (Prakash, 2000). Even the industry associations themselves have caused controversy by supporting Responsible Care principles while lobbying against laws that would strengthen the implementation of the system (ENDS, 2005).

One question that arises from this discussion is why would a firm or industry association attempt to bypass the rules or engage in poor and non-transparent communications? There are many reasons for this behaviour, most which centre on a lack of belief in the business case for sustainable development and more specifically, Responsible Care.

The Business Case

The business case for reporting standards centres on key indicators such as operational efficiency, brand value, customer attraction and socially responsible investor demand. Shareholders and investors are using these reporting results as a source of non-financial corporate data. In the future, companies who standardize their social, ethical and environmental reporting will be easier to evaluate and more responsible to all stakeholders and not just their shareholders (Dudok van Heel, 2001). Furthermore, reporting standards can help build shareholder confidence in a company's social responsibility mandate, including the treatment of workers, human rights issues and climate change concerns.

According to Oliver Dudok van Heel (2001), there is evidence that companies who subscribe to reporting standards were able to identify environmental costs and develop efficiencies to eliminate them. Responsible Care advocates have demonstrated that the proper implementation of the initiative can significantly reduce costs and increase the competitiveness of the firm. However, a major criticism of the system is that it does not fully integrate the principles of sustainable development into its mandate. For instance, one important theme that is missing from Responsible Care is the encouragement to use alternatives to chemicals that are less harmful to the environment and humans (ENDS, 2005). A move to a more transparent and accountable process would most likely include an emphasis on biomimicry and other principles of industrial ecology.

Central Question and Possible Answers

Academic sources and case studies that aim to identify the problems with Responsible Care and suggest ways to improve the system will be used to provide answers to the central question being posed, which is: "What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?" The possible answers to the question are as follows:

1. Self-reports of chemical firms are, in some cases, not standardized, accurate, or properly evaluated by an independent third party.
2. Responsible Care compliance is not properly enforced and sanctions for non-compliance are not delivered.
3. Firms are unaware of the business case for Responsible Care and the principles of sustainable development and industrial ecology.
4. Responsible Care lacks proper incentives to motivate firms to comply with all the codes of conduct. This can lead to the use of the system for public relations purposes and greenwash.
5. Communication issues within firms, between firms, and with the public hinder information gathering and dissemination, thereby hindering transparency.
6. Chemical firms are not subject to the same set of standards if they are not part of an industry association.
7. Actions of industry associations and chemical firms are not always harmonized with the principles of Responsible Care.
8. Limitations of voluntary environmental programs and the possibility of a certain degree of legislation to compliment the voluntary initiatives are not given due consideration.

PART II: Understanding the Possible Answers

In this section each possible answer to the central question will be discussed separately. A brief analysis and recommendation will follow the discussion of the answer at the end of each section. In part III, a summary of the findings will provide an overview of the research contained in this section.

1. Self-reports of chemical firms are, in some cases, not standardized, accurate or properly evaluated by an independent third party.

The various national chemical industry associations who subscribe to Responsible Care (RC) principles implement the evaluation of Responsible Care compliance in a variety of different ways. In discussing this possible answer to the central question, “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” it will be important to distinguish between the implementation schemes of the national chemical industry associations. This section will discuss these various schemes, the issues with reporting standards and the effects of third party evaluations on transparency.

Industry Association Implementations of Reporting and Evaluation

In the past, a variety of critics, including the American Chemistry Council (ACC) itself, have acknowledged the shortcomings of not having a verifiable set of standards to evaluate the performance of firms and their adherence to Responsible Care. Many chemical associations have recognized that insufficient third party monitoring of a firm’s performance has been a major deterrent to the success of Responsible Care. In response to these issues, as of 2007, the ACC now requires firms to subscribe to a hybrid Responsible Care/ISO 14001 environmental management system or a revamped Responsible Care Management System (American Chemistry Council, 2007; Schmitt, 2002a).

The International Standards Organization 14001 environmental management system (EMS) is a global standard for evaluating the performance of a firm’s environmental, health and safety management. Compliance to the codes of ISO 14001 is evaluated at regular intervals by an independent third party such as the Underwriters Laboratory (UL). The ACC’s RC-14001 overlays Responsible Care codes onto ISO 14001 codes and requires that only one evaluation be done for both standards simultaneously. Furthermore, member firms must submit information on safety, product management and the environment for public benchmarking. This type of policy is a major step towards legitimizing Responsible Care and ensuring transparent reporting and true accountability (American Chemistry Council, 2007; ENDS, 2005).

The Canadian system implemented by the Canadian Chemical Producers Association (CCPA), takes a somewhat different approach from the ACC and does not focus on independent

third party verification. The CCPA has required a form of third party evaluation since 1993, resulting in a much different experience than that of the Americans'. In their scheme, evaluation teams are made up of community members and industry experts experienced with Responsible Care. The membership of these teams is not fully independent from the industry, but they do not have financial interests in the evaluated firm (Canadian Chemical Producer's Association, 2005a).

The situation in Europe is much different than that of North America. In each European nation, the national industry association has control over how it evaluates performance. Most jurisdictions do not require mandatory reporting of environmental, health and safety (EHS) measures, nor do they require third party evaluation of the firm's self-reports. The only European industry association to set actual emission targets is the Chemical Industries Association in the United Kingdom. Performance goals were imposed on member firms in 2003 and are expected to be met by 2010. The measures include both social and environmental metrics and chart progress in relation to final target values. This type of monitoring and target setting can lead to greater transparency and accountability (Chemical Industries Association, 2006; Hawken, Lovins, & Lovins, 1999).

Reporting Standards

The issue of reporting standards is a complicated one. First, for the purpose of third party auditing, it is vital that a firm use standardized reports on inputs, outputs and process measures in order to allow the third party evaluator to obtain a clear and transparent analysis of the firm's activities. According to King and Lenox (2000), the Responsible Care system is in need of a set of reporting standards in order to ensure that firms can be equally and fairly compared across the industry and between industries. In addition, Responsible Care codes set standards for inputs but not for outputs such as emissions targets. Proper evaluation requires solid datasets that include information on all outputs including those of solid, liquid and gaseous wastes. In the current system, firms are required to set performance targets and are allowed to develop the means to achieve these targets, however, no industry wide targets are set in most jurisdictions (King & Lenox, 2000).

Some positive changes over the years have been developed to meet criticisms of poor reporting and evaluation standards. The ACC's RC 14001 requires third party certification and includes penalties for non-compliance. The pass or fail status of the certification is publicly reported as part of a new set of industry-wide performance indicators in the United States. These indicators are not nearly as in-depth as those used by Shell or the other companies who voluntarily report on the indicators of the Global Reporting Initiative, however, they are a step in the right direction (Global Reporting Initiative, 2006; Shell Canada Ltd., 2006). The ACC's performance measures include environmental aspects, worker safety issues, economic metrics and social metrics, but do not break down these metrics, as is done in other global reporting standards. The limited effect of these new guidelines is evidenced in the recommendation by an external ACC review panel in 2007

which recommended “enhanced measurement of performance [and] ... industry-wide goal setting.” (Kamalick, 2007, p. 29).

In situations where guidelines are followed and company reports are released, finding accurate information in these self reports is not a trivial task. Without standardized reports, some data is not reported on, while other data is not displayed in a standard format. This makes comparison of similar measures difficult, especially when two different firms are being compared to each other. In order to have true third party evaluation, the proper information must exist in the right format (Dudok van Heel, 2001; Tschopp, 2005). Without proper order and data, evaluation is difficult or impossible. This becomes a major hindrance to transparent communication and prevents the firm from being held accountable for its actions (King & Lenox, 2000, p. 714).

The situation is further complicated by lies of omission. Companies who report on environmental, health and safety measures sometimes chose not to report on indicators they have performed poorly on. Without standardized reporting indicators and procedures, reports tend to be greenwash rather than a factual representation of a company’s performance (Johnson, 2004; Tschopp, 2005).

A case example in Toulouse, France helps to demonstrate the issue of improper reporting. In a chemical plant owned by Arkema, a major explosion in 2001 left 30 dead, 9000 injured and 53,000 homes destroyed. According to ENDS Report Number 360 (2005), the parent company, Atofina’s 2003 sustainability report shows a downward trend in injury rates since 1999, but leaves out data for 2001. In this case, the French company was able to use transparent reporting indicators and Responsible Care to cover up its poor safety record and past mistakes. Although the 2003 report could not be found on-line, the 2004 report, includes the missing 2001 data and has corrected the numbers accordingly, showing the higher injury rates in that year (Archema Group, 2004). In another example, a Responsible Care company in the UK named Sevalco, knowingly released cyanide into a local estuary over several years (ENDS, 2005). According to Responsible Care codes of conduct this is a severe violation, but the company was not punished by its chemical association.

The CCPA’s reporting scheme focuses on emissions from toxic substances listed on Environment Canada’s National Pollutant Release Inventory (NPRI) and additional substances monitored by the CCPA. The published results are only industry aggregates, with company specific information available by request from the company (Canadian Chemical Producer’s Association, 2005b). Information on other aspects of sustainable development such as social, community, financial and additional environmental measures beyond emissions monitoring are missing from the required set of metrics. In terms of transparency, it is important to electronically publish results per company so that progress can be tracked from year to year (Schmitt, 2002a). The ACC has begun to do this; however, under Responsible Care, performance goals are chosen by each company and do not use an industry standard set of indicators. According to Andy Smith from Earth Ethics consulting firm, “the industry has not achieved effective, transparent self-assessment.” (Schmitt, 2002b, p. 44).

Third Party Monitoring

The issue of third party monitoring is a complicated one. First, for a firm to be monitored properly, the third party must be independent and be able to test facilities without notice. However, for the purpose of third party auditing, it is also vital that a firm use standardized reports on inputs, outputs and process measures in order to allow the third party evaluator to obtain a clear and transparent analysis of the firm's activities (King & Lenox, 2000). The American's have begun to embrace this idea and are in the early stages of implementing a more robust system.

Canadian member firms accepted the idea of third party verification after the CCPA's National Advisory Panel (NAP) suggested that this would be a way to make the system more credible. The NAP was established by the CCPA to involve external people in industry, academia, NGOs and the general public from across the country to provide suggestions for improving CCPA's activities. The CCPA has found that a majority of labour unions, environmentalists and government leaders do not necessarily find credibility with the third party evaluations. However, the industry association believes that these evaluations are a means to encourage member firms to fulfill their Responsible Care mandate as opposed to demonstrating the credibility of the system to the public (Reisch, 2003).

Critics of the third party evaluations are somewhat justified in their positions. One major issue involves the fact that verifiers used by the CCPA are not fully independent, which could be cause for concern. The verifiers are chosen from the community in which the verification is taking place, the CCPA's National Advisory Panel, a retired chemical industry executive and a retired Responsible Care Coordinator. The team's report includes mandatory issues to be resolved, suggested opportunities for improvement and recognition of best practices. In many cases the team members are assigned by the CCPA or the members of a Community Advisory Panel (CAP), who are appointed by the company or outgoing members of the CAP. In the re-verification process, some sites are not visited and others are only contacted by teleconferencing (Robertson, 2007). A notable missing element from these reports is a standard set of indicators and benchmarks over which the company can be compared to every year. If this standard were applied to all Responsible Care companies, there would be an efficient way to gauge their progress internally and externally.

Reporting standards, industry-wide metrics and independent, certified third party evaluations are key components of the Responsible Care initiative that are not fully present in any of the national association's implementation of the ethic. Recent studies of other Voluntary Environmental Programs such as the Forests Stewardship Council Certification have show that programs with these key components perform better than programs that lack some or all of these components. Chemical industry associations must draw on this data to build consensus on implementing thorough evaluation systems (Lenox & Nash, 2003; Steelman & Rivera, 2006).

2. Responsible Care compliance is not properly enforced and sanctions for non-compliance are not delivered.

The above possible answer to the central question, “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” involves the compliance of firms to Responsible Care codes and practices. The incentive for operating transparently may be increased if the firm faced penalties for not complying with the codes and ethics it has agreed to.

Current methods of ensuring accountability

An industry association’s harshest punishment it can inflict on a member firm is the removal of the firm’s membership in the association. However, they are limited in the other types of punishments they can issue. For instance, anti-trust laws do not permit industry associations to issue certain types of sanctions that could be used for competitive reasons rather than as punishment. Since industry associations are made up of member companies and managed by these companies, they are not the ideal candidates to issue punishments to their peers, given the possibility of ulterior motives and conflicts of interest (Prakash, 2000).

According to King and Lennox (2000), there exists a possibility for conformity without sanctions through three mechanisms: coercive forces, normative forces and mimetic forces. Coercive forces involve damaging a firm’s reputation in front of its peers and the general public. This type of strategy puts pressure on lagging companies through public inquiry or peer reprimand and shaming.

Normative forces include the adoption of external values into the existing corporate culture. In terms of Responsible Care, corporations who sign up to the initiative begin to adopt its values into their mission, vision and day-to-day operations. “Responsible Care is ... a process woven into the fabric of a company’s culture ... It has to become part of the way it operates so it becomes ingrained in the company’s day-to-day operations” (Canadian Chemical Producer’s Association, 2005c, p. 3).

Mimetic forces enable a company to learn from its peer companies through social networks established through its industry association. This strategy requires transparency, accountability and communication on the part of all participating firms. Responsible Care encourages firms to share their best practices for environmental, health and safety performance. The industry association acts as a facilitator to enable companies to share information and learn from each other for the benefit of the environment, their business performance and their brand reputation (Canadian Chemical Producer’s Association, 2005c; Prakash, 2000).

According to interviews conducted for the ENDS Report Number 360 (2005), industry associations feel that it is better to allow non-complying firms to retain their membership so that they can be monitored and guided to compliance. This velvet glove, peer pressure based approach is viewed as the best way to ensure compliance. However, at the same time, these chemical associations are struggling with falling revenues and require membership fees to be financially

stable. Given the situation of most chemical associations, it does not seem likely that they would chose to expel a member firm along with their fees (ENDS, 2005, p. 22)

Issues concerning the lack of sanctions

According to King and Lenox (2000), citing research from Grief (1997), without explicit penalties and sanctions, industry self-regulation may be susceptible to failure.

“If the industry cannot prohibit bad actors from becoming members of an association, these actors may join to disguise their poor performance ... If the association cannot observe and enforce performance requirements, firms may adopt the outward form of the standard but shirk the real effort required” (King & Lenox, 2000, p. 700).

The study conducted by King and Lennox found that self regulation without sanctions which operates via the three motivating forces discussed in the previous section, does not lead to improved performance for member firms. The “data suggest [that Responsible Care] has fallen victim to enough opportunism that it includes a disproportionate number of poor performers, and its members do not improve faster than non-members” (King & Lenox, 2000, p. 713).

The results show that non-transparent, opportunistic behaviour and greenwashing can only be prevented via explicit sanctions. Although other mechanisms exist, such as informal coercion, transferal of norms and mimicking of best practices, they may not be enough to overcome the ability for the firm to maintain opportunistic, non-transparent behaviours. The American Chemistry Council has begun to recognize this. The organization recently began publishing company specific environmental, health and safety measures and publicly listing the status of a firm’s adherence to third party monitoring. However, most of the true sanctioning comes from that built into the ISO-14001 evaluation system (Reisch, 2003).

In a 2003 review of the CCPA’s activities, the National Advisory Panel cited problems which could call into question the credibility of the third party Responsible Care evaluations. The CCPA has allowed some laggard firms to continuously postpone their evaluation dates. According to the panel, for the system to remain credible and accountable, action and sanctioning must take place to ensure that member firms meet their expectations.

“When all else fails, CCPA has the option of revoking a membership, though this means the Association loses the opportunity to positively influence that company—and loses the membership fee as well. For the sake of the credibility of Responsible Care, however, CCPA has to be prepared to use the ultimate sanction.” (CCPA National Advisory Panel, 2003, p. 1).

The movement towards third party evaluation is an important one, as discussed in the previous section; it helps to increase transparency and provides a mechanism to monitor progress. However, without sanctions, non-compliant member firms can still free ride on compliant ones. This also applies to product stewardship and supply chain management. Partner firms are more likely to comply, if they are under the threat of sanctions for non-compliance. “Studies indicate that [voluntary environmental programs] without sanctions, independent oversight, and standards ... are not effective in promoting improved corporate environmental performance. (Steelman & Rivera, 2006).

3. Firms are unaware of the business case for Responsible Care and the principles of sustainable development and industrial ecology.

A possible answer to the question “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” is that many companies are unaware of the business case for sustainable development or unwilling to accept it (Willard, 2005). According to Willard (2005), these companies chose to apply a business as usual strategy to the management of their operations and see environmental, health and safety issues as a compartmentalized area of costly compliance strategies. Many of these companies strive to achieve no more than the necessary bare-minimum of government regulations. This type of strategy does not create a culture of transparency or a need to remain accountable to stakeholders (Elkington, 2004; Willard, 2005).

Business Case Theory

Much of a company’s willingness to accept sustainable principles depends on their developmental stage. Elkington (2004) and Willard (2005) both describe a variety of company types and waves of corporate strategic eras. Corporate development can be broken down by corporate types such as laggards, compliers, beyond compliance firms and model corporate citizens. Laggards and compliers generally do not understand or accept the business case, while the latter company types are working towards or are implementing the principles of industrial ecology and sustainable development. Corporations in the first two stages of development may be enticed to conduct transparent operations if they were able to realize that a business case exists for a sustainable environmental management strategy (Elkington, 2004; Hawken et al., 1999; Willard, 2005).

The business case for sustainability is associated with the concept of business value creation. When making the case, financial performance is not the only measure used to determine success. Shareholder value, revenue, operational efficiency, access to capital, customer attraction, the building of intellectual capital, status of a company’s risk profile, innovation and social license to operate are all indicators of financial success and should be considered when examining the business case for sustainable development (Dudok van Heel, 2001). In order to accept that these additional measures are important considerations, corporate leaders must move beyond financial bottom line thinking and embrace a triple bottom line philosophy.

The triple bottom line of sustainable development gives equal weight to financial, social and environmental aspects of a firm’s operations and integrates these considerations into the corporate culture and mandate. Evidence from research conducted by SustainAbility (Dudok van Heel, 2001), John Elkington (1998; 2004), Paul Hawken (1999) and Bob Willard (2005; 2002); and evidence from positive corporate performance such as Interface Flooring’s sustainable success (Interface, Inc. Investor relations, 2007) have proven that the business case for sustainable development and transparent reporting exist.

According to Dudok van Heel (2001), the business case for transparent and accountable reporting standards centres on operational efficiency, brand value, customer attraction and socially responsible investor demand. Shareholders and investors are using these reporting results as a source of non-financial corporate data. Companies who don't provide these reports are not considered good investment choices by socially responsible investors.

In the future, companies who standardize their reporting will be easier to evaluate and more responsible to all stakeholders, not just their shareholders. Furthermore, reporting standards can help build shareholder confidence in a company's social mandate, including the treatment of workers, human rights issues and climate change concerns. According to Oliver Dudok van Heel (2001), there is evidence that companies who have used standard reporting systems were able to identify environmental costs and develop efficiencies to eliminate them, thereby reducing costs and improving profits.

The Business Case for Responsible Care

Debbie Jackson, editor of Careline, a Responsible Care magazine, recognizes the fact that some companies undermine the Responsible Care initiative by subscribing to the principles of Responsible Care, but not implementing them or internalizing their values into the corporate culture. The board members of these companies are not committed to the initiative because they don't see the benefits that complying with the recommendations can bring their company (ENDS, 2005). Firms, who adopt the principles but do not implement them, decrease the value of complying for all member firms. The incentive to increase transparency amongst all members will help identify non-compliers, who can be punished, while compliers are rewarded by increased profits and a stronger competitiveness (King & Lenox, 2000).

In order for chemical associations to entice firms to become members and adhere to the principles of Responsible Care, they must be able to offer benefits to member firms that non-members do not have access to. This includes access to resources that will strengthen the competitiveness of the firm. (Prakash, 2000). It has been previously established that firms who understand the business case associated with Responsible Care will be more transparent and accountable; therefore, it is vital that industry associations promote aspects of the business case to members.

Associations that offer excludable benefits are more likely to attract and retain responsible firms. Since Responsible Care generates goodwill for the entire industry by increasing stakeholder confidence and encouraging more sustainable and safe policies, it is important for all members to uphold a certain level of performance. "The challenge for industry-level bodies championing these codes is to transform the non-excludable goodwill benefits to excludable ones." (Prakash, 2000, p. 187). All members have the incentive to ensure that firms in the association uphold the principles of the system so that the reputation of the industry is in good standing. This encourages transparency, accountability and competitiveness because there is a focus on inter-firm sharing of best practices. In this case, firms are pursuing their own self-interest and creating benefits for

others at the same time. This is a key issue for supporters of the business value argument of attracting, retaining and ensuring compliance from member firms (Elkington, 2004).

Another major reason why the business value case is made so often for voluntary codes, such as Responsible Care, is that an industry level code can help shape environmental policies and regulations to mitigate the effects of government regulations which can be inflexible and expensive. The argument is that, by designing the policies themselves, industry firms can achieve better results than government regulations but in such a way that does not hurt their bottom line and in-fact could make them more profitable (Willard, 2005).

Government regulators are increasingly supportive of these partnerships because a command and control approach to regulations is costly and time-consuming for under funded and under staffed government agencies. By creating partnerships, implementing voluntary codes and using a mix of regulatory mechanisms the relationship between government and business can be positive and profitable (Elkington, 2004; Prakash, 2000; Willard, 2005). A complimentary belief is that a firm who keeps ahead of regulations will be more competitive than firms who are constantly trying to catch up. At the same time, these firms who keep ahead of the curve can increase their brand value and social license to operate by demonstrating to shareholders a performance level that goes well beyond what is mandatory (Dudok van Heel, 2001; Prakash, 2000).

Direct Corporate Benefits

There are benefits to implementing Responsible Care rather than just committing to it. One area where the business case can be made is in the area of communication. According to the CEO of Shell Chemical, Fran Keeth, "The effect of added transparency through public reporting is already demonstrating benefits." Keeth is referring to the ACC's recent initiative to report social, environmental, and safety measures on the ACC's website. The benefits have come in the form of increased traffic to the website and increased legitimacy of the Responsible Care initiatives being undertaken (Sissell, 2006, p. 25).

Brand value is seen as the essential component to building a better business case. If Responsible Care companies are doing more to ease public concerns and transparently report on their operations, the resulting improved and more accountable relationship with stakeholders will have financial benefits by increasing brand value (Dudok van Heel, 2001). An important component to building the business case is selling the idea of brand value to Responsible Care firms, especially those who may not be following the codes. The benefits are being marketed to firms as a way to reduce costs, obtain savings in efficiencies, obtain savings from less injuries and environmental clean-ups costs, increasing the firm's ability to influence the business environment, improving employee and community relations and lowering insurance costs. (Proving the Business Value Case, 2005). According to King and Lenox (2000), Responsible Care can lower the costs of not complying and reduce waste production. This is cheaper than overproducing waste and can make environmental problems more manageable.

The rising trend of socially responsible investments makes the business value case much stronger. Socially responsible investors (SRIs) make choices based on their moral beliefs as well as their pocketbook. They choose to support firms who champion and adhere to sustainable principles. It makes financial sense for a company to attract all possible shareholders, which includes SRIs. Since SRIs are responsive to companies who adopt a sustainable corporate mandate, it makes financial sense to operate in a sustainable way. Indexes such as the Domini Social Index (DSI) investigate firms to ensure they implement the principles they subscribe to, in order to catch cheaters (Tschopp, 2005). A company, who is listed on the DSI or other sustainability index, has a much greater appeal to SRI's than those who are not recognized for their sustainable performance.

Problems with the Business Case Argument

The business case for Responsible Care is not the same for all company types. Large firms such as Dow Chemical and BP can afford to invest in a quality management system and dedicate employees to ensure that the initiatives are undertaken. These firms will make large initial investments as long as the profits gained from undertaking the initiatives outweigh the associated costs. Large firms also have the most to lose financially and socially, if they cannot increase brand value and social license to operate. The study conducted by King and Lennox (2000) confirms this hypothesis by presenting survey data that shows many Responsible Care members are larger firms who are easily identified as being a part of the chemical industry.

Smaller firms and those firms that are not easily identified as chemical companies are less inclined to join Responsible Care for a variety of reasons. Some firms are satisfied with their brand value, social license to operate and their competitiveness. These companies have either flown under the radar of environmental groups, or legitimately have a good performance record (Willard, 2005). Other firms are in a different situation; many cannot afford to implement Responsible Care because the up-front costs and costs of management are too high. In this context, the business case does not exist or is hard to achieve. Many of these firms have limited health and safety policies and do not have the manpower to implement new policies. They remain accountable to the law, but do not generally engage other stakeholders (Newport, 2005).

Progressive industry associations have recognized the barriers that prevent small and medium sized firms from joining their group. Associations like the CCPA and the ACC allow special considerations for small firms such as allowing these firms to implement Responsible Care codes in stages, sharing information with firms on best practices, and cost pooling for joint initiatives. These smaller firms, like their larger partners, are motivated by profits, as much as they are motivated by doing good (Canadian Chemical Producer's Association, 2005a). It has been found that the best way to approach small and medium sized firms is by presenting a business case for participation. When smaller firms are suppliers to large partners or could benefit by becoming a part of a social network within their region of operation, they are more inclined to subscribe to Responsible Care (Prakash, 2000). Since small and medium sized companies make up a significant proportion of the

chemical industry and its supply chain, providing incentives for these firms to join Responsible Care and implement its policies is vital to making the industry more transparent and accountable.

Overall, the business case for Responsible Care presents challenges and opportunities for the chemical industry. The evidence indicates that firms who believe in the business case will conduct their business in a more transparent manner because they understand the benefits of sustainable development. National chemical industry associations need to reward compliant and beyond-compliant firms who uphold the principles of sustainability. More firms will be inclined to accept the business case and join Responsible Care if a system of rewards and punishments is in place as well a system of recognition for those who achieve acceptable triple bottom line results.

4. Responsible Care lacks proper incentives to motivate firms to comply with all the codes of conduct. This can lead to the use of the system for public relations purposes and greenwash.

A common criticism of Responsible Care is that it is used a public relations tactic, rather than an environmental, health and safety reporting and management strategy. The possibility of this abuse could help answer the question “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” This answer is best examined using analysis and case studies of firm performance under Responsible Care.

Public Relations and Greenwashing

As cited by Topalovic (2007), Greenwash is defined in the Oxford dictionary as “disinformation disseminated by an organization so as to present an environmentally responsible public image.” (*Oxford English Dictionary: Greenwash, n.2002*). The omission of certain enviro-social indicators and inclusion of others on a company report can be used as a marketing strategy. For example, environmental groups have accused Esso of greenwashing for not signing the Kyoto agreement and attempting to mislead the public into viewing it as a green company (Gray, 2004). Another petrochemical giant, British Petroleum, differs from Esso in that it has a well entrenched set of principles and programs dedicated to sustainable development (Willard, 2005). The company is not considered a laggard, but it is not considered a model sustainability champion, such as Interface Flooring, either. For instance, BP spent \$200 million on the “Beyond Petroleum” advertising campaign, which is the same amount it spent on a six year investment in renewable technologies. It is obvious, that even the corporations who promote sustainability, do not always employ sustainability in every aspect of their business (Driessen, 2003).

Greenwashing and Responsible Care

One of the biggest criticisms of Responsible Care is that it allows opportunistic firms to use their participation in the program as a public relations tactic, rather than as a system for positive corporate change. According to King and Lennox (2000), industry standards create homogeneity across participant firms, making it difficult to distinguish one from another. In addition, a lack of transparency can make it difficult for external bodies to evaluate individual firms. When these are coupled together in the face of an environmental infraction, “a firm could use its participation to show that it was not negligent, but following commonly accepted practice.” (p. 702). In this and other similar cases, an industry sponsored environmental management system could provide laggards with an image of false legitimacy, allowing them to avoid exposure or reprimand.

Other firms may have the right intentions and adopt the proper principles, but poorly implement the codes of practice so that they do not achieve their goals. In this situation, critics can be satisfied, but many of the stakeholders continue to suffer from a lack of implementation, making the adoption of Responsible Care more symbolic than operational (King & Lennox, 2000). This usually occurs because the company has not integrated Responsible Care principles in every aspect of its daily operations.

Dirtier firms and firms who are clearly associated with the chemical industry, such as Dow Chemicals, are more likely to be a part of Responsible Care because they derive greater benefits than cleaner firms. Laggard firms can use their participation as insurance against poor environmental performance, and health and safety infractions. At the same time, these firms have the most to gain from a change in their corporate culture in terms of reputation, environmental performance and cost minimization, especially legal costs associated with health and safety infractions. Firms which are visibly associated with the chemical industry, who may or may not be laggards, have incentive to participate because they benefit more from a responsible and environmentally friendly industry as a whole. The public tends to associate chemical firms with their industry rather than on the performance of individual firms which makes Responsible Care more lucrative for these visible chemical companies (Lennox & Nash, 2003).

Case Study: Public Relations Tactics Rather than Genuine Change

In a study of Mobile Alabama’s chemical corridor conducted by Mark Moberg (2002), the results show a blatant use of Responsible Care as a tactic to preempt the community’s environmental concerns, in order to pacify those who live near the chemical factories. The author found that the Responsible Care codes practiced by the companies in Mobile, “defines a now dominant model of environmentalism that privileges corporate interests over those of host communities and self-regulation over government oversight” (Moberg, 2002, p. 380).

The results in Mobile summarize the reasons why public opinion of chemical plants has remained low, despite the changes and progress that has been made over the past 20 years. Despite suspicious local health problems, toxic releases of chemical emissions and government tax

breaks for chemical firms, the residents of Mobile and Axis do not rise to action and no mention of the environmental, health and safety problems are found in company literature or in public forums (Moberg, 2002).

Despite the environmental rhetoric of chemical firms, case studies of non-transparent transactions that go against the main codes of Responsible Care, make the chemical industry look devious and underhanded. In the case of Mobile, regardless of whether firms were greenwashing or not, the mere doubt surrounding the transparency and accountability of the companies calls into question their true intentions. Cases such as this one justify the erosion of public trust and remind the public that despite many inroads, the chemical industry is still the largest polluting industry in North America (Moberg, 2002, p. 380).

John Elkington of SustainAbility, confirms the results of the case study in Alabama. His research and interviews found that the public has little trust in Responsible Care and views the chemical industry as using the initiative as a greenwashing tool rather than a viable system for mitigating environmental degradation and addressing health and safety issues. (ENDS, 2005; Reisch, 2000).

The Drive for Real Change

In section three, evidence presented by Willard (2005) and Elkington (2004) indicated that chemical firms are not all created equal. In all industries one can find laggard firms operating and greenwashing to some extent. These firms give their entire industry a bad reputation regardless of which industry they are operating in. The chemical industry is just as susceptible to exploitation by laggards, as are other industries.

Many of the case study reports that have been conducted are from the earlier part of this decade. In recent years, Responsible Care revamping and stakeholder pressure have prompted some resolution to the issue concerning greenwash. As previously noted the ACC has revamped the evaluation and monitoring portion of their version of the Responsible Care code. In Canada, the Canadian Chemical Producers cite many case studies that show legitimate Responsible Care projects in action. In addition, the CCPA's Reducing Emissions Reports and Health and Safety Reports aim to reduce the amount of greenwashing taking place amongst member firms.

The CCPA case studies document examples of high plant standards, brownfield remediation projects, stringent safety and disaster contingency standards, and community engagement projects which provide evidence of responsible corporate action. Other firms such as Shell and BP have recently been credited for their transparent communication and accountability standards. Although many chemical firms are not models of corporate citizenry, many are compliant and some are firms go beyond compliance (Canadian Chemical Producer's Association, 2005a; Livesey, 2002).

To ensure that firms are being given the proper incentives to be transparent and accountable rather than engage in greenwashing, it is important for industry associations to understand the developmental stage of the company and build incentives into the program that will encourage

companies to comply. For instance, laggards will respond well to sanctions for non-compliance and training to engage in best practices for more profitability. These incentives will most likely not appeal to a firm who does not require training and is well beyond compliance. In this case public rewards for beyond compliance behaviour and financial incentives to help laggard firms will be useful in encouraging continuous improvement from firms that are already performing well.

5. Communication issues within firms, between firms, and with the public hinder information gathering and dissemination, thereby hindering transparency.

According to the CEO of Nova Chemicals, “Responsible Care has not been a complete success in one critical area – communication to general audiences ... its not good enough to just do better – we have to be understood as doing better as well” (Sissell, 2006, p. 25). Communication is at the heart of the Responsible Care ethic, as its original purpose was to demonstrate to the public that the chemical industry was exceeding regulations, engaging in transparent dialogue and remaining accountable to stakeholders. An examination of the issues relating to communication may help to answer the central question: “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” This section will discuss communication issues that exist between firms and the public and issues that exist within firms themselves. It will also discuss the recent progress being made to resolve these issues.

Communication and Responsible Care

Communication issues concern communication between firms, within firms and between firms and their stakeholders. The issue of communication is directly related to the transparency of a firm. Regardless of whether a company follows guidelines and acts responsibly, they are often times judged on how they demonstrate their progress, how they interact with their stakeholders and what they are affiliated with (ENDS, 2005; Reisch, 2000). These measures are a part of the corporate governance of a firm which involves a set of practices, policies and laws that affect the way a corporation is controlled. It involves fairness, transparency, accountability and responsibility. Corporations with an organized governance structure implement guidelines and mechanisms to ensure shareholders and stakeholders are protected. These corporations attempt to eliminate corruption and practice due diligence while communicating their progress with the public (World Bank, 2007). Responsible Care aims to ensure stakeholders that member firms are responsible corporate citizens who create voluntary regulations that are dedicated to improvement. Naturally, given the goals of the initiative, communication is at the centre of Responsible Care’s mandate.

In the past, information on operations, risks to the community, risk management policies and environmental, health and safety statistical data were not shared with stakeholders. The new mindset amongst corporate leaders, government and citizens is that stakeholders, including the public, have a right to information. Transparent communication is the mechanism required by corporations to ensure this information is made available (Elkington, 2004). The toxic release

inventory and the emergency planning and community right to know act (EPCRA) created in 1986 by the United States government, was a catalyst for this type of thinking (Prakash, 2000). Its analogue in Canada is the National Pollutant Release Inventory, established in 1992.

Communication between Firms and the Public

Although Responsible Care mandates that firms disclose information on environmental, health and safety issues, in the past groups such as U.S. Public Interest Research Group (US-PRIG), Mother Jones and the Chemical Manufacturers Association (now the American Chemistry Council) found that, in practice, facilities were not forthcoming with information, if they responded at all, to an individual's requests for information. In one study conducted to gauge transparency amongst Responsible Care firms "more than 75% of facilities were either not willing or not able to share information required by Responsible Care." (Prakash, 2000, p. 198; U.S.P.I.R.G., 2004).

The Responsible Care mandate to involve the local community in chemical plant relations was intended to strengthen communication between the firm and the public. This interaction is successful as long as it represents a random, representative sample of the community. In some cases these Community Advisory Panels (CAPs) may be appointed by the company and lack a transparent selection process (Prakash, 2000).

According to research and interviews conducted by Mark Moberg (2002) in Mobile, Alabama, Responsible Care's CAPs are not effective or transparent forums. The various communities in which chemical plants reside rely on these facilities for jobs, wages, and taxes. Members of a CAP are hesitant to sully the reputation of these plants and their community, which could discourage new settlers to the area and lower property values.

The make-up of a CAP includes industry representatives and residents of the community who are appointed by industry members. CAP members meet on a monthly basis to act as liaisons between the plant and the community and discuss local concerns. According to Moberg's interviews, members who deviated from the agenda were voted off the committee and prevented from attending further meetings. The committee in Mobile amounted to a carefully controlled, non-transparent, one-sided forum for pro-industry discussions (Moberg, 2002, p. 384). A study conducted by Chemical Week found similar results across the United States: "CAPs remain a select collection of local citizens that are generally friendly to the companies but do not necessarily represent the general public" (Chemical Week, 1997, p. 31).

Communication within Firms

Communication issues surrounding Responsible Care can also be found within companies. A study conducted in 1998 by the Federation of Chemical, Energy, Mine and General Workers Union, surveyed union members in 21 countries and found that most employees were not aware of Responsible Care or its benefits. These workers see Responsible Care as a management-led public relations exercise rather than a strategy for health, safety and financial success. Proper

execution and management of Responsible Care is important to its integration into a company or facility. Workers who do not understand the importance of the codes and practices associated with Responsible Care cannot be expected to properly implement its recommendations. Without buy-in from key employee sectors in a company, the likelihood of operating in an efficient and transparent way is unlikely. Proper corporate communication involves the inclusion of key stakeholder groups and the recognition of successes and failures throughout the company (Prakash, 2000).

Recent Progress on Communication Issues

In recent years there has been some progress in solving the communication challenges facing the chemical industry. The CCPA's independent National Advisory Panel issued a 2003 challenge letter to the member firms which chose to focus on five main issues that needed resolution for the improvement of Responsible Care. One of these resolutions dealt with communication:

If CCPA member companies were to consistently use the Responsible Care name and logo in communicating with employees and local communities, it would enhance brand recognition considerably. It is ironic that many member companies have been somewhat reluctant to use the brand themselves, often preferring to feature their own internal company program names, yet worry about improving recognition for the Responsible Care brand (CCPA National Advisory Panel, 2003, p. 2).

The American Chemistry Council's initiative to communicate environmental, health and safety data with the public via the internet has been a great success. In section one, it was mentioned that progress is still required concerning the types and quality of metrics being shared with stakeholders; however, the very presence of environmental, health and safety metrics listed by company, is a breakthrough. The CCPA lists this data on-line as well, but not for each company. The detailed company information must be requested from the company who is required to comply (Canadian Chemical Producer's Association, 2005a).

Communication lies at the heart of Responsible Care. It is the tool used for transparent communication and for holding firms accountable. Improvements to the way CAP members are elected and improvements to the way the members interact with firm executives will be an important step in improving the transparency of Responsible Care. In terms of employee relations, it will be vital that firms have buy-in from all employees in each manufacturing location. This requirement has even been built into the CCPA's evaluation process which requires that employees demonstrate knowledge of and acceptance of the Responsible Care ethic. This has become so vital, that some firms are denied Responsible Care certification on the basis of lack of employee buy-in (Reisch, 2003). If member associations follow the recommendations of their peers, including their independent advisory boards, and follow the lead of the ACC's electronic communication strategy, a great deal of potential progress in re-invigorating the Responsible Care ethic can occur.

6. Chemical firms are not subject to the same set of standards if they are not part of an industry association. This can negatively affect supply chain management and damage the goal of transparency in inter-firm transactions.

A common claim of chemical industry associations is that firms who do not subscribe to Responsible Care are not obligated or encouraged to pursue beyond compliance goals. Companies in the supply chain who do not subscribe to the ethic may be less responsible and lower the reputation of the industry. These less responsible firms are not held accountable, nor are they required to be transparent. This may help answer the question: "What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?" This possible answer is best understood by examining the make-up of Responsible Care members and non-members and discussing the supply chain management strategies that apply to both.

The Make-up of the Non-membership

The stages of company development are an important consideration in the discussion of chemical firms who do not hold membership in their industry association. Some of these firms are laggards who do not wish to draw attention to themselves as non-compliers. They believe that the costs of satisfying the codes and practices of Responsible Care would not be feasible (Willard, 2005). The other group of non-member firms are companies who go beyond compliance or are corporate leaders in their field, yet chose not to be a part of Responsible Care.

The first group of companies, the laggards, may lower the reputation of the industry. According to ACC's vice-president - Responsible Care, Terry Yosie, chemical association members "get blamed for the shortcomings of the rest of the [chemical] industry." She suggests that "government needs to do more to crack down on companies that don't adopt Responsible Care" (ENDS, 2005, p. 20). King and Lenox (2000) suggest that chemical firms who subscribe to Responsible Care put pressure on those companies who are not a part of the standard. When a company with a poor performance record chooses not to participate, stakeholder pressure on that firm can increase making them more likely to eventually join the industry association and begin participating.

In the case of the responsible and compliant group of non-members, it is possible that cleaner firms do not need to participate in Responsible Care. These firms are generally farther along in their sustainable development journey and fall into the category of a corporate leader in environment, health and safety policy and implementation. In these cases, there is little incentive to join an association that adds no benefit to their operations, as they are ahead of most other companies (Willard, 2005). However, some incentive may exist, if the model company is clearly associated with the chemical industry. These companies may adopt a strategy that bringing laggards up to their standard could increase their brand value indirectly by improving the reputation of the whole chemical industry (King & Lenox, 2000). Industry associations try to attract these

sustainable companies in order to benefit the laggards in their membership who could learn from more successful manufacturing processes and results.

The Make-up of the Membership

The results from the King and Lennox (2000) study, referred to above, indicate that companies who are most likely to join their industry association are those who are easily identified as chemical companies and laggard companies who have the most to benefit from the increase in reputation. This was evidenced by the results showing that American Chemistry Council members who subscribed to Responsible Care from 1990 to 1996 were improving at a rate more slowly than non-members. This trend could have multiple meanings.

The first possibility is that Responsible Care was not effective over the time period at achieving results. However, the initiative could have motivated both members and non-members to participate in corporate cultural change, thereby making the results even. A third possibility is that Responsible Care caused environmental activists to focus their efforts on non-members, which in turn caused non-members to improve at a higher rate than members of the ACC. In a fourth possible scenario, more transparent reporting strategies on behalf of Responsible Care members, caused them to appear less successful than non-member firms (King & Lennox, 2000).

Unclear Results in Determining the Effects of Non-members

From the evidence it is clear that analyzing the supply chain's strengths and weaknesses is a difficult task. While it is easy to blame non-Responsible Care companies for the shortcomings of the industry, this may not be the case in every situation. These unclear results are one of the catalysts for poor public perceptions of the industry and the driving force for new legislation such as the European Union's Evaluation, Authorisation and Restriction of Chemicals (REACH), instituted in 2006.

The REACH initiative focuses on product stewardship and makes the chemical producer and suppliers responsible for hazardous chemicals from their manufacture to their end of use. Companies will be required to register hazardous chemicals, undertake risk management measures and communicate handling and use information to customers and users (EU Commission Enterprise & Industry, 2006). This legislation has encouraged chemical industry associations to focus on product safety throughout the supply chain. The ACC is creating a proactive set of standards to help mitigate product risks, however, the level of detail and product specificity of REACH is beyond the scope of the ACC's 2007 revamping of product stewardship directives (Kamalick, 2007).

Recently, information being collected by the ACC is being used to build a better business case for Responsible Care by comparing members to non-members and showing the greater business successes of members. This type of comparison builds a stronger image for Responsible Care, encourages the reporting of data and transparency amongst members and encourages more firms

to join the association. According to the ENDS Report, a more transparent monitoring and reporting process will build a better business case. This will be achieved through performance benchmarking and comparisons with other firms as well as demonstrating financial success through environmental protection (ENDS, 2005).

Supply Chain Management Initiatives

The CCPA and the ACC have addressed supply chain management issues over the years through the Partners program. These partners comprise the vast array of firms that provide support services to the chemical industry including storage facilities, distribution, transportation and environmental services. Firms enrolled in the program must subscribe to the codes and principles of Responsible Care and are held accountable to the member association (Canadian Chemical Producer's Association, 2005a)

A major issue with supply chain management involves transportation. Communication between producers, distributors and carriers is vital for upholding product safety. Incident reporting and data analysis are keys to ensuring that proper, transparent monitoring is taking place. A distributor must take responsibility for transportation incidents by monitoring carrier issues and taking action if issues are not resolved in a timely and transparent manner (Richardson, 2000).

For effective supply chain management, firms must go beyond monitoring and sanctioning. Training is a key component of supply chain management, especially where the handling of volatile chemicals are concerned. Distributors and Carriers under the UK's Responsible Care program have experienced a 75% reduction in traffic accidents and a 25% reduction in employee accidents through training and adherence to Responsible Care codes (Newport, 2005, p. 24). According to Peter Newport (2005) of the British Chemical Distributors and Traders Association (BCDTA), a proactive policy is required to maintain quality and accountability in the supply chain. This policy must include provisions for smaller firms who are involved in support roles across the chain and have limited resources to implement stewardship initiatives. He also believes that end use information for products must be disclosed in a transparent manner for the system to work. According to Newport, a system must be designed that maintains commercial confidentiality while allowing the disclosure of information on the intended use of the product being shipped.

Another link in the supply chain consists of retailers who build consumer trust and confidence with the products they sell. Retailers and producers need to trust the chemical sources that make up the products being retailed. At any point in the supply chain, a negative event can harm workers or users, and damage a firm's reputation. A lack of transparent communication at any of links in the chain could cause considerable damage. In order for the system to remain safe, transparent and accountable, each partner in the chain must implement similar product stewardship strategies. According to Peter Sobic of Unilever, "Communication within and outside [the] business is the only way to build and maintain trust ... Consumers are more sophisticated, they are demanding and expect responsibility and accountability from big business." (Product Stewardship is Cefic's Flagship, 2005, p. 12). In the case of Unilever, it developed a business partner code which

examines the level of stewardship of its partners and sets targets to ensure proper practices are in place.

A firm's participation in Responsible Care does not necessarily predict the quality or safety of the product. Until all laggard companies in the membership of chemical industry associations are held accountable for their actions, a supply chain of strictly Responsible Care companies may not have a safer path than a chain with some non-Responsible Care companies. To ensure safety in the chain, companies need to follow the example of Unilever and advocate the use of transparent information systems to ensure that the supply chain is safe. This type of strategy will also help to ensure that companies in the chain are responsible for products from manufacture, distribution, transport, use and waste recovery.

7. Actions of industry associations and chemical firms are not always harmonized with the principles of Responsible Care.

Issues of corporate governance and the multiple, sometimes conflicting, roles of industry associations could hinder the transparent and accountable mandate of the Responsible Care ethic. These issues could help to better understand the central question: "What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?" This possible answer will deal with sustainability and governance, as well as the lobbying efforts of the industry association and its possible conflict with the mandate to move beyond compliance.

Corporate Governance and Sustainability

Integrating responsible care into the corporate mandate is a major focus of industry associations. In section five, the CCPA's evaluation process was discussed. One of the requirements of the evaluation was that the Responsible Care ethic be evidenced at every level of the corporation (Reisch, 2003). This is not always the case and some companies are denied certification based on this shortcoming because it indicates that the ethic is not being promoted company wide. Although Responsible Care sees itself as more than a health and safety initiative, many companies treat it as such. This is a trend amongst many companies who have not been exposed to the benefits of sustainable development. They tend to relegate Responsible Care initiatives to the company's environmental, health and safety department. According to Bob Willard (2005) and Paul Hawken (1999), compartmentalizing sustainable ethics will not result in superior environmental performance, nor will it lead to an increase in efficiencies or profits. Furthermore, this type of compartmentalization does not integrate sustainable thinking into the culture of the organization and does not allow the company to obtain the financial and social benefits it could achieve with a truly transparent and accountable mandate (Willard, 2005).

Evidence from Elkington (2004), Willard (2002, 2005), and Hawkins and Lovins (1999) prove that companies which have made sustainability the driving force in their business decisions have

seen a good return on their investment in terms of financial benefits as well as indirect benefits such as license to operate and brand value. Chemical firms who do not implement the Responsible Care initiatives that they have agreed to may not be achieving the benefits promised, which in turn, causes them to perform more poorly and non-transparently. These firms need to be aware of the benefits of sustainable development in order for Responsible Care to be truly successful.

In recent years the focus on environmental, health and safety issues have become a part of a greater movement that can be referred to as the sustainability revolution. Sustainability has been defined as meeting the needs of the present without compromising the needs of the future (Brundtland Commission, 1987). This definition has been built upon by Elkington's research on the Triple Bottom Line (1998, 2004) and Bob Willard's Sustainability Advantage (2002, 2005), amongst others. The movement recognizes the need to incorporate ethical, environmental, economical and social considerations into the governance of a corporation. A sustainable company is one that has made ethical, environmental and social goals a part of its mandate and culture. Responsible Care and ISO 14001 are considered environmental, health and safety management codes of practice. They both stop short of incorporating corporate social responsibility into their mandate (Prakash, 2000).

The ISO's new standard for sustainability attempts to address this issue; however, the question still remains as to whether or not Responsible Care will incorporate sustainable principles into its code. The CCPA, ACC and ICCA (International Council of Chemical Associations) have all stated that sustainability and stewardship are implicit goals of the ethic. However, Responsible Care stops short of Hawken's and Lovins' (1999) theories on natural capitalism and the theories of industrial ecology, which go beyond eco-efficiency to advocate closed loop manufacturing processes, biomimicry and inherently safer technology (IST). The Global Reporting Initiative's sustainability indicators and the new ISO sustainability standard take into account these factors.

The 2003 report to the CCPA from the National Advisory Panel single out Responsible Care's lack of explicit provisions for some of the principles of industrial ecology such as zero discharges; a need for a product stewardship vision that goes beyond product safety and focuses on the environmental aspects of product manufacture; and research into alternatives to toxic materials. This indicates that there is work which needs to be undertaken for Responsible Care to become more than an environmental management system.

In Europe, there has been difficulty in encouraging firms to pursue Responsible Care and corporate governance. Sixteen of twenty-two industry associations currently require members to subscribe to the principles of Responsible Care. This indicates that there is a general belief amongst these associations that Responsible Care is not a right fit for their members and participation in the program does not give a competitive advantage (ENDS, 2005).

Political Actions and Principles

When actions do not line up with principles, it calls into question the firm's level of information disclosure. The public and other stakeholders will begin to question the company's commitment to

sustainable principles (Bendell & Kearins, 2005). An example in which an industry association's lobbying efforts were incongruent with Responsible Care philosophies involves the Canadian Chemical Producers Association and their lobbying against Canada's early ratification of the Kyoto protocol. At times, companies and industry associations use Responsible Care as a lobbying tool, rather than a tool to take action. In the CCPA's example, its National Advisory Panel recommended that the association "develop a process to ensure congruency between CCPA legislative positions and Responsible Care" (CCPA National Advisory Panel, 2003). A similar situation occurred in 1996 when the U.S. Chemical Manufacturer's Association (now the ACC), lobbied congress to remove 90% of the chemicals on the Toxic Release Inventory.

Incongruent political and environmental goals, call into question the level of transparency that the chemical industry operates at. It also makes the Responsible Care initiative seem more like a public relations strategy than a true attempt at creating a sustainable industry (Prakash, 2000). In order to achieve a truly transparent system of reporting, chemical industry associations must take the lead in consolidating their various goals, responsibilities and interests into a streamlined mandate that centres on Responsible Care.

In the CCPA and ACC's defense, an industry association is mandated to serve the needs of its members as well as serving the needs of the community. This requires a delicate balance that is hard to achieve. Also, industry associations such as the ACC have instituted new measures, such as the ACC's security code to encourage the use of safer technologies, including safer materials (Schmitt, 2002b). However, the association was still criticized, according to Chemical Week, when its push to reduce public access to information for security reasons, was condemned by environmental groups. They stated that "the practical impact of taking right-to-know information off the web is to make it harder for community members, workers, physicians, and emergency responders to get the information, while doing nothing to hider terrorism." (Schmitt, 2002b, p. 44).

Andy Smith, from Earth Ethics suggests that the Responsible Care ethic must focus on sustainable development in its entirety, rather than just focus on environmental health and safety. To do this, chemical firms must question the sustainability of the products they manufacture over their entire life-cycle. The goals of zero-waste and zero-impact must be incorporated into Responsible Care, to ensure maximum transparency (Schmitt, 2002b). If companies continue to efficiently produce hazardous chemicals, while lowering emissions, a certain set of problems are solved. By pursuing eco-efficiency, emissions are reduced and profits are increased, but socially, the problems associated with hazardous chemicals remain. Efficient technologies can allow firms to make more of a hazardous chemical at a reduced cost, allowing the chemical to flourish and drive consumption despite its negative environmental effects (Hawken et al., 1999).

A sustainable strategy would also examine the social effects aspects of hazardous chemicals, including health and safety issues, and would pursue a policy of reducing or replacing these chemical with a more benign, cost effective, alternative (Schmitt, 2002b). This type of strategy is one that maintains a congruency between policies and ethics. Chemical firms need to resolve their

multiple interests and strive to achieve implementations that correspond to ethical goals prescribed by Responsible Care.

8. Limitations of voluntary environmental programs and the possibility of a certain degree of legislation to compliment the voluntary initiatives are not given due consideration.

The benefits and drawbacks of voluntary environmental programs such as Responsible Care have been discussed throughout this inquiry. In practice, the best policy may be a hybrid between voluntary initiatives and government legislation. The push by chemical associations to have a fully voluntary standard may be a possible answer to the central question: “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” In this section the benefits of government legislation, voluntary initiatives and hybrids of the two will be discussed.

Government Legislation

The Environmental Protection Agency’s Toxic Release Inventory developed in the 1980’s and the European Union’s Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), instituted in 2006, are two examples of initiatives which overlap with Responsible Care directives. The REACH initiative, as mentioned in section one, focuses on product stewardship and makes the chemical producers and suppliers responsible for hazardous chemicals from their manufacture to the end of their useful life. Companies will be required to register hazardous chemicals, undertake risk management measures and communicate handling and use information to customers and users (EU Commission Enterprise & Industry, 2006). According to the chairman of the ICCA’s Responsible Care leadership group, this type of registration and supply chain management has been an un-fulfilled goal of Responsible Care for many years. The Global Product Strategy was created by the ICCA to address the issue of product stewardship (International Council of Chemical Associations, 2007). Cefic has also revamped its product stewardship directives in order to meet and surpass the new REACH legislation.

In this case, the REACH legislation has acted as a catalyst to improve product stewardship and provides the Responsible Care system with the necessary information required to track and manage chemical products. From this example, it is clear that some degree of legislation can act as a motivator and spur more development in certain areas of the initiative. According to Willard (2005), there exists a proper mix between legislation and voluntary initiatives. Too much legislation can be too costly, as was the case in the command and control era of the past. However, too little legislation may not provide the necessary incentives to ensure compliance from industry.

Voluntary Initiatives

Although government legislation acts as a catalyst in certain situations, it is by no means an end in itself. The hope is that Responsible Care initiatives can be built around the legislation in order to supplement it with more action and implementable goals. If the participation of chemical firms in Responsible Care can not be mandated by legislation, it may be necessary that certain areas of the codes should include some legislation to augment voluntary initiatives (ENDS, 2005).

However, legislation alone cannot help foster inter-firm communication, nor can it develop mutual support networks of chemical firms. According to Debbie Jackson of Careline, these social structures help relate information about best-practices to all the firms in a given association. The initiative also encourages peer review of reporting data and mutual assistance when required, to increase compliance and competitiveness (ENDS, 2005). In previous decades, trade secrets were guarded and information was not shared. In the years since Responsible Care, trade secrets have become shared best practices and companies have adopted the new philosophy that sharing information and experts can increase competitiveness for all parties involved (Willard, 2005).

The success of other well established voluntary environmental programs, such as the Sustainable Forest Council's certification program, provide good evidence that with the right configuration of penalties, incentives, certification strategies and management philosophies, Responsible Care can be as successful as other voluntary programs (Lenox & Nash, 2003).

Successful Hybrid Implementations

Throughout this document it has been shown that the Responsible Care system may be more effective if members can be punished for non-compliance and inability to meet target requirements of input use and output production. An industry association is not in a position to effectively punish its members due to conflicts of interest and anti-trust legal limitations. There are a variety of actors who can fulfill the role of a third party evaluator and sanctioner. These are the government, third party certifiers, such as the International Standards Organization (ISO), non-governmental organizations and the news media (King & Lenox, 2000)

A successful hybrid implementation of a voluntary environmental program with the oversight of a government regulatory body is the case of the Institute of Nuclear Power Operators (INPO) and the National Regulatory Commission (NRC) in the United States. In this case, the NRC acted as a third party evaluator and had the power to deliver sanctions to non-compliant nuclear power operators. The actual codes of practice and self-evaluations were voluntary. According to King and Lenox, "the INPO may have been successful because the threat of opportunism was reduced by enforceable sanctions" (2000, p. 713).

The evidence presented demonstrates the success of voluntary environmental programs that have enforceable sanctions. At times the voluntary body may not be in the right position to deliver sanctions, as is the case with the national chemical associations. The American Chemistry Council

has taken steps that realize this limitation by using independent auditors and the option of an ISO 14001 based standard which includes built in sanctioning mechanisms. Participation in the Responsible Care program should remain voluntary, however, the right mix of regulations such as REACH may be the catalyst necessary to improve the performance of Responsible Care, encourage more participation in national industry associations and minimize the ability for firms to act in a non-transparent manner. In the future, industry associations should recognize and research areas which need more attention, in order to create new policies or work with government and other bodies (such as the ISO) to build in the proper legislation. This type of relationship should not be feared and it has been proven to be successful in some cases.

For example, according to Prakash (2000), for Responsible Care to continue its success, it may need more science and research to demonstrate that chemicals are safe and a good alternative to other materials. Mattel and Nike have deselected chemical product use based on public concerns of health effects related to the use of certain chemicals. In the future, chemical firms must work to make their products more benign and safe. They must also provide the proof of this work through independent peer reviewed scientific study. This research should be carried out at the industry level, because the threat of product de-selection affects the whole industry.

PART III: Concluding Discussion

Rationale

The goal of doing this type of research is to help identify the problems affecting Responsible Care which stifle efforts to encourage transparency and accountability amongst member firms. Many scholars and industry associations themselves recognize that there are flaws with Responsible Care. The AccountAbility website's section on environmental management systems states that the Responsible Care initiative "is typically perceived as rather minimalist and baseline" (2005). Although the corporate social responsibility philosophy which forms the root of the Responsible Care is sound, the successful implementation of the principles and codes has been called into question.

Communication issues have been cited as one of the greatest barriers to successful implementation. This includes communication between industry associations and member firms, member firms and employees and member firms and the public. Addressing issues concerning transparency and accountability will help to solve communication issues by improving the reporting of environmental and social successes and failures. As reporting becomes standardized, firms will be held more accountable to the public for their actions. At the same time firms must be properly rewarded for their honest and proper participation in the Responsible Care management system.

It is intended that this research will help industry associations work with chemical firms, NGOs and the public to create a system in which all stakeholders can be confident in. Communicating successes and failures in an open and honest forum is a first and crucial step in achieving this goal.

According to stakeholder reviews conducted by SustainAbility and commissioned by the ICCA, those associated or affected by chemical manufacturing want the industry to “focus its improvement efforts [in four major categories]: communication and transparency; accountability; impact of products; and impact of operations” (Scott, 2004, p. 29).

Central Question and Possible Answers

The central question posed in this inquiry, which asks “What are the challenges to ensuring greater transparency and accountability in the Responsible Care System?” aims to address these four areas of improvement (mentioned above) with a focus on communication, transparency and accountability. The possible answers were explored in section II and analysis was provided at the end of each discussion of the possible answers. The following is a summary of the analysis and findings in this report.

Analysis and Findings

Possible Answer 1: Self-reports of chemical firms are, in some cases, not standardized, accurate, or properly evaluated by an independent third party.

Analysis:

Reporting standards, industry-wide metrics and independent, certified third party evaluations are key components of the Responsible Care initiative that are not fully present in any of the national association’s implementation of the ethic. Chemical industry associations need to promote performance targets, on-line publishing of sustainability indicator progress broken down by company, and independent third party certification. If companies know that they are going to be publicly monitored, they will have more incentive to comply. If they were also made aware that achieving results could improve profits and identify areas requiring more efficiency, the benefits for all stakeholders would be numerous.

Possible Answer 2: Responsible Care compliance is not properly enforced and sanctions for non-compliance are not delivered.

Analysis:

Sanctions are necessary to maintain the transparency of firm reports and the accountability of Responsible Care. These sanctions must be enforceable and regularly applied to remain effective. Some examples of useful sanctioning strategies are publishing compliance records by company on the internet, collection of and releasing of emissions data by company and using an independent third party evaluator with built in sanctioning system such as the ISO.

Possible Answer 3: Firms are unaware of the business case for Responsible Care and the principles of sustainable development and industrial ecology.

Analysis:

The business case for Responsible Care is an important tool for increasing transparency and accountability. The evidence indicates that firms who internalize sustainable practices across all their business interests have reduced costs, increased profits and improved community relations. The results come from a fully integrated mandate and therefore promote transparent and accountable practices that appeal to socially responsible investors and community stakeholders. It is recommended that evidence for the Responsible Care business case be gathered and marketed in order to encourage laggard firms to comply with all codes. This can also attract firms who may be skeptical about the true benefits of Responsible Care.

Possible Answer 4: Responsible Care lacks proper incentives to motivate firms to comply with all the codes of conduct. This can lead to the use of the system for public relations purposes and greenwash.

Analysis:

To ensure that firms are being given the proper incentives to be transparent and accountable rather than engage in greenwashing, it is important for industry associations to understand the developmental stage of the company and build incentives into the program that will encourage companies to comply. For instance, laggards will respond well to sanctions for non-compliance and training to engage in best practices for more profitability. These incentives will most likely not appeal to a firm who does not require training and is well beyond compliance. In this case public rewards for beyond compliance behavior and financial incentives to help laggard firms will be useful in encouraging continuous improvement from firms that are already performing well.

Possible Answer 5: Communication issues within firms, between firms, and with the public hinder information gathering and dissemination, thereby hindering transparency.

Analysis:

Communication Issues are at the heart of Responsible Care. The mechanisms used to communicate with stakeholders must be transparent. Stakeholders have a right to information and industry associations must diligently make that information available on a company per company basis. When dealing with these communication issues companies must be cognizant of the issues that exist within the firm and externally. A Responsible Care ethic that is not properly developed within the company will not be useful to employees or other stakeholders. Finally, communication within CAPs should be reviewed in terms of the CAP member selection process and the way these committees discuss issues. CAP members must be able to discuss issues without fear of reprimand from other stakeholders in the community.

Possible Answer 6: Chemical firms are not subject to the same set of standards if they are not part of an industry association

Analysis:

A firm's participation in Responsible Care does not necessarily predict the quality or safety of the product. Until all laggard companies in the membership of chemical industry associations are held accountable for their actions, a supply chain of strictly Responsible Care companies may not have a safer path than a chain with some non-Responsible Care companies. To ensure safety in the chain, companies need to use transparent information systems and work with governments on developing a product stewardship system that goes beyond REACH legislation to ensure that the supply chain is safe. This type of strategy will also help to ensure that companies in the chain are responsible for products from manufacture, distribution, transport, use and waste recovery.

Possible Answer 7: Actions of industry associations and chemical firms are not always harmonized with the principles of Responsible Care.

Analysis:

The Responsible Care ethic must focus on sustainable development in its entirety, rather than just focus on environmental health and safety. To do this, chemical firms must question the sustainability of the products they manufacture over their entire life-cycle. The goals of zero-waste and zero-impact must be incorporated into Responsible Care, to ensure maximum transparency. If companies continue to efficiently produce hazardous chemicals, while lowering emissions, a certain set of problems are solved. By pursuing eco-efficiency, emissions are reduced, profits are increased, but socially, the problems associated with hazardous chemicals remain. Efficient technologies can allow firms to make more of a hazardous chemical at a reduced cost, allowing the chemical to flourish and drive consumption despite its negative environmental effects.

A sustainable strategy would also examine the social effects associated with hazardous chemicals, including health and safety issues, and would pursue a policy of reducing or replacing the chemical with a more benign, cost effective, alternative. This type of strategy is one that maintains a congruency between policies and ethics. Chemical firms need to resolve their multiple interests and strive to achieve implementations that correspond to ethical goals prescribed by Responsible Care.

Possible Answer 8: Limitations of voluntary environmental programs and the possibility of a certain degree of legislation to compliment the voluntary initiatives are not given due consideration.

Analysis:

Participation in the Responsible Care program should remain voluntary, however, the right mix of regulations such as REACH may be the catalyst necessary to improve the performance of Responsible Care, encourage more participation in national industry associations and minimize the ability for firms to act in a non-transparent manner. In the future, industry associations should recognize and research areas which need more attention, in order to create new policies or work with government and other bodies (such as the ISO) to build in the proper legislation. This type of relationship should not be avoided as it has proven to be successful in some cases.

Conclusion

Responsible Care's global charter aims to strengthen the role that the initiative has world wide and maintain a similar set of codes and practices in all participating countries. What began as a response to disaster, threat of government legislation and communication needs has become a global, industry supported environmental, health and safety management system. The global chemical industry has been forthcoming in its critical evaluation of its environmental performance and has dedicated itself to improvement. This inquiry addresses the need for improvement, especially in the area of transparency and accountability. Although the industry is open to criticism, it still requires more improvement in the area of implementing recommendations and monitoring its progress. This includes:

- Reporting standards,
- Industry-wide metrics,
- Independent third party evaluation,
- Stakeholder engagement,
- Improved sanctioning,
- Business case development,
- Communication improvement,
- Minimization of greenwashing,
- Improved supply chain management strategies,
- Adoption of sustainable manufacturing philosophies,
- Pursuit of industrial ecological principles, and
- Balance between political and social actions

Given the evolution of the ethic since its inception in 1985, it seems likely that the above issues will be addressed and solutions to these problems will be implemented. In many of these areas, progress is already being made. The next few years will prove to be an important time for the chemical industry. With issues such as global warming and supply chain management at the forefront, Responsible Care will need to evolve and meet the concerns associated with these and other pressing environmental, health and safety issues.

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