GUIDELINES FOR THE SAFE HANDLING OF HAZARDOUS CHEMICALS – A COLLABORATIVE APPROACH

By

WILLIAM ROBERT GRAHAM

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We accept this thesis as conforming to the required standard

Project Sponsor, Eugene McCaffery, PhD

Faculty Supervisor, Eugenie Samier, PhD

Committee Chair, Gerry Nixon, PhD

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In Memoriam

This work has filled my days
since the loss of my son, David.
I dedicate it, with love, to his memory.

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Glossary of Acronyms

CACD - Canadian Association of Chemical Distributors
CAER – Community Awareness and Emergency Response
CAP – Community Advisory Panel
CBC – Canadian Broadcasting Corporation
CCOHS – Canadian Centre for Occupational Health and Safety
CCPA – Canadian Chemical Producers Association
CEPA – Canadian Environmental Protection Act
CMA – Chemical Manufactures Association
CPR – Cardiopulmonary Resuscitation
CQI – Continuous Quality Improvement
CSA – Canadian Standards Association
DREF – Distribution Research and Education Foundation
EHS – Employee Health and Safety (U.S.A.)
EPA – Environmental Protection Act (U.S.A.)
IAPA – Industrial Accident Prevention Association
ISO – International Organization for Standardization
MIACC – Major Industrial Accidents Council of Canada
MMA – Materials Marketing Association
MSDS – Materials Safety Data Sheet
OHS – Occupational Health and Safety Act (Canada)
NACD – National Association of Chemical Distributors (U.S.A.)
NRPI – National Pollutant Release Inventory (Canada)
SIO – Social Investment Organization (Canada)
TDG – Transportation of Dangerous Goods Act (Canada)
TQ – Total Quality
TQM – Total Quality Management
TRI – Toxics Release Inventory
TVO – TV Ontario
TSE – Toronto Stock Exchange
WHMIS – Workplace Hazardous Materials Information System

CHAPTER 1: INTRODUCTION AND BACKGROUND

1.1 - The Issue

In the last decade, there has been a tremendous increase in awareness and concern about the safe handling of hazardous chemicals. Media coverage of disastrous events in Bhopal, India and Love Canal, New York, for example, exposed inadequate and irresponsible conduct in both government and corporate sectors. This has resulted in massive legislation at different levels of government and corrective initiatives within the chemical industry itself.

Chemical manufacturers and distributors, seeking to rectify damage to human life and the environment and to prevent such occurrences in the future, have initiated an enormous shift in philosophy and focus. Led by the large companies like Dow, Dupont and Union Carbide, human and financial resources have been allocated to develop and monitor safe and responsible practices for handling dangerous goods and to meet or exceed those standards legislated by federal and provincial governments. These companies, in effect, dictate the expectations within the industry and will enforce quality and safety practices through auditing of associates. Smaller companies with fewer resources must nevertheless implement ongoing learning and training not only to remain competitive, but to protect all stakeholders.

1.2 - Project Purpose

As a responsible member of the chemical industry, the subject organization is undertaking an inquiry into the issues surrounding the safe handling of hazardous chemicals in collaboration with its stakeholders. The emphasis will be on government and industry standards which safeguard its employees, customers, suppliers, the public, and the environment.

In the process, employees, through their input and participation, will have the opportunity to:

- Clearly understand the impact of safety and quality issues on the core values of the company and its stakeholders.
- Develop clear and effective procedures to uphold shared values.
- Experience empowerment through the process of decision making.
- Enhance their sense of social responsibility and pride as chemical industry employees.
- Become part of a growing and ongoing learning community within the organization and industry.

The questions this project will seek to answer are: 1) What guidelines should employees adopt that will ensure safe handling practices thereby protecting all

stakeholders? and 2) How can this collaborative effort be a vehicle for the establishment of a learning organization beyond the scope of the project?

1.3 - Historical Background

Mishandling of hazardous and deadly chemicals has had catastrophic results in terms of humanity and the environment. The chemical industry has a dismal history in this regard. The methyl isocyanate gas leak in 1984 at a Union Carbide facility in Bhopal, India, resulted in the deaths of nearly 4000 people. Thousands more were disabled. This incident has been attributed to employee sabotage however, Union Carbide has assumed responsibility and compensation is ongoing over a decade later (Union Carbide, 1998, p. 1). In 1979, the train derailment in Mississauga, Ontario, caused the evacuation of over 200,000 citizens. It was attributed to an equipment malfunction and compounded by an extremely dangerous combination of chemicals as cargo. The result was damage to property but no loss of life (Mississauga Library System, 1998, p. 2). Love Canal was the disposal site for 20000 tons of toxic chemicals by Hooker Chemical and Plastics Corporation through the 1940's and 50's. The subsequent sale of the land to government which then resold it for residential development lead to serious health threats including cancer and birth defects (Online Ethics Centre for Engineering and Science, 1998, p. 1).

Environmental crusaders and media reporting of such events have contributed to the emergence of safety consciousness in society as a whole. The public has focussed on the chemical industry as one threat to its safety.

1.4 - Response to the Issue

In response to the need for safety in the manufacture and handling of dangerous chemicals, governments have passed legislation and industry has developed initiatives, some of which are summarized in a chronological order below.

1985
The Canadian Chemical Producers Association, (CCPA) conceived and developed the Responsible Care initiative and guidelines. The Chemical Manufacturers Association (CMA) in the United States also adopted these guidelines in 1988. As a result, most large chemical manufacturers now publish a Responsible Care progress report along with their annual report. Compliance with the Codes of Practice is a condition of membership and as many of the organization's suppliers are CCPA and CMA members, employee knowledge of the codes, especially as they apply to distributors, will be valuable in developing meaningful procedures for the organization.

1985
The Occupational Health and Safety Act was passed. It outlines employer and employee duties pertaining to health, safety, and welfare in the workplace. Employees of the organization, as participants in research, will determine how the company should continue to provide for the maintenance of a safe and healthy workplace through training and supervision as outlined in this Act.

1987
ISO 9000 standards for quality management and assurance, derived from British standards, were developed. Companies have adopted these on a contractual basis, not a regulatory one. In the proposed study, a determination will be made of resources needed to effectively and regularly maintain the ISO documentation to facilitate annual audits. ISO standards and CACD guidelines are both complementary and supplementary. Stakeholder participants in this project will be asked to evaluate any redundancies in the interests of simplification.

1988
The Workplace Hazardous Materials Information System (WHMIS) was developed jointly by government, industry, and labor as a management system for the handling of hazardous chemicals in the workplace. As it is not regulated, it falls to individual organizations to self-monitor such components as labeling of product, provision of Material Safety Data Sheets (MSDS), and worker education. Through this study, employees will determine levels of compliance, which are appropriate to their environment.

1988
The Canadian Environmental Protection Act was passed and covered pollution prevention, management of toxic substances, clean air and water, and provided for public participation and intervention. According to the cyclical review stipulation, the new CEPA (Bill C32) has gone through its second hearing in parliament and will have great significance for the chemical industry. Enlisting the expertise of CACD, employees will review applicable clauses such as those that govern transportation and waste management, both of which are integral to the distribution role. The cradle-to-grave principles of this Act are consistent with those of Responsible Care and Responsible Distribution.

1989
The Canadian Association of Chemical Distributors, (CACD) adopted a Responsible Distribution Policy and a Distributor Code of Practice based on the Responsible Care philosophy and guidelines. Not only do they contain systems for safe handling, but provide the basis for a culture of safety for stakeholders. Employee participants in this project, as partners in research of this material, will be able to define that culture for the organization.

1992
The Transportation of Dangerous Goods (TDG) Act was designed to promote public safety in the transportation of dangerous goods. Transportation is a fundamental component of distribution and, with an increasing number of products listed under TDG regulations, employees will need to establish a system for regular review of these and of the design of the organization's Transportation Emergency Response Plan.

These standards and guidelines are now among those that govern the organizational practices of the chemical industry. The organization's stakeholders, through the process outlined in this proposal, will participate in an assessment of the extent to which, and of the manner in which, these initiatives should be applied. The Responsible Care mandate aims to get away from the compliance mentality and to move toward a philosophy or culture in which stakeholder safety is implicit. This compliments the secondary purpose of the project.

1.5 - Internal Causes of the Issue

Within the organization, factors that have lead to the stated issue are really quite simple. The company has grown considerably and the rate of change outlined above has been swift. The allocation of human and financial resources for a concerted effort to maintain guidelines for safe handling has not been designated. Leadership and management have prioritized growth of sales and improved customer service through compliance with quality standards.

Larger organizations have hired individuals whose sole responsibility it is to research and develop processes for implementation and monitoring standards and guidelines. In the subject organization, this responsibility has not been clearly defined and is shared by three or four employees for whom regulatory concerns are in addition to their routine and problem solving duties. Such an expectation may have become unrealistic and unfair due to the scope of the issues and complexity of the standards.

1.6 - The Organization

The organization is a privately owned distributor of specialty chemicals and processed raw materials and has been in operation for 30 years. The head office and warehouse are located in Mississauga, Ontario and there are two smaller branch offices in Montreal and Vancouver. It employs a permanent full-time staff of 26, many of whom have been with the company in excess of fifteen years. The following chart depicts the organization as it currently functions.

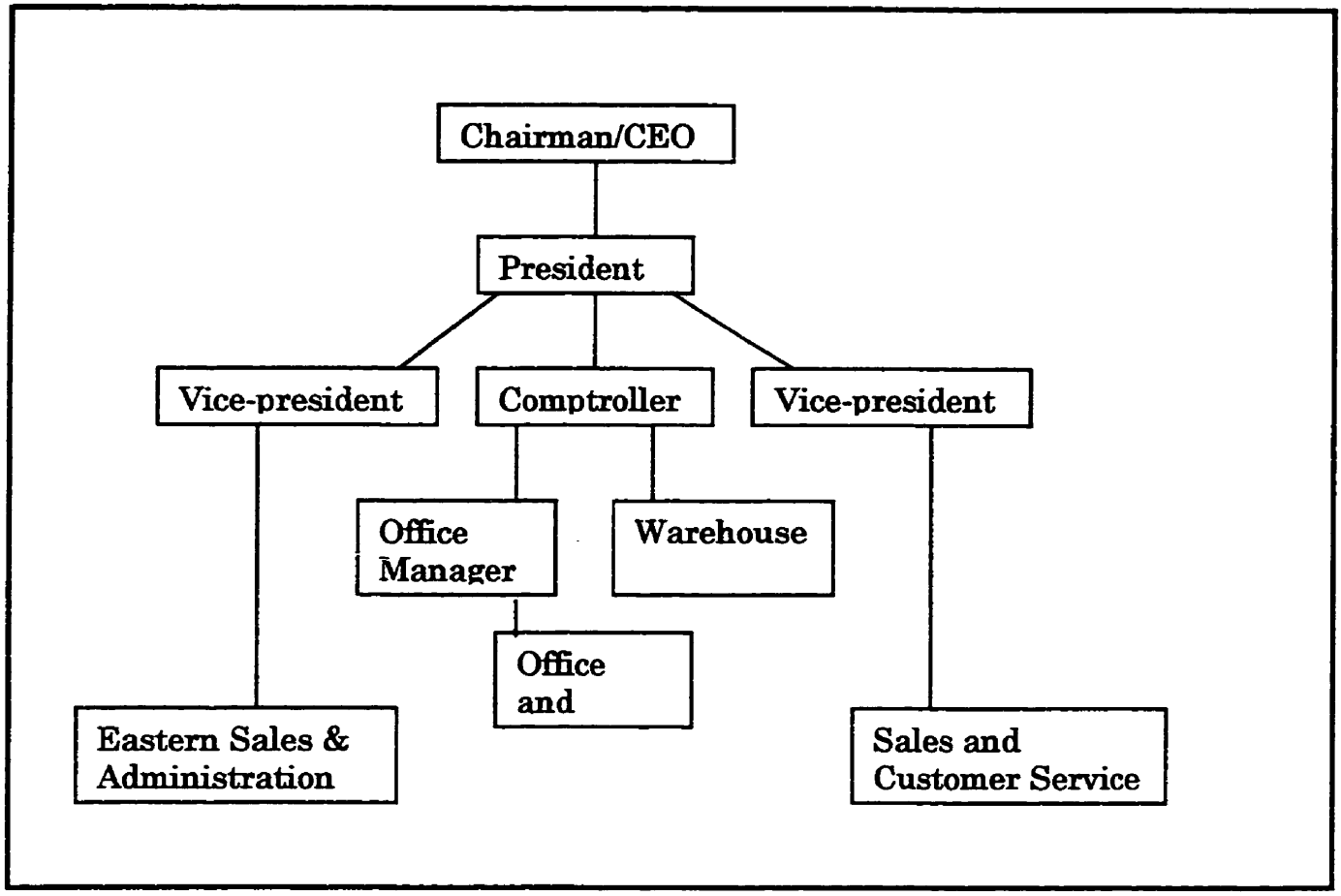

Figure 1

The business involves the purchase of products from manufacturers and the transportation, storage, and sale of product for delivery to customers. The company has two divisions:

Industrial Chemicals. These products are sold to customers who manufacture coatings, inks, adhesives, and plastics. They include epoxy resins and diluents, rheology modifiers and phenalkamine curing agents and have hazardous ratings according to properties such as explosiveness or corrosiveness.

Fine Chemicals. Food and pharmaceutical manufacturers purchase these. Food flavours and pill coatings and fillers are not considered hazardous. For example, microcrystalline cellulose is a natural product derived from wood fibre and is used as "filler" in producing pills.

CHAPTER 2: REVIEW OF RESOURCES AND SUPPORTING LITERATURE

The subject organization is affiliated with several associations that will serve as sources of relevant information and documentation.

Materials Marketing Associates, Inc. (MMA) is a group of independent, non-competitive distributors of which the organization is a member. Members meet annually to communicate concerns and issues and collaborate to solve problems. The material being gathered through this association is anecdotal and testimonial in nature as businesses share their experiences with regard to implementation of Responsible Care initiatives. For example, obtaining new product lines was facilitated for some as a result of their endorsement and therefore it is reported to be a marketing advantage. This of course, is very subjective and information of this nature will be treated accordingly. A sampling of members will participate in the project by completing a survey.

Industrial Accident Prevention Association, (IAPA) is a not-for-profit association helping firms establish health and safety practices in the workplace. Their library provides journal articles and statistical material for research and other services including consultation and training are available.

Canadian Association of Chemical Distributors, (CACD) shares resources with members, and is representing members in committee hearings on the new environmental bill, C32. They assist in interpretation of legislation and its ramifications for the industry. Resources include a regulatory affairs manual and an implementation guide, which is a collection of documents submitted by member companies pertaining to procedures in areas of quality and safety.

Literature Review

The literature review consists of four major areas of relevance. An historical perspective provides a necessary background in any learning situation. Looking at past events places current affairs in context and develops a keener sense of future trends. Efforts by federal and provincial levels of government, the second area of review, have had significant impact on the chemical industry and will continue to do so. Industry and government are increasingly cooperative in their attempts to curtail excessive legislation while protecting citizens and the environment. Familiarity with regulatory matters has significance for participants in this project. The third area outlines industry initiatives; voluntary measures designed to serve and protect stakeholders. Finally, organizational leadership, change and teamwork are central to the project's purpose and to the chosen methodology.

2.1 - Historical Perspective

In a retrospective written by Hess and Kavaler for the *Chemical Market Reporter* the move to communication and sharing of information by the chemical industry is described as coming late. A cynical view might suggest that this has only been as a result of public pressure and legislation. Although the Bhopal tragedy is often cited as the impetus behind Responsible Care, concerns had been expressed long before. The chemical industry had been celebrated until the 1950's, when environmental activists like Rachel Carson, the biologist, began targeting it for its role in polluting the earth and threatening the existence of all living things (1996, p.72). In the 1960's, anti-war protesters focused on the producers of napalm and Agent Orange while huge fish populations died in the Mississippi River, adding to public outrage. In April 1970, the first Earth Day marked the beginning of a collective consciousness in the preservation and restoration of the environment. By the time of the Love Canal crisis in 1979, the chemical industry had taken a defensive stance at a time when communication and consultation with the public was most needed. It took such influences as Ralph Nader, *The Environmental Protection Act* and the lethal chemical leak at Bhopal to accelerate the fledgling Responsible Care and Community Awareness and Emergency Response (CAER) initiatives (1996, p.105). Undeniably, the industry has advanced some dramatic lifestyle improvements but as undeniable are the deleterious effects of air, ground and water contamination through chemical production and handling. It is important to stakeholders to have a balanced overview of the background and of the significance of events that have impacted on current affairs. This is especially meaningful to people who work within the industry and who are charged with shaping its future (Hess and Kavaler, 1996).

The Bhopal legacy is far-reaching in terms of health, economic, legal and moral issues. A decade after the tragedy, there was, and still is, debate as to legal liability and moral responsibility for the victims and their offspring according to editors for a 1994 *Chemical Week* issue. The same legacy could face any organization that makes or handles hazardous chemicals. Union Carbide had paid, by 1994, a half-billion dollar settlement to victims of an incident which took nearly 4000 lives, while the Exxon Valdez damages totaled 5 billion and Dow Corning paid 2 billion (all payments are in U.S. dollars) in settlements for breast implant cases. It is difficult to reconcile the imbalance in financial restitution when in the latter two cases there have been no reported deaths (Hunter, 1994, p. 8). The industry and its stakeholders have continued to grapple with the concept of justice. It is obvious from these figures that there is no formula for damages and due diligence must be inherent and demonstrable in practice by industry employers and employees alike. There is data to indicate that environmental threats by chemical production, storage and transportation are decreasing. The Toxics Release Inventory (TRI) in the U.S. showed emissions to be down by 35%. By 1994, the TRI list of chemicals whose emissions must be reported had been increased by 286 (Begley, 1994, p. 15). Expenditures by the chemical industry on environmental measures were up from 1% of sales to 3-4% in 1994 (p. 8). However, the prevailing opinion is that the rate of

improvement was then and remains unsatisfactory to stakeholders. In 1994, the identified needs were for formalized systems for quality management such as ISO 9000 and 14000, for workplace health and safety (WHMIS) and safe handling of hazardous goods from their place of manufacture to their end-user. This publication attests to a major and costly shift that directly impacts on safety – the gradual elimination of the need to store and transport large quantities of dangerous goods by relocating facilities (Wood, 1994, p. 25). The evolution of TransCAER was a further recognition of the responsibility of carriers and distributors for the safe handling of hazardous chemicals that must be moved. In annual issues dedicated to the Responsible Care movement, Chemical Week chronicles both progress and areas of concern and conflict. This issue reveals a demand for measurement through benchmarking.

The 1995 *Chemical Week* perspective focused on the outreach aspects of the Responsible Care initiatives. The "chemical valleys" of Kanawha in the U.S. and Sarnia in Canada, were models of community outreach. Worst-case scenarios were disclosed by a number of producers and Community Advisory Panels (CAPs) became active. Responsible Care had been adopted in parts of Europe, the U.K. and parts of South America. Germany and Japan were showing interest (Hunter, p. 33). Overall, however, the industry's image and reputation had not significantly improved in the public eye. Third party verification teams were beginning audits of 23 of the 65 members of the CCPA (p. 66) according to Markets Editor, Gregory Morris, who also reported the need for increased openness with the community. He quotes an industry spokesperson: " A well-informed, educated community will make reasonable decisions. But to be open, you have to have a system you are proud to show" (pg. 68). The resistance of companies to disclose emissions data and process systems suggested that these remained unsatisfactory as "practice-in-place" had not been achieved. This and other issues develop a sense of the scope of Responsible Care for the researcher and for employee participants. The Responsible Care ethic is not going to recede and vanish, as fads tend to do, but will continue to gather momentum within the industry.

The 1997 "CAPS Come of Age" edition of *Chemical Week* indicated progress in the outreach code of Responsible Care. (The Oakville-Mississauga CAER group is reputed to be one of the largest and most active in Canada and membership will be explored in Chapter 4.) Gregory Morris wrote that the CCPA was preparing for second -round verification of its now 78 members (p. 72). Attention had increasingly turned to the responsibilities of non-producing companies such as carriers and distributors and the CCPA and CACD formed the first partnership within the Responsible Care programme. Other industries such as steel producers had begun to adopt the Responsible Care codes. As member companies strove to demonstrate compliance, the product stewardship code (a separate code in the U.S. and integrated within all six codes in Canada) was becoming the focus as the "cradle- to-grave" product cycle ultimately has greatest environmental significance. Producers look to distributors who guarantee adherence to safe handling practices and who will, in turn, require the same of their customers. The CACD first-round verification was piloted and was based on a management systems (ISO) approach for

affordability reasons while the NACD in the U.S. had developed an " elaborate, detailed questionnaire that the verifiers will use" according to Morris (p. 76). Of particular interest to the researcher was the CMA's report that employee awareness of Responsible Care was at 77% of those surveyed, but only 47% of those had a good understanding of the programme (Fairley, p. 64).

2.2 - Government Legislation and Publications

The " Regulatory Affairs Guide" published by CACD (1997) provides interpretations of Acts including the *Canadian Environmental Protection Act* (CEPA), the *Transportation of Dangerous Goods* Act (TDG), *the Occupational Health and Safety* Act (OHS) as well as systems such as the Workplace Hazardous Materials Information System (WHMIS). The Acts are extremely lengthy and filled with terminology that would make them very difficult for employees to use. Although it is an extensive document, member experts in the various aspects of safe handling have put the guide into the context of chemical distribution. It is supplemented periodically by the *Chemunicator* and *Mailbag* newsletters. While the guide may be intended as an administrative tool, it will provide employee teams with essential and applicable requirements upon which to construct a framework for company philosophy, policy and procedures.

Transport Canada publishes a quarterly "Dangerous Goods Newsletter" providing information and articles relating to regulatory developments, compliance standards and enforcement activities within regions and provinces. It supplements the "Transportation Guide", a reference book used extensively by warehouse employees. Working with these materials and with officials from contracted transport companies will provide information needed to review effective shipping and receiving procedures and emergency response planning.

"Canada's Advantage" is a booklet produced cooperatively by the Major Industrial Council of Canada (MIACC) and Industry Canada. MIACC originates from a task force created following the Bhopal disaster. It was formed to determine the possibility of such an occurrence in Canada and did, in fact, find that such a possibility existed. It speaks to the role of the industry in education, awareness and self-monitoring practices. It promotes voluntary initiatives over regulation as more effective and less costly – a position shared with CCPA and CACD (MIACC, 1996).

Alchuk's article, "Due Diligence: The Crown's Perspective," deals with the legal responsibility of an employer under the Occupational Health and Safety Act. It outlines nine duties of employers and highlights risk-assessment and management in particular (p. 16). Alchuk, in presenting different scenarios, suggests: "Perhaps the greatest misconception about due diligence is the belief that being generally due diligent in the workplace, is enough to establish a defense against specific charges in the court" (p. 16). The article supports due diligence as both an ethical and legal requirement. To supplement this article, it would be necessary for employees to be made aware that the Occupational Health and Safety Act outlines duties of employees as well and that diligence is also needed on their part. In some

organizations, employees watch coworkers for safe practices and behaviour modification results through mutual support. (Alchuk, 1994).

The belief that government and industry must cooperate to promote continuous quality improvement and competitiveness is supported in a special publication entitled *Quality Success Stories* (Government of Canada, 1994). Case studies point to successes and also to problems and pitfalls. The publication underlines that "the rush to quality" does not yield success as does the approach of "ongoing, incremental improvements" (p. viii). It refers to total quality as: " a management philosophy which emphasizes management leadership, employee involvement, focus on the customer and continuous improvement" (p. vii). Employee participation is a recurring theme in the success stories. Dow Canada has developed an employee suggestion system which results in a 74% implementation rate with an estimated $30000 per month in accumulated savings in one department (p. 91). The role of management is to remove obstacles for using employee suggestions and to reinforce and reward them. Whether it is quality or safety, organizational initiatives require employee participation facilitated by support and commitment of leadership.

2.3 - Industry Initiatives

Whether for altruistic or practical purposes, various initiatives within the industry and the business sector as a whole have emerged. The Total Quality concept is customer-oriented while Responsible Care encompasses the broader stakeholder orientation. Systems for managing both are numerous, complex and costly and are subject to failure. A review of the literature reveals that successful implementation of any or all systems or standards depends upon the degree of acceptance within the industry, public perception, cooperation with government efforts and conducive conditions within individual organizations.

Total Quality Management (TQM) for wholesale distributors has become a well-established expectation in the current international marketplace. A company that has a quality system in place offers a competitive edge through stronger customer and supplier relationships, fewer problems and assurance of resolution should problems occur. However, the Distribution Research and Education Foundation (DREF) clearly points to prerequisite conditions within an organization in order for any such system to be of real value. Successful implementation is not seen when the following elements are not in evidence: leadership commitment and support, employee involvement following training and reeducation, and a teamwork approach based on shared vision (1993, p. 68). When implementation is rushed and process stages including planning, assessment, measurement and review do not take place, success is not experienced. The provision of consistent, value-added service with the goal of "100% of customer requirements being met 100% of the time"(1993, p. xvi) impossible if employees have not been immersed in the principles and deeply involved in redefining procedures and policies (DREF, 1993). This view is echoed by Senge who says, " faster is slower" when growth within a system exceeds the optimal (1994, p. 62). With many standards to endorse, there is confusion, and therefore reluctance, to commit on the part of many organizations. In

a handbook for practitioners of ISO standards (which is the most prominent of quality and environmental management systems), the Canadian Standards Association concedes a need to improve confidence in the outcomes and value of compliance with ISO 9000 and the newer 14000 standards relative to the considerable effort and cost of implementation. The need for benchmarking is essential so that organizations can begin to gauge benefits and set meaningful goals. Again, the process is critically important and it requires a systems orientation. Objectives, milestones, resources and timelines must all be identified so that implementation is a course, not an event (CSA, 1998).

There is a practical need for harmonization of standards and legislation at all levels. An article written by Brian Lane for Hazardous Materials Management Magazine points out that different systems (such as ISO 9000 and ISO 14000) can have different objectives, yet be similar in their implementation paths. Such similarities also exist between ISO and Responsible Care standards. Integrated systems rather than multiple systems are superior as they reduce paperwork and more importantly reflect a cohesive and comprehensive philosophy. Once again, organizational culture and structure are cited as being of foremost importance: "The companies who have embraced "empowerment" and cross-functional operation teams will have little problem with integration."(1997, p. 20). Stand-alone systems reflect and perpetuate stand-alone segments within a company and, in view of the dual purposes of this project, the need for a team approach is underlined.

The Responsible Care initiative had more compelling origins in terms of its social and environmental scope. Its implementation has therefore been more complex as it represents not only a system, but also a far-reaching value statement by those who espouse it. In 1996, the reluctance of producers to become proponents of Responsible Care was echoed in the title of the report "Does Responsible Care Pay ?" The need for yet another management system had to have some bottom-line benefits that would justify the expenditure and exposure. Hazardous Materials Management contributor Madeleine Donahue writes: " The proponents of certification, and those who have been certified, must spell out the gains companies stand to make by the process, and the specific costs contained therein." (1997, p. 42). The document summarizes reported benefits of member companies and associated agencies of CCPA. The benefits are numerous and not all are easily substantiated, as the shift in ethic is only a decade old. Many of the direct benefits to companies, such as employee job esteem, are difficult to measure. Without much supporting data, tangible benefits such as preferred insurance and financing rates are given. Another reported benefit involved the generation of an improved management system for safe handling to replace an "ad hoc" approach. Reducing the "costs of ill repute" associated with pollution is a long-term benefit (CCPA, 1996, p. 11).

The 1998 perspective developed by Chemical Week's editorial team provides an overview that indicates the level of commitment that an organization's policies and procedures must reflect. Japan, Australia, New Zealand, Brazil and Mexico have developed Responsible Care programmes, suggesting a realization that Responsible Care does, in fact, pay. The CMA has begun gathering data on the health effects of

chemicals as the Product Stewardship deadline approaches in 1999. CCPA members have been collecting data on their Safety, Health and Accident Reporting Experience (SHARE) and emissions reporting and reduction plans are required. These kinds of disclosures will serve to strengthen the initiative from within and without. Although Responsible Care has gained support within the industry, by environmentalists and governments, the public's distrust is not improving despite CAP activity. Critics cite: 1) The absence of specific goals; 2) A reluctance of members to disclose results of third-party audits; 3) Undeveloped and undisclosed worst-case scenarios; and 4) Opposition to regulations which are in line with Responsible Care principles. It seems necessary for the CMA, NACD, CCPA and CACD to raise their respective and collective profiles through increased community involvement with member companies. School programmes, tours, open houses and involvement in local CAER groups are ways to overcome this. (Mullin, 1998, p. 62).

Many examples of efforts to enhance the community awareness and outreach initiative were found. The publication entitled *Good Neighbours, Good Sense* (1997) summarizes the Responsible Care commitment and has value as a concise, attractive booklet for use in educating employees and external stakeholders. It contains an anecdotal report that has relevance for employee involvement. A verification team was asked by an employee of the company being audited if they were from the ISO 9000 programme. While humorous, Responsible Care and its verifiers demand employee knowledge. Too many such blunders could and have resulted in failure to demonstrate compliance (CCPA, 1997). Corporate environmental "report cards" are now published annually as annual financial reports have long been and this is yet another indicator of a willingness for public disclosure and a commitment to Responsible Care. The "Union Carbide 1997 Responsible Care Progress Report" (1998) and "Dow Canada Progress Report on 1997 Environmental Health and Safety Performance"(1998) are examples of corporate endorsement of Responsible Care practices and contain data on emissions and air and water quality using U.S. Environmental Protection Agency and Environment Canada standards. They attest to the benefits of safe practice and exemplify the new ethics within the industry. They reinforce for employees of distributors the huge commitment and level of expectation within the industry. Dupont Canada, in its 1997 Environmental Performance Report (1998), discusses its training and education programmes for contractors, customers and distributors. Co-sponsorship of educational programmes like Let's Talk Science and The Children's Groundwater Institute demonstrate community involvement and a furthering of interest in science and ecology. While the huge, multinational producers have been the largest environmental liabilities, they have also become leaders in environmental remediation and responsibility.

An initiative of the Major Industrial Accidents Council of Canada (MIACC) called Partnerships Toward Safer Communities has identified 530 communities across Canada which have increased risk due to hazardous chemical production, storage or transportation. Under the chairmanship of CCPA and with CACD as one of many partners, MIACC's focus is on prevention, preparedness and response in such communities. TransCAER is another programme aimed at protecting such high-risk

areas. Funded by CCPA members and the rail industry, the Safety Train, a converted tank car, is a mobile training classroom for industry workers, firefighters, police and emergency response teams. These are a few of the measures outlined by the CCPA in its annual Responsible Care report entitled "Are We There Yet ?" (1996). The Oakville-Mississauga CAER group sponsors an educational initiative called the Link Programme in which secondary school students present chemical awareness and safety to elementary school classrooms. Such programmes are in evidence in many North American communities.

The Social Investment Organization, a national non-profit group formed in 1989 to advance socially responsible investors and corporate social responsibility, has begun an annual ranking of corporations published in *The Financial Post* magazine. These are TSE 300 companies whose financial, social and environmental performances demonstrate excellent core values and integrity. Links to tobacco production or to repressive political regimes eliminated some companies despite excellence in other areas. The significance of the article lies in equal importance being given to "doing the right thing" and to bottom-line considerations. Shareholders and stakeholders are valued equally (SIO, 1997). In contemplating the many standards to be incorporated into company policies and procedures, stakeholders, and especially employees, must consider the ensuing implicit commitment to important initiatives, some of which have been outlined above.

2.4 - Organizational Leadership, Change and Teamwork

Many references in the previous review of industry initiatives indicated the importance of the role of leadership in attaining organizational goals. The commitment to change or to altering the status quo is a recurring theme as is the need for stakeholder participation. Leadership, change and teamwork can be discussed as separate concepts but in reality and practice are interconnected.

Distinguished leadership is often associated with change or with the creation of something new. Kouzes and Posner (1995) talk in terms of insight and outsight: "Outsight is the sibling of insight – the ability to apprehend the inner nature of things – and the awareness and understanding of outside forces comes through openness" (p. 47). In confronting change and promoting an environment that is receptive to change, leaders must possess the ability to stay connected with internal and external conditions. In *The Leadership Challenge* (Kouzes and Posner, 1995), the leader is not isolated but fosters enabled and empowered individuals who are better equipped to confront change. This can be achieved through collaboration and teamwork, especially when individuals and teams are celebrated (p. 294). As this project challenges the status quo, employees who formerly would have been asked to read the guidelines will now be asked to rewrite the guidelines based on participation in research and evaluation processes. As this work will represent additional responsibility for a period of months, celebration of individual and team efforts will be of great value should thereafter become an integral part of organizational practice.

Senge, in *The Fifth Discipline* (1990), proposes that an effective leader adopt a teacher role in orienting and focussing workers in beneficial directions (p. 353). This project entails such a role for the researcher who must facilitate teamwork and frame a shared vision for the future that promotes a learning environment. Senge teaches the fundamentals of creating a learning organization. A prerequisite is a systems-thinking orientation that enables shared vision and teamwork that yield adaptability and growth. The focus is on the "whole" - whether it is a business, an industry or a global concern. Getting away from "survival learning" and fostering "generative learning" (p. 22) perpetuates creativity and innovation. Learning disabled organizations become prisoners of the status quo which is comfortable, familiar and has provided prosperity or prestige. When "managers find collective inquiry inherently threatening "(p. 25), the learning opportunities are compromised and change is resisted. "Can you create a quality organization without building a learning organization?" provides the introduction to an article entitled *Our Quality Program Isn't Working* (1994, p. 445). Consultants Roberts and Thomson suggest this is symptomatic of organizational dysfunction resulting from lack of shared mental models, deep commitment, systems thinking and transformational leadership (Senge et al. 1994, p. 453).

Perspectives on leadership and management behaviors, influence, traits and skills abound. Yukl's (1994) examination of styles involving participation (p. 157) and transformation (p. 351) are of particular significance in this research. Participative leadership is based on inclusion of employees in decision and policy-making, whether or not it is necessary to do so. It is advantageous and beneficial in terms of morale but it also recognizes the wisdom and experience that employees possess. It cautions leaders not to presume that employees share objectives or wish to share responsibility for decisions. O'Toole cautions in *Leading Change* (1996) that a leader as an agent of change that is not understood by others will meet with resistance (p. 248). A most effective way to understanding is through participation. Transformational leadership is based on trust, loyalty and respect for the leader (s). A leader shapes culture by attention, reaction style, role modeling, reward allocation and recruitment criteria (Yukl, 1994, p. 356). To focus solely on leadership offers too narrow a perspective. "Leadership is not a solo act" according to Kouzes and Posner in *The Leader of the Future* (Hesselbein, Goldsmith and Beckhard, 1996, p. 106). Leaders who are successful are supported by others. In an interview conducted by Joel Kurtzman for the quarterly publication *Strategy and Business*, Warren Bennis discusses what he calls "Great Groups" in which leadership plays a critical role. He sees the role as twofold; that of visionary and that of protector of talent. Great leaders and great groups often create one another through support, training, shared vision and values. Leaders must recognize, appreciate, and nurture the strengths and talents of individuals within the team. They must be able to shift roles in order to be totally supportive and must constantly remind the group of the goals and objectives (Kurtzman, 1997, p. 89). In successful implementation of quality and safety practices, the role of leadership is most often given as the key but not to the exclusion of stakeholder participation and teamwork.

The creation of teams is in itself a process involving training and learning according to D. Harrington-Mackin (1994, p. 144). Whether they are cross-functional or multi-functional, certain elements must be in place. Successful teams must be built on trust and comfort in order for the desired participation to take place. The role of facilitator must be understood and should be rotated. Listening and interpersonal skills are important and can be developed through team experience. Certain elements must not exist; a hierarchy – real or perceived – will not allow a team to succeed as all members should be able to demonstrate leadership traits as they are able (Harrington-Mackin, 1994, p. 22). Teams must exist within a systems orientation lest they create silos or a "we-they" operation. Oshry develops the understanding of all social systems for the purpose of reducing divisiveness and a fragmented state of affairs by putting one's self into another's perspective. *Seeing Systems* promotes moving from an "I" to "we" framework and, in the context of this project, away from a "we/they" stance. In a business organization, it means that all workers must learn or be taught to see that their roles and attitudes impact significantly on the roles and attitudes of others and vice versa (Oshry, 1996, p. 164).

CHAPTER 3: RESEARCH APPROACH AND METHODOLOGY

3.1 - Research Approach

An action and evaluation research approach was adopted for this project to best achieve its primary and secondary purposes. The study objectives required an understanding of attitudes, perceptions, experiences, and values within a workplace and within the broader industry. These are to be assessed in the context provided by the review of literature. That the project was aimed at improvement and change within the organization is evident in the stated purposes. The action research principles of participation, inclusion and communication for the purpose of generating and expanding knowledge about and within a group are applicable to all aspects of the study. While much of the work was problem and needs-assessment based, an appreciative inquiry was utilized in examining stakeholder experiences, the historical perspective and in consideration of recommendations.

The stakeholder groups are diverse, as are their respective agendas. Accommodating such diversity is a further justification for the action research approach. Intragroup meetings in which different stakeholder groups were able to "discuss their problems and describe their situational contexts" (Stringer, 1996, p. 69) were appropriate given the scope of the project. Customers, suppliers and other distributors who have, are or will be involved in incorporating safety guidelines needed to be consulted. Mounting public awareness of and involvement in hazardous chemical management as seen in the increasing activity of Community Advisory Panels (CAPs) needed to be explored. Government intervention, as seen in the CEPA review and efforts to harmonize TDG legislation internationally, demands stakeholder diligence and education in the interest of public safety and environmental justice. Finally, employees are empowered through the action research style as their knowledge and experience is valued and expanded throughout the evaluation process. In participatory action research "the group moves from a feeling level about their need, to thinking and understanding, to action and transformation" (Smith, Pyrch and Lizardi, University of Calgary, unpublished work, 1991, p. 5). The relatively small number of employees facilitates a collaborative inquiry while it does not necessarily provide the basis for a more scientific, randomized study.

Embedded within the selection of this research approach is the goal of affecting a shift in the culture of the organization to include a team-based learning environment. This type of study will afford employees an opportunity to practice the goals of shared decision-making and problem solving – two of the essential elements in building alignment and shared vision within a learning organization. The opportunity to experience such a degree of inclusion is inherent in the action research principles.

Both qualitative and quantitative designs, with emphasis on the former, were used. This, again, is consistent with the overall approach and with the researcher's experience, stakeholder needs, existing theory, the available data and project purpose. The interactive approach is enhanced by a quantitative model that yields "thick" (Thompson, Crawford, Hartvigsen, Parrish and Thomas, unpublished work, 1993, p. 1) or "rich" (Maxwell, 1996, p. 95) descriptive data out of a real setting and context. Although the study was primarily qualitative, the quantitative implications of the survey, interview and observational results offer measurable, precise information to be used in validation of apparent trends or patterns.

A modification of the " Look, Think, Act model" (Stringer, 1996, p. 16) will be applied to ensure a continuous reflection on data collection and results.

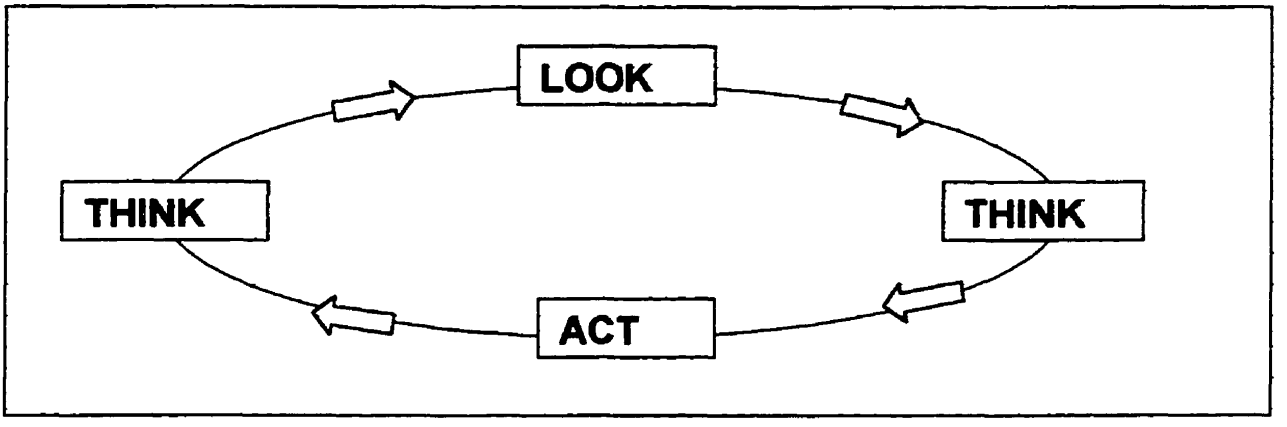

Figure 2

This model reinforces the intended movement from "what is" to "what should be" within the organization. The "look" component represents the inquiry, the "think" component indicates ongoing scheduled reflection and discussion, and the "act" component is more accurately a recommendation for future action. Ross, Smith and Roberts use a similar analogy in their "wheel of learning", the elements of which are reflecting, connecting, deciding and doing (Senge et al, 1994, p. 60).

3.2 - Methodology

As a component of the overall project design, the following methodology satisfied both purposes. Soliciting different stakeholder perspectives advanced the more practical purpose of determining the nature of a meaningful employee guideline (i.e., its contributors, content and format). Initiating, if not establishing, learning and teamwork practices within the organizational culture will be developed within the project.

The researcher relationship with participants was complex and multi-faceted. At various stages, it involved these roles: leader, teacher, facilitator, consultant, mentor and last, but not least, learner. In qualitative research, the researcher is

often " an instrument", as so much information is gleaned through that individual (Stringer, 1996, p. 62).

3.2.1 – Participant and Site Selection

Sixteen head office employees, not including the two administrators, were invited to participate in workshops, inquiries and surveys. A cross-functional team of six employees, representing the warehouse, sales, administration and customer service, was formed to serve multiple functions within the project - as a focus group, as key informants and as leaders of inquiry teams. Their job titles are as follows: Customer Service, Warehouse Assistant, Office Manager, Controller, Technical Sales Representative and Marketing Manager. This group will be referred to as the focus group throughout the report. Asked individually and privately and given an outline of the activities with an approximation of time requirements, all consented. One individual expressed concern about the time taken from regular job performance but was comfortable that withdrawal was an option should this result. The four inquiry teams, each headed by a focus group member were formed according to interest and expertise and, again, participation was voluntary and as time allowed. Each team had four employee participants. It should be emphasized that this research was initiated in an effort to introduce teamwork and collaborative learning within the organization and will not be reported, as it was not an integral aspect of the study. The findings will, however, be utilized in future in conjunction with some of the recommendations presented in Chapter 5.

External stakeholders (customers, suppliers and friendly competitors) were chosen using criteria developed with the internal focus group. It was decided that the external group should be made up of companies that were: 1) Important to the organization and within the industry; 2) Accessible and approachable for follow-up discussion; and 3) Involved in or considering some focus on Responsible Care or Responsible Distribution. Seventeen were selected, of which five were customers, six were suppliers, and six were competitors. This group was representative of different sized companies. Initial contact was made by telephone, asking for cooperation, after which eleven packages were delivered in person and six were faxed.

The site selection was straightforward. As this was a workplace study, all interactions with employees and observation of routines and practices took place at the head office – in both the office and warehouse areas. Workshops and small group meetings were held in a boardroom and interviews were held in a private office. As a practical matter, employees were less disrupted by involvement in the project by remaining on-site. External participants were met at their convenience at their workplace, unless a faxed package was appropriate because of distance. The researcher based all work that was not interactive at a home office.

3.2.2 - Data Collection

Data was obtained in several ways. Two surveys were designed to elicit attitudes and experiences from employees and the external stakeholder group. Interviews were conducted to gain insight into stakeholder attitudes and experiences with regards to Responsible Care. Observations, both purposeful and anecdotal, were gathered from the workplace.

3.2.2.1 – Focus Group

The first function of the focus group was to participate with the researcher in designing the survey questionnaires. The researcher prefaced the first session by reminding the group of the purposes and by asking for a brainstorm of questions that might reveal both existing and desired conditions within the organization. Once the exchange of ideas was underway, the researcher became a facilitator of and participant in the discussion. Ideas were recorded on chart paper and then sorted into themes. Further details of the questionnaire designs are given below.

3.2.2.2 – Survey Questionnaires

The brainstorming sessions with the focus group yielded questions and themes that supported the goals of both the project and organization. Ideas for format and structure were modeled on existing surveys from customers, suppliers, and market research firms and from MALT workshop materials. Simple coding guarded anonymity. Several parties including a retired employee and administrator, a former employee, three present employees, an MMA colleague and the Faculty Advisor reviewed both survey drafts. Revisions, additions and deletions were made according to their input.

The employee survey is attached as Appendix G. Four major themes evolved out of the random generation of questions designed to clarify the purposes. The first theme, Procedures, addresses the first stated project purpose. Questions attempt to determine the importance of procedure guidelines in daily job functions and to seek employee opinions on format, content and contributors. The second stated purpose required insight into conditions and attitudes within the organization that might further or hamper an environment geared toward sharing and learning. The questions were sorted into themes entitled: Teamwork, Communication and Job Experiences. At this point, the researcher, having chosen a Likert-type format, asked that the questions be revised to read as statements or assertions (Palys, 1997, p.170). A majority of the statements, totaling twenty-three and organized within the four themes, solicited "variance" information using a five-point scale indicating agreement. One multiple choice and two short-answer formats were incorporated and each section provided space for additional general comments.

The questionnaire distributed to external stakeholder participants had three versions. Two versions have slightly different wording of the first question to reflect

American and Canadian differences (see Appendices D and E). There is also a difference in the last two questions depending on whether the recipient was a supplier or a customer (refer to Appendix F). The literature review provided perspective on the major trends in implementation of safe handling practices but the more immediate view offered by the organization's stakeholders and associates view was sought in terms of the project's first and more practical purpose. The researcher and focus group decided it was important to know how others have experienced change, both culturally and pragmatically. Multiple choice and short-answer formats were used in a total of fifteen questions, the singular theme being safe handling practices and the endorsement of Responsible Care. Each survey was accompanied by an overview letter (Appendix C), a consent form (Appendix B), and return information. Anonymity was waived as participants felt the content was not overly sensitive or confidential.

3.2.2.3 – Interviews with Focus Group

One-hour interviews were conducted with focus group members to consolidate the researcher's impressions of apparent trends or attitudes indicated by survey responses. The employee focus group members were interviewed individually to reexamine and clarify the research issues - that which was to be understood, as separate from the practical issues - that which was to be accomplished (Maxwell, 1996, p. 16). This questionnaire is attached as Appendix H. The nature of the questions was fairly broad, to encourage descriptive accounts from the perspective of the interviewee (Stringer, 1996, p. 62).

3.2.2.4 - Observations

As with the interviews, purposeful observations served to enable the researcher " to draw inferences about someone's meaning and perspective" (Maxwell, 1996, p. 76) not conveyed in surveys or interviews. The researcher was interested in such information insofar as it would reveal the adequacy or inadequacy of existing procedures and also the level of teamwork and communication in existence. Physical trace measures (Palys, 1997, p. 216) were included to reinforce reported patterns especially related to safety. Movement of employees and equipment in and through the warehouse area was particularly emphasized. The nature of employee interaction was another aspect of interest in that behaviors would manifest such things as departmental silos and other obstructions to systems dynamics. Indicators of recurring problems or inefficiencies were to be noted. The employee focus group had been asked at the outset of the project to keep anecdotal notes on these aspects which were then collated with the project leader's observational notes.

3.2.2.5 – Appreciative Inquiry

In addition to the sources of data identified above and in light of the change likely to result from the study, an extensive appreciative inquiry was considered of value. "Looking for what works and finding ways to do more of that" – the basis of appreciative inquiry (Hammond, 1996, pg. 9) supported the purpose of the project.

The content of discussion with chemical companies revolved around the question: "How have the principles of safety and quality been incorporated, not only into practices, but into the culture of your organization?" Those contacted were recommended, based on their proactive stance and experience in implementation of such practices, by either the CCPA or CMA VP's of Responsible Care. Non-business contacts were asked to identify any tangible impacts of the Responsible Care initiatives.

3.2.3 - Procedures

Although not entirely sequential, the research was conducted through the following components, some of which ran concurrently.

3.2.3.1 - Orientation and Background

Initially, two orientation workshops were provided for employees to overview the project, its purpose, and the timeline, workplan and ethical considerations. A second component introduced systems thinking and teambuilding concepts. The historical perspective was presented as the foundation for all initiatives regarding safe handling of hazardous chemicals. Consensus as to its value was an objective as was obtaining employee support and commitment.

The catered lunchtime venue that was deemed preferable to employees provided a relaxed, informal setting. Workshop materials consisted of a colourful display board highlighting critical aspects of the project (this was left in a prominent place in the office area), overheads that summarized the project and steered the researcher's presentation, and a handout for employees that contained the survey. Some of these materials are included in Appendix I. Consent forms (see Appendix A) were collected following the workshops.

3.2.3.2 - Employee Focus Group Functions

The procedures involving this group proceeded as follows.

Given that much of the study would revolve around the survey responses, the group met immediately after the orientation workshops. A series of three two-hour meetings addressed the design of the surveys. The first produced themes (Procedures, Teamwork, Communication and Job Experiences) and related questions. The draft was typed and pilot-tested, leading to a second meeting in which revisions, additions and deletions were put forth. The external stakeholder survey was generated in a third meeting as was a list of prospective participants.

A further meeting with focus group members initiated the four inquiry teams which would gather information and insight into the following questions: 1) What do other companies' policies and procedures guidelines look like and contain? 2) What degree and kind of employee participation has been involved in creating such guidelines? 3) What has been the role of leadership in developing guidelines that reflect the values

and culture? and 4) What has been the impact of Responsible Distribution and what are some future implications? A six-week period was allotted with team meetings held at the convenience of team members. Employees contributed voluntarily and were asked to share information in at least two sessions within the allotted time period. The researcher provided the bulk of archival material and a resource area was set up in a vacant office. The researcher met with all teams once and with three teams twice. Major findings were summarized and shared in a final meeting with the focus group and were recorded by the project leader.

When the majority of employee surveys had been returned, the researcher conducted half-hour interviews with each focus group member to reflect on suggested patterns and attitudes.

The focus group met with the researcher once again to summarize and review accumulated observations. The researcher had allocated four sessions of one mid-morning hour each for note taking on routines, interaction and condition of equipment in both the office and warehouse areas.

3.2.3.3 - Survey Procedures

Employees were given the survey following orientation workshops with a two-week period agreed upon for its return by fax to the project leader's home office. After the two-week period, the leader or office manager gave verbal reminders. After four weeks, a memo from the researcher was circulated to all employees resulting in submission of two more. One of the non-respondents had left the company and the other is unknown.

The external stakeholder surveys were hand-delivered in ten cases and faxed from the researcher's office in five cases. Two were delivered by the researcher and eight by sales personnel. All were contacted by telephone first by the researcher. After two weeks, eight were outstanding and calls were made to remind the informants. After four weeks, two had not been received and telephone calls resulted in their prompt return.

3.2.3.4 - Appreciative Inquiry Procedures

This aspect of the research involved telephone conferences, e-mail correspondence and meetings with various businesses, agencies and government offices and was conducted by the project leader

A telephone conference with the VP of Public and Government Affairs of a Brampton-based specialty chemical company provided insight and inspiration on the topic. The conversation was transcribed from notes taken and subsequent receipt of an information package underlining the discussion added to the substance of the exchange. This exchange served to underline the value of communication and the willingness of people to do so when shared values and vision exist.

An all-day formal meeting of CACD members was attended as the agenda was especially relevant to the research. The keynote speaker, Diane Saxe, a specialist in environmental law, presented a perspective entitled, "CEPA - How do we influence positive change?" A Transport Canada representative delivered an overview of international influence on TDG legislation. The most significant talk, in terms of this project, was given by a Dow Canada spokesperson, who outlined the expectations of suppliers with regards to distributors as a consequence of the Product Stewardship element of Responsible Care. A spontaneous lunch meeting with this individual ensued, during which the project issues were discussed and notes taken. Having consented to participate in the survey and offering an extensive package of reference materials from the Dow library this unexpected project mentor was a valuable resource.

A significant telephone conversation was held with a regulatory affairs administrator of a multi-national producer at one of its Canadian facilities. A recognized world leader in safety and quality practices, this perspective on how the principles of Responsible Care (or Total Quality) translate to employee behavior was very revealing and generalizable. Disagreements with the CCPA with regard to policy and procedures were outlined as was initial resistance of employees to certain initiatives such as CAP involvement; resolution of both being relevant to this project.

Extensive and comprehensive e-mail responses were received from three major American producers who were recommended by the CMA. The representative of one discussed "the good fit" of Responsible Care principles with a well-established quality culture, reinforcing the idea that they are inseparable philosophically. Responses from the second resource focussed on employee job esteem associated with Responsible Care, as they became involved "in goal-setting, planning, problem-solving and decision making". Concepts of realignment, empowerment and involvement were central in this response. The third company related the success of self-managed work teams overseeing safety performance and environmental compliance as well as the open-house approach with the community.

A CCPA connection with a major insurance broker was contacted to offer a perspective on one of the reported benefits of Responsible Care endorsement: more favorable insurance premiums. The supposition that CCPA or CACD membership constitutes good risk management ergo premiums go down was challenged in this discussion.

A meeting with an Inspector with the Environmental Control department for Region of Peel yielded spills statistics for 1995,1996 and 1997. Their perspective on the principles of Responsible Care is quite positive yet there is skepticism regarding current levels of implementation.

Canutec, an information agency residing within Transport Canada, responds to incidents involving dangerous goods, including hazardous chemicals, by providing MSDS information when called – usually by an attending Fire Chief. A lengthy

discussion with a senior statistician revolved around valid assumptions to be made with regard to Responsible Care practices in the absence of data attesting to its impact. The TransCAER initiative is of great importance as an awareness and education program for communities through which hazardous chemicals are transported.

3.2.4 - Ethical Conduct

The ethical consideration of participants in research was observed. Confidentiality was offered and assured. The concept of free and informed consent was explained verbally and incorporated into a letter (worded slightly differently depending upon the recipient's stakeholder group) asking for signed consent (see Appendices A and B). The dilemma of exploitation was discussed with employees, as the project demanded of their time. By mutual agreement, catered lunch meetings were arranged for workshops and discussion of findings while completion of surveys and interviews were seen as within job context and not intrusive on their daily functions. In all, participation of all stakeholders was voluntary, with job demands given priority over project demands.

3.2.5 - Limitations

The project focus was more on private sector stakeholders although was not exclusive of the public sector. In fact, further investigation of the latter was strongly indicated and will be an aspect of the final recommendations to the organization. Involvement in the Oakville/Mississauga CAER network is currently being explored.

Larger organizations have the human resources needed to fully explore existing and new legislation. The subject organization of this project does not. The laws in their entirety will not be studied; rather the interpretations offered by the CACD will be utilized in preparing company guidelines.

The actual creation of an employee guideline exceeded the scope of the project which served to lay the foundation by providing the "tools" for this undertaking: knowledge of laws and standards, perspective, collaborative planning, the experience of team-based learning and the importance of communication in developing shared vision.

CHAPTER 4: RESULTS AND ANALYSIS

The findings of this project serve to clarify the researcher's first purpose by indicating what a revised guideline of policies and procedures emphasizing safe handling of hazardous chemicals might contain as well as optional formats. Feedback was especially enlightening with regard to the process of developing such a document. Many of the components of the methodology laid groundwork for future communication and learning between and among stakeholders – a desired outcome as stated in the second purpose. With the conclusion of this project, it is hoped that these elements will be continued and fostered. Recommendations to this effect will be discussed in Chapter 5.

The results are reported by instrument and approach as outlined in Chapter 3. Within each section, focus group comments are interspersed with findings according to the topic rather than in a separate section.

4.1 - Data Results

4.1.1 – Employee Survey Findings

The survey results are summarized in tables corresponding to themes within the questionnaire: Procedures, Teamwork, Communication and Job Experiences. Percentages refer to the ratio of total respondents who either agreed or strongly agreed with the statements. Those results are discussed first. Then, numbers indicating majority in a neutral state or one of disagreement are discussed, in most cases with clarification from the focus group comments. Any area showing a majority response was considered an area needing attention with a possible recommendation implied.

Table 1: Procedures

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Percentage in Agreement
1) Aware of manual.	0	2	2	7	3	71%
2) Use manual.	2	2	2	6	1	54%
3) Want manual.	0	1	1	3	9	86%
4) Manual beneficial.	0	1	0	1	12	93%
5i) Regulatory information.	0	2	6	3	3	43%
5ii) General only.	0	4	0	3	6	69%
5iii) Emergency Plans	0	1	0	1	12	93%
5iv) Mission statements.	2	1	2	6	3	64%
6) Familiar with Responsible Care	0	1	5	4	4	57%
7) Familiar with Responsible Distribution	2	5	3	2	2	29%
8i) OHS	0	0	1	3	10	93%
8ii) Warehousing	0	0	1	3	10	93%
8iii) Transportation	0	0	1	4	9	93%
8iv) CAER	0	0	2	3	9	86%
8v) Waste	0	0	3	4	7	79%
8vi) Outreach	0	0	8	2	4	43%
8vii) Self-assessment	2	1	2	7	2	64%
9) Obtaining information.	4	7	1	2	0	14%
10) Employee input	0	1	1	2	10	86%
11) Want to participate.	0	0	0	6	8	100%
12) Finding time.	0	4	8	2	0	14%

Table 1 indicates that although there is an overall awareness of existing company manuals, few (54%) utilize them. Focus group members were able to elaborate that existing manuals in binder form have been mislaid and that because it has not been maintained, are obsolete. The most useful finding is that 93% felt they want and could benefit from a comprehensive manual. Question 5 indicates a need for clear emergency plan guidelines for the workplace. General guidelines and mission statements are important to a majority (69% and 64% respectively) but need not reside in this document according to focus group elaboration. Mission statements could be more constructive in more visible locations such as on letterhead, a web page and in advertising material. There is an apparent contradiction between Questions 5 and 8 responses. Detailed regulatory guidelines are not given great importance as conveyed in Question 5 (i), yet all of the items in Question 8 *are* regulatory codes within the Responsible Distribution guidelines and were deemed important. The only areas not valued by 93% of respondents were community outreach initiatives and self-assessment protocols. Focus group feedback indicated a

lack of knowledge and understanding of the scope of Responsible Care and Distribution initiatives might account for the discrepancy between Questions 5 and 8, and for the lack of importance given Questions 8 (vi) and 8 (vii). Question 9 responses suggest little difficulty with obtaining safety information. As MSDS labels satisfy daily needs for information and these sheets accompany most product, this does not typically present a difficulty. A worst-case scenario would be a different story according to a focus group comment. Another comment was that when information is lacking, employees turn to sales personnel for answers.

There is considerable support for the involvement of all employees in guideline production. The high number of neutral respondents (67%) in Question 12 indicates that time could be a problem given current job demands.

A summary of comments reveals the need for management support of a collaborative effort to produce meaningful guidelines in terms of providing input and time. Examples of emergency situations within the safety procedures were deemed important to help employees identify and classify an emergency and how to proceed. The warehouse needs to be linked to the office via computer in order to have access to MSDS information when it is not provided, thus facilitating warehouse procedures.

Table 2: Teamwork

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Percentage in Agreement
1) Spirit of teamwork.	0	5	7	2	0	14%
2) Ideas to improve.	0	0	3	5	6	79%
3)Important to know other's roles.	0	0	0	6	8	100%
4) Know other's roles.	0	2	2	7	3	71%

Table 2 results show only 14% agreed that teamwork is established within the organization and with 50% neutral and 35% in disagreement with the statement, this is obviously an area needing remediation. A majority indicated that they had ideas for this remediation. While all gave importance to familiarity with the roles of coworkers, a smaller majority felt that they had achieved this familiarity.

Three comments reflected the need for support and role modeling by leadership in establishing teamwork. "Leading by example might result, by osmosis, in team behavior in others", was one comment. The formation of task-specific teams was suggested – three respondents mentioned a "think- tank" team and a committee to monitor a suggestion box or complaints system. Another proposed that in all teams, "the team leader chosen that reflects the spirit of the team *by* the team" should be the rule. Four respondents mentioned regular staff and team meetings for the purpose of a "meeting of minds" and a "free flow and exchange of ideas and fixes to problems". Input from all participants, not only those directly involved in a specific

issue, was another comment followed by the statement that "left field can sometimes make a great play". A broad comment was that " the company has grown tremendously but is using the same old practices". There were two written comments suggesting that off-site fun should be planned for as the Christmas party is always enjoyed. Numerous focus group comments reiterated this opinion. Five specific ideas for outings during the year were presented – some including families. One respondent suggested team trainers and formal programs and mentioned those featured on Venture (CBC) and Studio 2 (TVO) programmes.

Table 3: Communication

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Percentage in Agreement
1) Ideas valued.	0	2	10	2	0	14%
2) Want to share ideas.	0	0	0	9	5	100%
3) Leaders discuss openly	0	9	2	2	1	21%
	Preference					
4i) Memo	5					36%
4ii) Email	0					0%
4iii) Meeting	9					64%
4iv) Newsletter	0					0%

As Table 3 indicates, while all respondents expressed a wish to share ideas, few (14%) agreed that management would consider their ideas for improvement. Only 15% agreed that leaders were open in discussing decisions with 65% feeling that they do not. The majority thinks staff meetings are the best way to communicate change and focus group comments reinforced this by underlining the need for discussion of organizational issues that have broad impact. Memos are effective sometimes when the content is purely informative.

Leaders are thought by two respondents to communicate with a select few but not with most employees. One comment was that ideas "fall on deaf ears" and that there seems to be a "reluctance to change". Communication and teamwork applies to everyone and elimination of a "my way, or else" approach by "top management" was called for. This was thought to generate an "I don't care" attitude among certain employees. "With everyone overloaded there is too much patchworking or bandage fixing" and there especially needs to be greater communication between sales representatives and customer service. Three comments indicated " in person" communication was more effective and desirable than that by memo. Two felt that all but major changes could be shared by memo or email. One respondent enjoyed sending and receiving memos that were "newsy" or vital and found them to be very effective.

Table 4: Job Experiences

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Percentage in Agreement
1) Get training needed.	0	2	3	8	1	64%
2) Empowered.	0	6	4	4	0	29%
3) Goals unreachable.	0	2	3	7	2	64%
4) Risk-taking encouraged.	5	3	4	2	0	14%

While 64% feel they receive adequate training in the area of safety, few feel they have the empowerment to do their job. Most felt that there are unreachable goals within their jobs (focus group members thought this meant definition of job parameters) and that leadership does not encourage decision-making by employees.

Positive job experiences reported in Question 5 included: the thrill of bringing a new principal on board, getting the big order with the help of all, job training and development over the years, getting new business, and computerization of operations.

Comments were few but detailed. One respondent said, " A position of nominal empowerment exists until a major decision is required, whereupon all power is withdrawn to the dismay of the individual. This leaves a mixed feeling of being useless, incompetent, anger, not being wanted and humiliated". Another said " There remains room for latitude in autonomy and empowerment – management is too hands-on everything, therefore risk-taking is snuffed". A final respondent wrote of a need for training to keep pace. Three commented that they were proud to be part of the company despite criticisms.

4.1.2 – Focus Group Interview Findings

The questions asked in focus group sessions are outlined in Appendix E and many involved discussions that will be condensed and paraphrased here.

The first question asked about the preferred format of a policies and procedures document. Two members felt that separate documents should be created. One of these two participants suggested a general policy document and a separate quality and safety policies and procedures document. The general policy document should contain such information as vacation and automobile entitlement, salary review guidelines, health benefit programmes, and job description information. Another member felt there could be too many manuals that must be maintained and kept track of. An on-line version was thought to be the way to manage this with all employees eventually having access through a company intranet. Two or three hard

copies could be printed (three group members seemed to think a book format was useful as opposed to a copy solely on the main computer server) and maintained and stored in appropriate places. Two people felt that job roles should be represented as flow-charts within a larger flow-chart depicting interconnected jobs. In the case of a hard-copy format, it was thought that not every person would need a full version. For example, the warehouse employees may only need the sections outlining procedures for warehousing and transportation.

The second item asked for input on how learning should take place in creating greater knowledge of Responsible Distribution. Four participants preferred sessions similar to the project orientation workshops. An extended lunchtime venue with an employee or guest expert allows for an informal experience in which attendees can ask questions and discuss freely. One participant said that all meaningful internal training should be as hands-on as possible with a verbal and visual presentation as opposed to reading materials. For more specialized learning such as TDG or WHMIS training, going outside to attend workshops is often the best or only choice. One person said that learning away from the workplace is always better as there is greater focus, fewer interruptions and it provides a refreshing change of environment. Meeting people from other companies and situations was a positive aspect of this preference as well.

That people did not, in the Procedures section of the survey, indicate having trouble obtaining information yet all want a manual, was not clearly understood and will bear further inquiry. Focus group feedback suggested that if people were more knowledgeable about the ISO and Responsible Distribution codes and elements, they would feel the need for more resources. As suggested in that previous section, they may need more information than they realize. The response to this and the reasons for the apparent contradiction are speculative and will be dealt with in the recommendations for future research.

Elements that were perceived to impede quality service or safe practices were: incomplete product knowledge, inconsistent CPR training and fire drills, employee suggestions not acted on, too little time, no dedicated staff in this area, and no ongoing, cyclical training in these areas. One member commented that employee suggestions, unless they are presented fully, in writing, and repeatedly, are not acknowledged and, as most suggestions are relevant to either quality or safety, either can be negatively impacted by lack of action.

Elements that were thought to contribute to quality and safety were varied. They include: good relationships among employees, individual pride in performance in the absence of consistent teamwork, the knowledge and help of the sales team, CACD updates on regulatory requirements, and following routines and procedures that work whether or not they are documented.

In addition to comments recorded in the Survey section, many ideas for improving teamwork referred to a social aspect. Catered lunches, barbecues, and racetrack outings were mentioned. One person said that celebrations needed to be more

frequent and should occur spontaneously when there is a success or a completion of a challenge such as an audit. Shared long-term planning was given as a way of promoting the team climate. Management's example was again mentioned and recognition of teams and individuals was suggested.

Learning about the roles and responsibilities of colleagues should be done soon after hiring and as the situation warrants after that. A "job-shadowing" approach was suggested and this could occur for a day or half-day. The diagramming of jobs in a flow-chart with written descriptions was another method. Again, time was given as the major constraint in this area, although members reported some cross training was underway.

Staff meetings are rare and the majority wants them as regularly scheduled events. All but two participants thought they should include everyone. Two members felt that would leave the office unattended and would be disruptive and that two groups could meet at alternate times instead. The favoured frequency was monthly, but one suggested bi-monthly. Intermittent team meetings would follow the formation of teams. One person felt strongly that regularly scheduled meetings can be a waste of time and should be scheduled in advance on an as-needed basis only. They should be mid-morning or during an extended lunchtime and should not exceed two hours. The feeling was that they should not always be presided over by a management person but the role should rotate among volunteers who would follow an agenda. Topics to be discussed should be submitted by anyone with a concern or recorded on a sign-up sheet centrally posted.

The last question asked was "What are three things most needed?" Teamwork, fun, higher morale, ongoing training and professional development, technology applications to assist communication, efficiency and to eliminate monotonous manual tasks, and greater support and value of all these things by current top management were the responses.

4.1.3 – Observation Findings

Focus group members and the researcher recorded observations at the workplace. Those that supported the project purposes were compiled.

Procedural notes corresponding to quality and safety were looked at first and many of these involved the warehouse. Employee parking is at the rear of the building and the short cut is through the warehouse. As rubber-soled shoes and hardhats should be worn in the warehouse, this presents a violation of safe practice. In one area, lighting is inadequate for reading labels. For one hour in the morning, there is only one person in the warehouse and this is unsafe.

Quality or efficiency is impacted by the absence of a computer link in the warehouse. MSDS information is kept in the office area. In the office, there are stock record cards in a trolley, which are still maintained manually.

Factors impacting on job experiences were noted. There is a tremendous volume of paperwork and systems for handling it are inadequate. Pricing and product information, sales call reports, advertising, internal monthly reports and trade publications create a veritable mountain of paper. Much of it finds its way into the offices of the president and vice-president whose desks are covered constantly. There is no assistance for administration in this regard.

Printed resources are located in three different areas, two of which are not centrally situated and this creates inconvenience. MSDS files are in the main office area. Product information is in another room along with archival files as well as in individual sales offices. Trade publications reside in another area.

Regulatory affairs are the responsibility of at least three individuals. The receptionist looks after WHMIS. ISO is the job of a soon-to-retire marketing person. CACD correspondence is the responsibility of the head sales representative. Each of these individuals has a full job description apart from these regulatory concerns and there is little interaction or coordination among the three.

All interaction observed was respectful and friendly. There is much on-going problem-solving and there is collaboration on that front. The customer service individual is somewhat isolated from the activities of the other office staff with more interactions with sales staff who are seldom in the office. Interaction occurs mainly when there is a problem and some tension has been noted. Observations included some behind-the-scenes gossip by certain office staff, which was not considered to be positive or productive.

4.1.4 – External Stakeholder Survey Findings

The results of this survey are summarized in Table 5 and in written comments made by respondents below. As the survey was issued to suppliers, customers and competitors, the surveys differ slightly. Question 14 to eight suppliers asked about audit criteria. For the customers and competitors, two different questions were posed. Question 14 asked for data supporting benefits linked to Responsible Care and Question 15 asked how Responsible Care had been incorporated into organizational culture.

Table 5: External Stakeholder Survey

	Yes	No
1a) Not NACD or CMA?	85%	15%
1b) Not ISO certified?	100%	0%

	Very Important	Important	Not Important
2) Importance of Responsible Care?	38%	54%	8%

	Yes	No
3) Use of word "safety"?	85%	15%
4) Include employees?	85%	15%

	One Person	More Than One
5) Who is responsible?	23%	77%

	Always	10 Years	5 Years	1 Year
6) How long safety a mandate?	85%	0%	8%	8%

	Not at all	To Some Extent	To a Great Extent
8) Extent of employee inclusion?	0%	38%	62%

	Most	Some	Few
10) Are guidelines meaningful?	62%	31%	7%

	100%	75%	50%	25%
11) % of employees trained?	55%	15%	15%	15%

	Yes	No
14) (Supplier Version) NACD/CACD audits to replace your own?	38%	62%

Table 5 summarizes the external survey results. Non-endorsement of Responsible Care and ISO does not preclude business transactions in the great majority of cases, yet it is deemed important or very important by 92% of the respondents. 85% reported that "safety" had been incorporated into policy or mission statements and included employees. Most companies have more than one employee looking after Regulatory Affairs. The explanations for this were varied and will be summarized with the comments below. Safety has always been an initiative and the comments suggest this to mean within the workplace. All reported inclusion to some extent of employees in generation of safety guidelines with some or most employees having some use for them in their job functions. Just over half of respondents reported training of all employees and 85% provide safety-related training to at least half of

their people. The majority would not, at this time, consider abandoning their own audits with third-party verification as a substitute.

Questions 7, 9, 12 and 13 of both survey versions required a short written response. Question 7 asked about the impact of a safety culture and all the responses referred, in very positive terms, to workplace incidents, "lost time" accidents, lower IAPA costs, personal injury – in other words, operational safety or worker health and safety. There were no references to transportation incidents, product stewardship issues, waste issues, or community impact. Two respondents referred to a lack of benchmarking to really measure this.

The means of delivering safety guidelines to employees were varied and reflected the importance given the issue. All used regular meetings as one way of communicating this information and changes, and one reported that safety was the first item on the agenda of every staff meeting. Regular training on an ongoing basis was reported by all but one that reported "seldom", however frequency varied greatly. Two reported annually, two quarterly, one every six months, one according to legal requirements of TDG and WHMIS guidelines, and others did not get specific but said training was routine and when needed or upon hiring. Means of training included meetings, supplier presentations, consultants, videos, handouts, and demonstrations.

One respondent submitted " no spills or accidents/incidents attributed to religious following of procedures" in answer to Question 14 of the competitor version. There were no other responses to this question asking for data supporting Responsible Care.

Finally, as to how Responsible Care has been made part of organizational culture, responses were as follows. One said they had not yet implemented a full program. Two said it was through the creation of a safety manual, another cited training and audits of their operations manual. The fifth respondent from this group talked about awareness in all employees of the necessity of handling Hazmat properly.

Comments in Question 14 of the supplier version yielded a range of attitudes. Of the two "No" respondents, one said they did not consider the CACD approach to third-party verification valid and the other said they were not familiar enough with CACD requirements to justify replacing their own audits. The "yes" respondents qualified their answers in various ways. One said they would reserve the right to audit for a specific element such as Product Stewardship, or when otherwise warranted. Another said that sometimes a self-audit was acceptable but it would depend on the chemical being handled. An American respondent said they only use distributors internationally, so it is impractical for them to conduct audits and accept self-audits in this instance.

4.1.5 – Appreciative Inquiry Findings

The report of these findings will be outlined in the order they appear in Chapter 3 procedures.

The first interview with the Vice-President of Public and Governmental Affairs of a local specialty chemical producer was extremely insightful. The informant reflected a great deal on the process involved in instilling Responsible Care philosophy and practice into the organizational culture. She reported that with the initial effort to develop policies and procedures, "nothing happened". There was no change in the behaviors of employees and she began to feel "fraudulent" in light of her proactive position on various committees and within the CCPA. The formation of a cross-functional committee of employees was the turning point. It began to review laws and elements governing safe practice for the dual purpose of: 1) documenting what they *were* doing; 2) determining what they *should be* doing;and 3) determining where they *could exceed* standards. They looked at ISO and Responsible Care and if they found that a procedure was in place for one, it was not rewritten for the other. The language used in the company document was simple and clear to accommodate the literacy levels of all employees. Once the manual had been produced, the messages were reinforced through a quarterly newsletter that reflected a different annual theme. One year, articles supported the theme "Take charge of your own training" as employees were asked to identify and pursue programmes for their professional development with company support. As a producer of specialty chemicals, she is advocating an initiative whereby retailers become part of the cradle-to-grave initiative through staff and customer education.

A telephone interview with the regulatory affairs administrator of a Canadian-based multi-national producer revolved around the challenge of instilling Responsible Care safety ethic in employees so that it is reflected in their attitudes, behavior and practices. First and foremost, this individual considered leadership the driving force: "the CEO was an SOB on the subject of RC" was an initial comment. From there, the entire corporation, from the top down, was inundated with the safety message – through training, meetings, newsletters and visible posters and slogans throughout the premises. The CEO, in passing would engage any and all employees at all levels and in all departments in conversations about Responsible Care codes. The same methods had been utilized in establishing the Total Quality culture or any other major initiative. Newsletters reinforced the message through informative features on the different codes of practice and by continually acknowledging individual employees who demonstrated any aspect of these. This company, a world leader in safety performance, did not pass a phase-one third-party audit as it could not demonstrate adequate Community Awareness initiatives. Subsequent establishment of a Community Advisory Panel (CAP) met with considerable resistance internally, especially from operations managers. It did not take long to discover benefits, one of which was the approval of a proposed new facility that normally takes months of public hearings. In this case, the government waived the process because of the documented public outreach and involvement

already demonstrated. The internal resistance disappeared as public scrutiny did not create a threat or disruption, but a positive sharing of concerns and ideas. They continue to do business with companies that are not certified because, having experienced the long and costly process, realize that smaller companies do not have the resources. They do, however, insist that companies embrace the principles and will reject suppliers, carriers or distributors that do not conform.

On the recommendation of the CMA's VP of Responsible Care, an email was sent to three major producers asking for information or insight on the subject of perceived benefits of Responsible Care and involvement of employees in generating guidelines in order to affect a cultural shift. One respondent related three anecdotal instances of employee esteem directly linked to the safety initiatives of Responsible Care. He did say that making Responsible Care part of organizational culture was a major challenge but made easier because it was " a good fit with the current culture of Continuous Quality Improvement (CQI). We see Responsible Care as CQI for EHS." None of the processes are stand-alone or finite. Commitment, communication with and training of employees, inclusion of employees on Responsible Care implementation teams, sharing positive results and benefits, asking employees to be ambassadors of Responsible Care in the community through schools or other civic involvement, and rewarding individual employees, teams or plants for reaching practice-in-place goals were among noted leadership contributions. It was important, throughout the process, to reinforce the message that Responsible Care is here to stay.

The second email response also commented on employee esteem and the way in which Responsible Care enhances that due to the value it places on employee and community safety. This is reinforced throughout the implementation process by involving employees in goal-setting, planning, problem solving and decision-making to satisfy each of the codes. The process of evaluation involves employees in analyzing, rethinking and redesigning work processes to achieve goals. None of this will happen if alignment of vision, mission and values within the organization has not been established. The respondent stated: "The very key to incorporating Responsible Care into the company culture is involving employees in the development and implementation of systems."

The third email communication dealt primarily with a team management approach to any and all new company initiatives. Work-teams are self-managed and set goals and activities that support the goals. Team training is provided for all employees, and leaders emerge according to their own initiative. The job of supervisor has been replaced by a role as team leader/coach. This respondent said: "Coinciding with the implementation of team management, safety performance and environmental compliance have significantly improved; production is up; costs are down." Employee "ownership" extends to issues including budgeting, scheduling, hiring, safety and environmental training, drills, audits, contractor orientation, job safety observations and Responsible Care code reviews.

The CCPA VP of Responsible Care suggested contact with a major insurance brokerage representative in Toronto. On the basis of the information requested, that individual referred the researcher to a senior colleague at the head office in Nashville, TN who has been working with the CMA to develop benefits for practitioners of Responsible Care. The benefits are not at all clear in terms of real savings to those practitioners. "The supposition is that Responsible Care endorsement equals good risk-management, ergo insurance premiums go down. This is not necessarily so." In commercial insurance, premiums go up and down based on the overall volume and amount of claims. If a 10% discount is offered, is it a marketing gesture attributed to Responsible Care or is it a reflection of an overall reduced frequency and severity that may or may not be linked to Responsible Care? The respondent went on to say that the caveat is: "all other things being equal" and, again, there seems to be an absence of benchmarking to provide real measures.

A meeting with Region of Peel environmental control Inspector provided spill statistics for three years from 1995. This individual was familiar with the Responsible Care codes and involved with the Brampton CAER group. He felt that there was a positive impact and, indeed spills in 1997 are down region-wide. The statistics are not sorted as to industrial, transportation or residential so can not be used to substantiate his view of a positive impact. As he personally attends all spills, his perception is that Responsible Care has improved the performance in large companies but small and medium companies continue to offend, as do trucking companies. The most positive influence on reduced spills is Section 10 of CEPA that provides for billing the offender.

The absence of data supporting beneficial impact of Responsible Care was once again encountered in an interview with a senior statistician for Canutec. As statistics are "cleaned", there is no information about the parties responsible for spills and accidents involving hazardous chemicals. Canutec is not concerned with the "whom" or "why" of an incident but provides information on hazardous chemicals in order to protect public safety. He suggested that Responsible Care has two important aspects in safety. First, it is preventative. There are roughly 500 accidents per year involving chemicals and the dangerous goods cause only 10% themselves; the rest are driver error, fatigue or poor road conditions. Responsible Care training increases awareness and serves as prevention. Second, the response to accidents is the responsibility of the owner, and emergency response plans and personnel must be in place according to Responsible Care and Distribution codes. For Transport Canada, this has had a great, positive impact in terms of speed and cost. While there are no numbers, valid assumptions can be made; response times and effectiveness would be worse without Responsible Care guidelines.

The researcher attended a meeting of the Oakville/Mississauga CAER group, considered to be one of the largest and most active in Canada. General business included a discussion of a serious explosion and fire at a member facility. The discussion revolved around the success of emergency response strategies and personnel resulting in no injuries and no evacuation of the surrounding community. Documented plans were successfully executed and previous interaction and

planning with the local fire department were hailed as reasons for early containment of what might otherwise have been a more serious emergency. As it was, early estimates of damage to the facility ran to several millions of dollars. The head of the emergency medical response team at the host facility then proceeded to outline training procedures, mock exercises, equipment and recruitment of employee volunteers according to their emergency response plan. Another feature was the update on an educational initiative jointly sponsored by the CAER group and the Halton Industrial Education Council. The Link programme supports high school science students who visit primary and junior classrooms to present information on chemicals and safe practices. The significance of the meeting to this point in terms of the study purposes was indirect yet supported the value of the community outreach aspect of an endorsement of Responsible Distribution and Responsible Care. Of direct significance was the connection made through the chairperson of the meeting who works as a third-party auditor with the CCPA. He referred to one company's manual format and style as the most effective and user-friendly he has encountered. A subsequent discussion with the individual charged with the production of this manual told of the process undertaken. He formed a cross-functional steering committee with each member responsible for one element or code. They worked to integrate these with other existing procedures, but they were kept quite separate from ISO procedures. They initiated the project, which took nine months to complete, on the premise that "no one reads manuals" and sought to change that through a user-friendly format with a wide application useful to all employees. He felt they had succeeded with that goal.

4.2 – Analysis of Findings

Due to the multiple methods utilized in obtaining data and to the dual purposes of the study, findings were extensive and ranged between detailed and generalized. The analysis will be discussed according to concepts that recurred with some frequency within the findings and have a direct bearing on the purposes. These concepts have been identified as: 1) Development of procedural guidelines; 2) Leadership issues; 3) Teamwork and Communication issues; and 4) Learning issues.

4.2.1 – Development of Procedural Guidelines

Established procedures can be described as a "necessary evil". Fixed routines can be a factor in "conspiring to make leaders into bureaucrats" (Kouzes and Posner, 1995, p. 44) if they demand inordinate amounts of time to fulfil to the exclusion of innovation and learning. Similarly, the same authors point out that procedures can "conspire to maintain the status quo and prevent change" (p. 44). Procedures that serve a stakeholder group and not vice versa would be the desired goal.

The results of surveys and interviews within the organization strongly suggest the need for revised procedural guidelines with a special emphasis on workplace safety and emergency response planning, and warehouse and transportation safety

regulations. There is no current consensus among employees as to whether the guidelines should be separate or integrated, or as to whether they should be distributed in hard copy to some or all employees. It is generally agreed that all employees should have easy access regardless of the format. These are some of the many options with respect to format and should be debated by employees. The apparent contradiction of response patterns to Questions 5 and 8 (referring to the inclusion of detailed regulatory codes) was identified in Section 4.1.1. The researcher agrees with the focus group's speculation that lack of knowledge of regulatory elements governing safe handling of hazardous chemicals has produced these response patterns. The basis for the researcher's agreement is that three focus group members answered in a similar way because they did not understand the connection. They did not appreciate that commitment to Responsible Care implies a commitment to community outreach initiatives (or, "communication with all publics"). Focus group members suggest that other employee respondents not knowing about this aspect, do not perceive this element as especially significant and would not, therefore, include it in a procedural guideline. What *is* clear is that a guideline is needed and that employees wish to participate in its development.

The external stakeholder data suggests that endorsement of Responsible Care or Responsible Distribution is by no means as prevalent as are endorsements of quality systems, the most notable of which are the ISO standards. The former is customer oriented and, while safety is an important aspect, does not have the scope of Responsible Care codes in terms of stakeholders and the environment. ISO standards can be applied to all businesses while Responsible Care is solely concerned with hazardous goods and safe practices. Responsible Care is not yet the norm within the industry. Survey feedback suggests that "safety" is thought of in terms of the immediate workplace and not in the broader context that Responsible Care involves. The lack of data supporting benefits of Responsible Care in any concrete, measurable terms was encountered repeatedly in the research, even when speaking with its strongest advocates. At this time, endorsement must be made on the basis of ethical merit - a "leap of faith" of sorts because it has no proven longevity and implementation costs are high. The major producers in Canada and the United States have made huge commitments to the codes and it is safe to assume that smaller businesses will be asked to follow suite. Employees must learn not only about the specific elements, but also about this larger perspective in order to participate in informed decision-making and goal setting with regard to safety procedures.

The styles and formats of policy and procedures documents described by external stakeholders were as numerous as the companies themselves. What seems to be important is that they be consistent with established company conduct and values and useful to employees as well as representative of external stakeholders' needs. The distinct pattern that emerged from the research was to do with the process involved in creating guidelines and incorporating them into organizational culture. This always involved support of leadership, inclusion of employees, a commitment to training and continuous reinforcement of the initiative.

4.2.2 – Leadership Issues

Data from within the organization suggests that current leadership is generally unreceptive to employee suggestions and is not team-oriented. There is little delegation of decision-making, which presents a serious obstacle in adopting new initiatives, and in creating a culture of communication and learning. Covey states: "The basic task of leadership is to increase the standard of living and the quality of life for all stakeholders" and this is achieved through a "balance of courage and consideration" (1990, p. 218) in the leader's character. Options for altering the conditions of leadership are few and must be exercised with diplomacy. The recommendations in Chapter 5 will be presented to the President personally and privately before they are presented to the rest of the employees. Those employees who reported successful interaction with leadership felt that style, substance and persistence were factors in a positive response which may indicate a need for communication and conflict management coaching as a part of staff professional development.

External respondents consistently cited leadership support as of utmost importance in successful implementation of new initiatives like Responsible Care. Regardless of the size of the company, this was so. One such response was from a company with sixty employees, three were from companies of between 600 and 1200 employees, and another respondent company had 40000 employees. Peter Senge states: "The leadership challenges in building learning organizations represent a microcosm of the leadership issue of our times: how human communities, be they multinational corporations or societies, productively confront complex, systemic issues where hierarchical authority is inadequate for change" (Hesselbein, Goldsmith and Beckhard, 1996, p. 56). Whether the organization is large or small, the leadership challenges are parallel. Interestingly, the four owners who personally completed the external stakeholder survey did not allude to leadership in any way, while all other respondents did, leading the researcher to wonder how many bosses realize that they are leaders. Specific leadership traits or characteristics were not mentioned in any response. Those companies that have completed or are approaching third-party verification, attest to the leader's role in facilitating, if not initiating, the groundwork. Self-assessment, goal-setting, establishing feedback channels to monitor and improve safe practices, recognition of individuals and teams who demonstrate this behavior, and reaffirming organizational commitment through annual public and internal statements were among the many contributions noted. O'Brien describes General Electric's "widely known change leader", Jack Welsh, as a leader who created a corporate culture that was less control-oriented and more centred on individual initiative and decision-making. Decreasing bureaucracy and increasing leadership *across* the organization allowed for a culture of change to develop (1996, p. 13).

4.2.3 – Teamwork Issues

Internal responses indicate a desire for a stronger team approach within the organization. A synergistic organization nurtures its own individuals, who are then more inclined to support the organization. Helgesen observes: "The shift in the distribution of power is clearly manifested in the growing emphasis on the role of teams" but she advocates that a team "is not simply a task-force, for task-force members are appointed by their superiors, who define their mission and set the criteria for judging its fulfillment (Hesselbein, Goldsmith, and Beckhard, 1996, p. 21). The study survey responses indicated that teams were considered important in deriving shared goals and solutions to problems whether the teams were created for special projects or on a permanent basis. The need for more frequent, regular and effective communication was clearly indicated in the survey and comments. The majority favoured interpersonal communication in the form of meetings. Individual pride in job performance seems high and can only be furthered within a more supportive culture.

A majority of external respondents said the generation or major revision of procedures that were meaningful and useful was most often through a team effort. The crucial adjectives are "meaningful and useful". Guidelines that are developed by and for management are not going to have application to all stakeholders. As they take considerable time and effort to produce, they ought to signify a collaboration of those most affected. Respondents reported formation of cross-functional teams or steering committees that shared in the planning, implementation and review process. In this way, the codes and practices became part of the organizational identity, not simply part of its administrative documentation. In persuading leadership of the importance of teamwork, a further argument comes from O'Brien who observes that: "teams enable companies to respond with greater flexibility" in a rapidly changing and growing marketplace (1996, p. 59). This was in the ever-important context of competitive advantage.

4.2.4 – Learning Issues

The term "training" will be used synonymously with "learning", as it is the prevalent form of formal learning within the industry. Employees did not feel strongly that they were lacking in this regard. Focus group comments and the researcher disagreed with this perception and attribute it, again, to a lack of knowledge of regulatory stipulations and of more optimal learning and training orientation. It was agreed that they do not know how much they need to know. Internal documentation reflects a lack of regular upgrading in the areas of WHMIS requirements, CPR training and TDG standards. Fire drills are not routinely conducted. As computer upgrades progress, which they have even in the time frame of this study, training will be needed. In the area of product knowledge, two employees provide informal sessions and this should be routinely offered to all new employees and when there is new product.

External data supports the critical importance of regular upgrading of skills and knowledge in ensuring safe handling of hazardous chemicals. Legislation such as the OHS and TDG acts stipulate what is required: each organization must then decide how to meet or exceed these requirements based on the nature of the hazards posed and employee backgrounds. In reviewing the data, there were no respondents that did not mention training in some context. Many agencies and Ministries support safety training. Through courses, video and software packages, training can be "packaged" or customized through the Industrial Accident Prevention Association (IAPA) or the Canadian Centre for Occupational Health and Safety. The CACD can make excellent referrals to training resources based on a company's needs. The support of employee training and learning reinforces that they are valued, as does the endorsement of safety initiatives.

Many of the above training needs could be assigned to individuals and have no impact on organizational culture. All training must therefore be planned in the context of nurturing the interrelated system and of developing the learning organization. The researcher agrees with Senge when he says: "Team learning is vital because teams, not individuals, are the fundamental learning unit in modern organizations...unless teams can learn, the organization cannot learn."(1990, p. 10).

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

5.1 – Study Conclusions

In one decade, Responsible Care has greatly affected the ethics and attitudes within the chemical industry. With 70 member companies, the CCPA continues to develop partnerships with other associations. The first such partnership was with the CACD in 1997, which now has forty-three members and a goal of fifty over the next three years. Non-members are, for the most part, small distributors with limited resources. Responsible Distribution, as a component of Responsible Care, is not going to recede or diminish but will continue with a stringent agenda of scrutiny and peer pressure to ensure safe practices in the handling of hazardous chemicals. It is fair to conclude that, over the coming decade, endorsement will become a condition of doing business.

Members must also commit to working proactively with government toward standards that protect people and the environment as the first order of business. They must also continue to provide compelling arguments and data to protect the level playing field on the international market as standards are reviewed. The CEPA review process is a good example of the need for representation of business. There is a real threat to competitiveness with foreign businesses when, for instance, a substance that has been rigorously tested and approved in Europe and the United States but is prohibited in Canada. When production moves offshore, jobs are lost. The New Substances Notification system, a federal initiative required by CEPA, is seen to have had this kind of negative impact and to be an obstacle to business in Canada. A company that commits to Responsible Distribution must conclude that this entails much more than an overhaul of internal procedures and will require diligence on larger fronts.

As regulatory compliance and industry initiatives constitute a massive and complex body of laws, codes and elements, most companies, finding their human resources are insufficient, create a new position specifically devoted to this area. Tacking regulatory affairs on to other jobs is adequate in the early stages but with ISO and Responsible Care verifications, it soon becomes onerous. In the past, doing the minimum required and maintaining a low profile was possible, however this is no longer so. There are serious consequences to non-compliance. A conclusion is that a company should have plans to create and fill this role.

Given the difficulty in obtaining data to describe the benefits of Responsible Care, Responsible Distribution, or ISO, it is a conclusion that all member companies should be asked to provide meaningful information annually. Just as CCPA members are required to publish emissions data, so should CACD members begin the job of compiling data pertaining to accidents, spills, material losses, preferred financing rates and any emergency response data. This might help surpass their

goal of ten percent new membership per year and would enhance the public perception.

This leads to another conclusion regarding the need for public outreach initiatives. Member companies can not assume that CACD or CCPA will or are able to do that work for them. Community outreach is a front-line responsibility. ISO certified companies can hang banners across their exterior facades to advertise their compliance with a quality system. Chemical producers can conduct open houses and tours of facilities. Distributors have little to show but warehouse facilities. Responsible Distribution proponents must be more proactive within a community and this can be done through participation with the local CAER group. The annual Golden Horseshoe CAER Conference, for example, is a public event that includes ambulance service and emergency response demonstrations and vehicle displays. The Oakville/Mississauga CAER Group supports emergency simulations, mall displays and the TransCAER Safety Train in addition the Link Project described in Chapter 3. The other component of this is up-to-date information communicated to first-responders prior to the occurrence of an incident.

The conclusion that the process of generating a revised guideline of policies and procedures should commence is suggested by the survey results. As it is a condition of verification protocols, it is a happy coincidence that employees overwhelmingly advocate such a document. Inclusion of all employees and, ideally, external stakeholders should occur according to literature in the field, and survey and interview data from this study. In discussing collaboration, Kouzes and Posner state: " Indeed, as leaders foster collaboration and strengthen others, the constituents' assessments of the leaders' personal credibility, upward influence, and workgroup esprit de corps rise – as do constituents' own levels of job satisfaction and commitment" (1995, p. 153). All of these benefits are needed in the subject organization. On the subject of inclusion, Stringer suggests: " it creates conditions likely to lead to the formation of operational processes that are socially and culturally appropriate for diverse client groups. By including people in decisions about the programs and services that serve them, practitioners extend their knowledge base considerably." (1996, p. 37). While he is addressing community-based action research, the same principles apply to operations within any organization. The consensus among employees is that a comprehensive review should include general, quality, and safety procedures that should be integrated as much as possible but housed within the same manual. As many as three copies should be produced with the goal of making the conversion to a computerized version as soon as the technology allows.

Inasmuch as data points to the need for a guideline of procedures, current conditions within the organization are obstacles to such an undertaking. It is the researcher's conclusion that certain preconditions must exist and these are not in evidence. The major barriers are leadership approaches, lack of established communication and team frameworks, and time constraints for employees who otherwise wish to participate. The data and recommendations will be presented to the leadership and management in the most positive light with clear, unthreatening

suggestions for initiating some internal change prior to any major undertaking. Leadership distinguishes itself in many ways and in this organization, has done so on the basis of growth of sales. A persuasive argument can be made that a company's most valuable asset is its people and some investment must now be made in that area. As the literature suggests, distinguished leadership is most often associated with change. As agents of change, Kouzes and Posner cite: "leadership is inextricably connected with the process of innovation, of bringing new ideas, methods, or solutions into use" (1995, p. 51). As Senge points out "small, well-focused actions can sometimes produce significant, enduring improvements, if they're in the right place" (1990, p. 64). For the time being, the subject organization requires leadership that is receptive to change. In the future, it needs leadership that will facilitate change.

O'Toole (1996) was cited in the Literature Review above as offering a caution to leaders who promote change that is not understood. Conversely, it is concluded that if employees are agents of change not understood by leadership or reconcilable with leadership style, resistance will result. Leadership must be approached as a facilitator of a group with vision, positive energy and ideas that will only serve to strengthen the company's position. There is nothing to be lost – delegation of responsibility does not mean abdication of power or control as none of the suggestions reflect such issues. A greater understanding will be initiated with a skillful and tactful presentation of this research. Again, without a shift in this area, successful implementation of other crucial initiatives will be compromised.

Should a shift in leadership approach be achieved, the researcher concludes that further realignment within the organization as a whole would be necessary before a thorough review of policies and procedures commenced. Most of us learn to walk before we run and, should the group rush to a major collaborative endeavor without some practice and experience with effective communication and team functioning, success may be hampered. This was reported several times in the findings. This realignment should be preceded or accompanied by interpersonal training encompassing effective communication skills, conflict management and resolution, and team training.

Training (or learning), within the chemical industry, is the most significant aspect of risk management. Knowledgeable stakeholders will make fewer mistakes. Currently, the study organization does not adequately provide for training of its employees although the areas needing attention are known. Given the previously stated conclusions, this might be a starting point for a team effort to plan and coordinate some needed gaps in employee learning.

The connotation of "safety" in chemical industry terminology has long been interpreted to mean "under its own roof" and, in that context, has always been deemed important. The historical facts are that safety, as it applies to communities and the environment, was not given equal priority. In summary, this study yields the conclusion that, through industry and government initiatives, this is changing for the better. It is evident that the movement toward safe practices that are

verifiable and demonstrable is gaining strength. It is therefore imperative that all companies involved, in any capacity, in handling hazardous chemicals, develop procedures to protect public and environmental safety. These procedures, regardless of how they are documented, must withstand the scrutiny of the public and the "right-to-know" ethic. Third-party verifiers act as custodians of this ethic and are charged with monitoring rigorous application and continuous improvement. Stakeholders demand and deserve no less. Teaching and medical professionals, politicians and priests are subject to the scrutiny of their "clients" – the public. The public's right-to-know is a fact of public, private and business life.

5.2 – Recommendations

It is recommended that, beginning with the executive and management levels, the organization collectively reaffirms and consolidates its commitment to the safe handling of hazardous chemicals through a learning process. The overview of Responsible Care and Responsible Distribution provided in the project's orientation phase should be extended into a series of workshops to further employee knowledge of the codes and specific elements. The links to ISO standards should be made and verification protocols outlined. A focus on the areas of community outreach, self-audits and waste disposal is indicated in the survey results. This could be done over a period of three months using a venue similar to that used in the earlier workshops.

All recommendations will be made to leadership, but several will be about leadership. A consideration of the conclusions will be requested and an endorsement is hoped for. The researcher will seek, at the very least, an *agreement* to initiate the recommendations and, preferably, an *approval* of them. The researcher will also ask for, at the very least, an *unobstructive* stance and, preferably, a *participative* one. Some reading and seminars will be specifically suggested to support and further validate the findings of this study.

It is recommended that the organization's leadership and management team plan to hire a person with knowledge and experience of regulatory standards within the next year. This would ease the concern of employees about limited time for participation in special projects and when teams are established, time must be available for those meetings. It is further recommended that an administrative assistant be engaged to allow leadership the time to focus on broad issues such as those outlined in this work.

Regular monthly staff meetings should begin immediately. Discussion among the eighteen employees would define the logistical issues. The goal of developing better teamwork and communication should be clearly stated. Initially, the meetings may be a challenge as it is suspected, based on survey responses, that participation may resemble a dam bursting. The development of a new general mission statement would be an excellent exercise to initiate communication of shared values and goals.

As suggested in the surveys, teams should be formed within three months, following consideration and study of applicable models. An employee suggestion system should be monitored and managed by a team. The Dow Canada model is but one that has been successful and should be studied. CACD and MMA resources would be useful in such a study. A "think tank" team of interested employees should be pursued and may be linked to the suggestion team. A social committee or team would be appropriate given survey feedback.

Perhaps the most important team would be one formed to research, plan and coordinate training for employees. This team would need to be comprised of individuals with knowledge of ISO and Responsible Care requirements. Beyond required training, the building of interpersonal communication as outlined in the Conclusions, should be addressed. This group would be concerned with incorporating training into annual budgets, calendars and, eventually, policies and procedures guidelines.

A recommendation must be made with regard to computer technology. The focus over the past several months has been on the Y2K issue. As that seems resolved, continued advancement of plans for operations, inventories and internal communication should be kept on a "fast track". The link between the office and warehouse should be stressed, as communication is awkward at the moment. Of course, training is crucial and the computer and training teams will need to confer.

With realignment of values, goals and roles as described above, the process of reviewing and revising policies and procedures would then begin. While this research has provided a lever of sorts in moving toward a different way of communication and interacting, the work of realignment has only begun. A deliberate, conscious shift in orientation in all members of the organization will take time to achieve. Just as the rush to implementation of quality and safety systems met with failure or disappointment, so would a rush to organizational alignment. It is recommended that the job of redesigning a guideline of policies and procedures begin in the next six months, after the prerequisite conditions have been established and that an eighteen month completion goal be set.

5.3 - Organization Implementation

The recommendations contain goals and means for implementation and for change. The implications of the failure to implement the recommendations are significant. Internal dissatisfaction in the areas identified will continue and perhaps escalate. This would result in instability. McCarthy, in *The Loyalty Link*, suggests that companies that have satisfied, loyal employees tend to have satisfied, loyal customers – a compelling motivation in fostering a unified environment (McCarthy, 1997, p. 14). The issue of liability is considerable when compliance with standards is not closely monitored. Diligence must be demonstrated at all levels in all roles. Knowledge and training enable diligent behavior. Finally, internal alignment is no more important than alignment with industry values and objectives. The subject

organization has always adopted a responsible position and must make a renewed effort to maintain and exceed its past performance.

5.4 – Future Research

As the historical perspective in Chapter 2 suggests, Responsible Care and quality management systems initiatives combined with government requirements have had a positive impact in the enforcement of safe handling of hazardous chemicals. The study also reveals that extensive research is still needed in many areas. The Canadian National Pollutant Release Inventory (NPRI) shows a reduction in toxic releases (Government of Canada, 1998). Since 1988, the American TRI shows emissions are down 51% and transport, employee and process incidents are also down. However, waste has increased. (Mullin, 1998, p. 39). Perhaps the most effective direction in reduction of hazardous waste is being encouraged by recognition of companies that develop products that are nontoxic to begin with. The EPA awards such companies annually with Presidential Green Chemistry Challenge Awards (Scott, 1997, p. 92).

Product Stewardship will involve a commitment to education, beginning with chemical industry employees. The end users of products that contain hazardous chemicals are the public. The public outreach initiative still leaves much to be desired and this will only be satisfied through openness within communities. As of 1998, only 22% of people who resided in industry communities felt that openness from producers existed (Mullin, 1998, p. 62). Future research will reveal ways to improve the chemical industry's image and interaction with the public in order for the cradle-to-grave ideal to be achieved.

Harmonization means simplification. At every level, initiatives to monitor safe handling of hazardous chemicals must be streamlined in order to be most effective. If provincial standards duplicate, or are contradictory to federal requirements, these must be harmonized. Continued efforts to harmonize standards at the international level will be necessary. The future of safe practices in the handling of hazardous chemicals lies with stewardship, education and a unified effort among stakeholders.

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Appendix A

Employee Consent Form

The action research project being conducted by Bill Graham (the project leader) has been outlined for you in a workshop. The purpose, ethical considerations and workplan have been included in a handout for all employees.

Although your input is valuable to the study, you may choose not to participate or you can decide to withdraw at a later date with no explanation required and no consequences.

The project leader will not disclose individual responses and your name will not appear on any survey form or interview transcript. All data collected from employees will be securely stored off *(the organization's)* **premises and will be destroyed upon acceptance of the project by Royal Roads University. Overall findings based on analysis of data will be reported to all** *(the organization's)* **employees.**

_____

Signature of Participant

_____

Date

Appendix B

External Stakeholder Consent Form

The action research project being conducted by Bill Graham (the project leader) has been outlined for you in a letter. The purpose, ethical considerations and workplan have been included in the handout which is given to all participants.

Although your input is valuable to the study, you may choose not to participate or you can decide to withdraw at a later date with no explanation required and no consequences.

The project leader will not disclose individual responses and your name will not appear on any survey form or interview transcript. All data collected from participants will be securely stored off *(the organization's)* **premises and will be destroyed upon acceptance of the project by Royal Roads University. Overall findings based on analysis of data will be reported to all** *(the organization's)* **employees and interested stakeholders.**

_____

Signature of Participant

_____

Date

Appendix C

The following is a brief overview of the action research project being conducted by Bill Graham. The project is a requirement of the Masters of Arts and Leadership Program of Royal Roads University in Victoria, BC. It involves (the organization)and its stakeholders in a collaborative inquiry into the issues surrounding the safe handling of hazardous chemicals.

Project Purpose

(The organization), as a responsible member of the chemical industry is undertaking a study to produce a comprehensive procedures manual to address the safe handling of hazardous products. The emphasis will be on relevant safety standards that protect employees, customers, suppliers, the public and the environment.

Within this process, employees will have the opportunity through their input and participation to:

- Develop clear and effective procedures
- Clearly understand the impact of safety on the organization's core values
- Have ownership in the process which will encourage adherence to safety procedures
- Have an enhanced sense of the social responsibility within the industry
- Become part of a growing and ongoing learning community within (*the organization*).

The intent of the research will be to answer these questions:

1. How can employees, through their collaboration, ensure that a policy and procedures manual contributes to stakeholder protection and safety?
2. How can employees, through this process, help to establish a learning organization beyond the scope of the project?

Workplan

Initially, a workshop for employees will overview the project, its purpose, timeline, workplan and ethical considerations. Consensus as to its value will be an objective as will obtaining employee support and agreement to participate. A second workshop will introduce systems thinking and teambuilding concept.

The first phase will involve the formation of teams (on a sign-up basis according to interest and expertise) to carry out research that will address the primary purpose.

Surveys of customers and suppliers will be mailed or emailed. Meetings with Fire Department and Emergency Response officials will take place. Teams will report their findings to the whole group and provide documentation and summaries in a handout. Analysis of all reports will involve team leaders, the project leader and the consultant.

The second phase will address the secondary purpose of how to establish and incorporate the systems approach and the culture of the learning organization via this project's work. Employee surveys will be distributed and interviews will commence. The project leader and the consultant will be responsible for the analysis of these in order that confidentiality is assured. Findings will be reported to all employees who will be asked to reflect upon and discuss these before making recommendations about future action.

A formal summary of the project will be given to employees in a meeting with the project leader and consultant at which time suggestions for action or further research will be shared. These will become part of the project report to Royal Roads University and (*the organization*) management.

Appendix D

External Stakeholder Survey (Canadian supplier version)

1) Does you company do business with companies that are not
a) CACD or CCPA members. Yes No
b) ISO certified? Yes No

2) How important is it that suppliers/clients have endorsed the Responsible Care initiatives? Very Important Important Not Important

3) Does your company have a strategic initiative or mission statement that includes the word "safety"? Yes No

4) Does this mission statement include the role of employees in upholding safety standards? Yes No

5) Who has responsibility for Regulatory Affairs?
a) One person
b) More than one person

6) How long has safety been part of your company's mandate?
a) Always
b) 10 years
c) 5 years
d) 1 year

7) What has been it's impact?_____
_____
_____

8) To what extent have employees been included in the production of safety guidelines? (please check one)
a) Not at all _____
b) To some extent _____
c) To a great extent _____

9) How are safety guidelines delivered to your employees? (e.g., newsletter or memo)
_____
_____

10) Are safety guidelines meaningful to employees in their regular job function at all levels? Most Some Few

11) What % of employees receive training in safe handling procedures?
100% 75% 50% 25%

12) How frequently is training provided?

_____

_____

13) What is the nature of the training?

_____

_____

14) Would your company accept CACD certification in place of its own audits, once third-party verification is in place? Yes No
(Please explain.)_____

_____

Appendix E

External Stakeholder Survey (American supplier version)

1) Does you company do business with companies that are not
a) NACD or CMA members. Yes No
b) ISO certified? Yes No

2) How important is it that suppliers/clients have endorsed the Responsible Care initiatives? Very Important Important Not Important

3) Does your company have a strategic initiative or mission statement that includes the word "safety"? Yes No

4) Does this mission statement include the role of employees in upholding safety standards? Yes No

5) Who has responsibility for Regulatory Affairs?
c) One person
d) More than one person

6) How long has safety been part of your company's mandate?
e) Always
f) 10 years
g) 5 years
h) 1 year

7) What has been it's impact?_____
_____
_____

8) To what extent have employees been included in the production of safety guidelines? (please check one)
d) Not at all _____
e) To some extent _____
f) To a great extent _____

9) How are safety guidelines delivered to your employees? (e.g., newsletter or memo)
_____
_____

10) Are safety guidelines meaningful to employees in their regular job function at all levels? Most Some Few

11) What % of employees receive training in safe handling procedures?
100% 75% 50% 25%

12) How frequently is training provided?

_____

_____

13) What is the nature of the training?

_____

_____

14) Would your company accept NACD certification in place of its own audits, once third-party verification is in place? Yes No
(Please explain.)_____

_____

Appendix F

External Stakeholder Survey (American customer and competitor version)

1) Does you company do business with companies that are not
a) NACD or CMA members. Yes No
b) ISO certified? Yes No

2) How important is it that suppliers/clients have endorsed the Responsible Care initiatives? Very Important Important Not Important

3) Does your company have a strategic initiative or mission statement that includes the word "safety"? Yes No

4) Does this mission statement include the role of employees in upholding safety standards? Yes No

5) Who has responsibility for Regulatory Affairs?
e) One person
f) More than one person

6) How long has safety been part of your company's mandate?
i) Always
j) 10 years
k) 5 years
l) 1 year

7) What has been it's impact?_____
_____
_____

8) To what extent have employees been included in the production of safety guidelines? (please check one)
g) Not at all _____
h) To some extent _____
i) To a great extent _____

9) How are safety guidelines delivered to your employees? (e.g., newsletter or memo)
_____
_____

10) Are safety guidelines meaningful to employees in their regular job function at all levels? Most Some Few

11) What % of employees receive training in safe handling procedures?
100% 75% 50% 25%

12) How frequently is training provided?

_____

_____

13) What is the nature of the training?

_____

_____

14) Is there any data that you are able to share regarding reduced incidents (spills, accidents) that can be attributed to Responsible Care initiatives?_____

_____

_____

15) How has the Responsible Care/Distribution philosophy been made a part of the culture of your organization?_____

_____

_____

Appendix G

(THE ORGANIZATION) EMPLOYEE SURVEY

THE FOLLOWING IS A SURVEY OF THE KNOWLEDGE YOU HAVE AND OPINIONS YOU HOLD AS AN EMPLOYEE OF (*THE ORGANIZATION*).

Please clearly circle the number that most accurately indicates your agreement with each statement. In the case where a written response is requested, please print or write clearly in the space provided. There is an additional page attached should you need more space.

Your time is appreciated.

PROCEDURES

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I am aware of (*the organization's*) existing safety procedures manual.	1	2	3	4	5
2. I refer to existing company manuals or guidelines.	1	2	3	4	5
3. I would like to have such a reference manual.	1	2	3	4	5
4. I think that a comprehensive general and safety policy and procedure manual would be beneficial to (*the organization's*) stakeholders.	1	2	3	4	5
5. It should contain:					
i) Detailed regulatory information.	1	2	3	4	5
ii) General guidelines only.	1	2	3	4	5
iii) Emergency plans.	1	2	3	4	5
iv) Mission					

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
statements.					
v) Other:					
6. I am familiar with the Responsible Care/ Responsible Distribution initiatives.	1	2	3	4	5
7. I am familiar with the Responsible Distribution requirements for members.	1	2	3	4	5

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
8. An employee manual of policies and procedures for safe handling of hazardous chemicals should contain information on:	1	2	3	4	5
i) Occupational health and safety.	1	2	3	4	5
ii) Warehousing.	1	2	3	4	5
iii) Transportation	1	2	3	4	5
iv) Emergency response and community awareness.	1	2	3	4	5
	1	2	3	4	5

iv) Waste management.	1	2	3	4	5
i) Communication with all publics.					
v) Self-assessment and audits.					
9. I encounter problems accessing or obtaining information and documentation regarding safe handling and storage of hazardous chemicals.	1	2	3	4	5
10. Drafting an employee manual should involve input from all stakeholders.	1	2	3	4	5
11. I would be motivated to participate in such a project.	1	2	3	4	5
12. I would have difficulty finding time to participate in such a project.	1	2	3	4	5

Comments

_____

_____

_____

TEAMWORK

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1) There is a spirit of teamwork and cooperation in the workplace.	1	2	3	4	5
2) I have ideas about how teamwork can be improved.	1	2	3	4	5
3) It is important to be familiar with the work and responsibilities of others in different roles.	1	2	3	4	5
4) I am familiar with the work and responsibilities of others in different roles.	1	2	3	4	5

5) How could teamwork and "systems thinking" be enhanced at (*the organization*)?

Comments

_____

_____

_____

COMMUNICATION

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. My ideas for improvement would be considered by management as valuable.	1	2	3	4	5
2. I would like an opportunity to share my ideas.	1	2	3	4	5
3. Leaders openly discuss the philosophy and values behind their decisions.	1	2	3	4	5

4. Changes in procedures should be communicated by: (please circle one)
   - i) Memo
   - ii) E-mail
   - iii) Staff meeting
   - iv) Newsletter

Comments

_____

_____

_____

JOB EXPERIENCES

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1. I receive the training I need to incorporate safe practices into my job	1	2	3	4	5
2. I have the empowerment to do my job.	1	2	3	4	5
3. There are goals within my job that I am unable to reach	1	2	3	4	5
4. The leadership team encourages and supports risk-taking in decision making.	1	2	3	4	5

My most positive experience at work was

_____

_____

_____

Comments

_____

_____

_____

Appendix H

Focus Group Interview Questions

- Indications from the employee survey are that a comprehensive policies and procedures document would be beneficial. What should it look like? Should it be in a binder? Multiple binders? On a floppy?

- There is a lack of familiarity with Responsible Distribution codes and elements. How should learning within the organization take place in this regard and in general?

- The majority of employees report having no trouble finding safety and quality information yet they suggest that manuals would be beneficial. Why do you think this is so?

- What elements, physical or otherwise, impede quality service and/or safe practices within the organization?

- What elements work to ensure quality and safety?

- What are some of your ideas for encouraging teamwork within the company?

- How should employees learn about each other's roles and responsibilities?

- There is a prevailing wish for regular meetings. Who should be included?

- How often should they be? How long should they be? Who should preside?

- What three things are most needed within the organization?

Appendix I – EMPLOYEE WORKSHOP MATERIALS

Action and evaluation research

Evaluation = the judgement process people use to arrive at the highest quality decisions

Action Research = a process based on research and evaluation in a real-world setting

- **"Participative"** It involves all stakeholders. "Employee participation is not only effective, but its use by management is an ethical imperative."

- **"Constructivist"** It is for the building of knowledge to use in building new systems and approaches.

- **"Ethical"** It provides for consideration of :
  - free and informed consent
  - confidentiality and privacy
  - exploitation

Leadership

Leadership has been defined as " philosophy into practice" or a "duality of reflection and action".

Management has tended to be about 'doing things right', while leadership is about 'doing the right things".

- **Shared Vision-** Leaders encourage the setting of mutual goals through a process that includes all stakeholders.

- **Empowerment of Employees-** Leaders encourage commitment, risk-taking and innovation.

- **Foster Collaboration-** Leaders enable or strengthen others by facilitating dialogue and discussion.

"There go my people. I must find out where they are going so I can lead them." Alexandre Ledru-Rollin

"I must follow the people. Am I not their leader?" Benjamin Disraeli

Systems Thinking and Teamwork

Systems thinking refers to a collective mentality that sees the parts of the whole as being connected somehow. It is based on:

Shared Vision:- a compelling force which gives coherence to diverse jobs
provides focus and energy for ongoing learning
can only be derived through inclusion and participation

Teamwork:- "The fundamental characteristic of the relatively unaligned team is wasted energy."
each person's efforts compliments the efforts of others because they see themselves as part of a team. (This can only happen if there is a shared vision.)
Dialogue and discussion must be practiced often so that participants become comfortable with the process.

Responsible Care/ Responsible Distribution

Love Canal (1977)
Mississauga Train Derailment (1979)
Bhopal Gas Leak (1984)

CCPA conceives Responsible Care (CMA,1988)
OHS Act,1985
ISO,1987
WHMIS, 1988
CEPA, 1988
CACD adopts Responsible Distribution,1989
TDG Act, 1992

Responsible Care Codes of Practice:
Community Awareness and Emergency Response (CAER)
Research and Development
Manufacturing
Transportation
Distribution
Hazardous Waste Management

Responsible Distribution

Responsible Distribution Policy

Distributor Code of Practice

Statement of Commitment: "The CACD and each of its member companies is committed to taking every practical precaution toward ensuring that products and services do not represent an unacceptable level of risk to its employees, customers, the public or the environment."

- Conditions of membership
- Third-party verification
- A "culture", not a system

Project Objectives

- To produce, through a collaborative process involving all employee stakeholders, a comprehensive handbook of policies, procedures and mission statements with an emphasis on new standards for safe handling, storage and distribution of hazardous chemicals.

- To foster, through this process, an empowered spirit among employees who, through their input and participation, will have the opportunity to experience increased motivation, satisfaction, ownership and accountability.