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# The Implementation of Responsible Care in Costa Rica

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IMPLEMENTATION OF RESPONSIBLE CARE IN COSTA RICA

Interactive Qualifying Project Report completed in partial fulfillment  
of the Bachelor of Science degree at  
Worcester Polytechnic Institute, Worcester, MA

Submitted to:

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Professor Isa Bar-On (co-advisor)

In Cooperation With

(Mr. Carlos Perera Executive Director of CNP+L)

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(December 16, 2009)

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## **Abstract**

The National Cleaner Production Center of Costa Rica envisions a future where companies utilize responsible chemical care. To facilitate the safer and more conscientious handling and manufacturing of chemicals we developed a road map for bringing Responsible Care to Costa Rica. We devised a strategy to determine the host of the Responsible Care program, how the program will be supported, the verification process, and the public relations aspect of initiating the program. The results from our research lead to the creation of a road map for the chemical industry, a database of chemical companies, and a promotional pamphlet.

## **Acknowledgements**

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## **Authorship Page**

All writing and research for this report was equally completed by Natalie Eaton, Kareem Francis, Henry Moore, and Sean O'Donnell. Each member of this team contributed to the introduction, background, methodology, results, analysis, and conclusions and recommendations.

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## **Executive Summary**

Currently there are no programs for the safe handling of chemicals in Costa Rica. This has led to a rise in the number of chemical related accidents that have been harmful to the public and the environment. These accidents sometimes result in loss of life and have long lasting environmental implications that will affect future generations. Due to the lack of auditing agencies, chemical companies do not always follow the current regulations. The irresponsible acts of chemical companies affect a large number of people in the most basic forms such as the contamination of water and soil. The goal of this project is to help the National Cleaner Production Center of Costa Rica (CNP+L) with the implementation of Responsible Care (RC), a program that promotes safe handling of chemicals, sustainability, and reduced environmental impact, in order to reduce these incidents. Most of the Costa Rican chemical industry is concentrated around manufacturing and the distribution of chemicals. Therefore, transportation and environmental protection were areas of focus.

### **Background Information**

The manufacturing and distribution industries in Costa Rica contribute close to a quarter of the national domestic product. Many chemicals are used in the manufacturing industry in Costa Rica, for example; the Intel plant in Costa Rica uses many chemicals in its manufacturing of computers. This high amount of manufacturing increases the probability of accidents in the use and transport of the chemicals (CICR, 2009). In 1995, the United Nations established the National Cleaner Production Center program (Centro Nacional de Produccion más Limpia, CNP+L in Costa Rica). The goal of CNP+L is to create a capacity in the host country to accept cleaner production technology in the industrial sector and to solve production problems including waste management and emission control (Luken et al., 2004). CNP+L has chosen RC, with its goals of improved safety and reduced environmental impact, as the program best suited to make positive changes in the chemical industry.

The three fundamental principles of RC are based on social responsibility. Positive corporate social responsibility is the ethical obligation of companies to play an active role in protecting the community and the environment. RC is committed to sharing information with stakeholders and customers about their members' safety and environmental performance. Benefits of the program include; improved safety for the community and workers, reduced operating costs, and reduced environmental impact. Improvements in safety reduce insurance

and interest rates on loans, which along with improved efficiency helps to lower costs. Increased efficiency lowers the generation of emissions and waste by-products. There are 53 member countries of RC including 11 countries in North and South America however; there are no RC member countries in Central America.

## Methodology

We researched RC centers to understand how it was implemented in other countries (Brazil, Colombia, Mexico, U.S.A., and Canada). We interviewed companies in the chemical industry in order to evaluate their interest in the program and understand the concerns that would need to be addressed in the implementation plan. To generate interest in the program we held an informative workshop to present information on RC. To improve our promotional campaign, we surveyed the attending companies in order to understand their perception of RC and to discover what they considered the most influential information in a promotional pamphlet.

## Results

The companies that we interviewed varied in size from six to 1400 employees. They varied from manufacturers of veterinary products, to cleaning supplies, and even to waste management. All of the companies have similar levels of safety and environmental standards. Even though they are diverse in size and type, they had similar concerns regarding RC, such as the cost of the program and verification process.

Our research focused on the creation of an implementation plan, or road map for the successful introduction of RC in Costa Rica. Below, in Figure 1, are the steps for the implementation of RC as well as our recommendations.

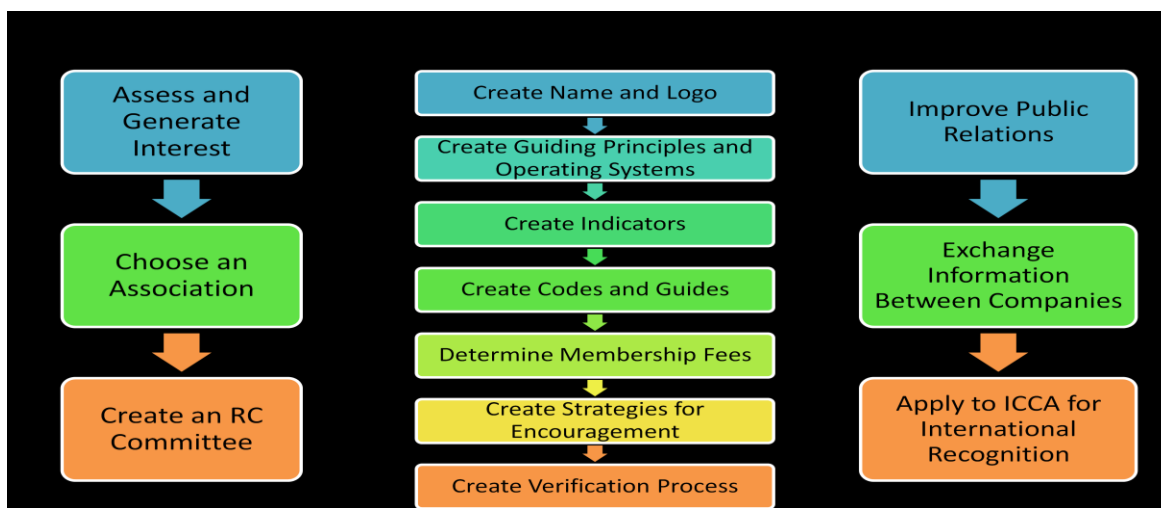


Figure 1: Implementation Steps

Companies expressed concern about environmental protection issues, benefits for companies, verification issues, and improving public relations. We recommend the advertising strategies for RC should include protecting the environment, preventing harm to surrounding communities, benefits for companies and improving public relations.

Three organizations were willing to host RC, including la Camara de Industrias de Costa Rica (CICR), CNP+L, and el Colegio de Químicos (Químicos). We recommend choosing el Colegio de Químicos as the organization to host RC. The main benefit of choosing Químicos would be the direct relationships with the chemical industry. This would decrease the networking that would have to occur otherwise. In addition, Químicos would provide office space and administrative staff that would make it more convenient to the members. Químicos will need to establish the RC committee, consisting of members from Químicos and interested companies. The committee deals with issues of verification, funding, and the system for establishing standards.

The RC committee will need to establish a system, which outlines how improvements will be made in RC, such as a one-tier system, two-tier system, or a self-improvement system. A one-tier system sets the same standards for all companies regardless of status. A two-tier system would establish a set of standards for less developed companies to meet, and a separate set for more developed companies to meet. An improvement system could establish standards based on percentages for each individual company, or on goals set by the companies. We recommend that the committee use a self-improvement system based on percentages, because it will set fair goals for each company regardless of status, and provide concrete data on their improvements.

Usually, membership fees, supporting associations, sources outside the chemical industry who want to support the RC initiative, and initially the founding organization pay for RC. The members of RC will have to pay membership fees that could depend on net revenues or the size of the company. We recommend that RC charge a membership fee based on net revenue because the fees will be fair for each company.

There are potential associates that are not directly involved in the chemical industry, but would like to support RC's efforts. Potential companies that would support RC outside the chemical industry could be referred to as "Friends of Responsible Care". U.S.A. RC has a Friends of Responsible Care program, and Canada and Mexico have expanded their membership

to include transportation and distribution industries. These program members pay membership fees to RC. We recommend that Costa Rica's RC adapt this extension of RC to increase income, and involvement outside the chemical industry.

When the Costa Rican RC committee considers how the progress of companies will be verified, it should select whichever process will be void of corruption and considered the most trustworthy by members and the public. The verification process for Canada's RC uses a three-person team including a member of the community, a third party verification organization and a representative from a member company. The team verification ensures the results are fair and accurate. This process reduces the possibility of green washing and increases the trust in the verification process. Green washing is a term that describes unverifiable claims that companies are environmentally friendly. Another possibility includes adding two more criteria to Canada's method, which would increase the integrity of the companies chosen. The community representative would choose the third party verification agency and RC would use a lottery system to randomly choose a company to represent the members of RC in the three-person group. We recommend using a third party verification system that includes a member from the community, a representative from an RC company and a third party verification agency. The community representative chooses a third party verification company and a lottery system chooses the member company.

The committee should review other countries' strategies for public relations to establish an ongoing communication between companies and interested parties inside and outside the membership. The communication should involve health, safety, and environmental matters. Special consideration should be given to the concerns and inputs of local communities. To help identify public concerns companies should host open houses, factory tours, and town hall style meetings.

These are our recommendations that will most likely result in a successful implementation of RC. A Costa Rican RC program will help to protect the environment, influence the industry to make positive decisions and improve communication within the industry and with the public. Future projects that could aid this process are establishing the guidelines for the RC committee, and analyzing each company's financial commitment, including the membership fees and costs to meet the guidelines. Another project could conduct a more active recruitment process and promote of the program.

## Chapter One: Introduction

Currently there are no programs for the safe handling of chemicals in Costa Rica. This has led to a rise in the number of chemical related accidents that have been harmful to the public and the environment. An accident, in Móin, Puerto Limón, for example, left 20,000 people without drinking water and an evacuation was necessary because of harmful vapors (Aguilar, 2006). The goal of our project is to help the National Cleaner Production Center of Costa Rica (CNP+L) reduce these incidents through the implementation of Responsible Care, a program that promotes safe handling of chemicals.

Responsible Care (RC) is a “voluntary global initiative under which associations work to improve safety, health, and environmental performance” (Responsible Care, 2009). The organization is committed to sharing information with stakeholders and customers about their members’ safety and environmental performance. RC is currently active in 53 countries, and member companies account for almost 90% of the world’s chemical production (Responsible Care, 2009). Eight South American countries and three North American countries are members of RC; however, there are no RC members in Central America.

Improved safety for communities and workers, reduced operating costs, and reduced environmental impacts are the most notable benefits for the RC member companies. An improvement in safety reduces insurance and interest rates on loans. A combination of improved efficiency and lowered insurance and interest rates leads to lower operating costs. Increasing the efficiency lowers the production of emissions and waste by-products, which lessens the environmental impact.

For the purposes of our project any companies who handle, use, or transport chemicals were considered part of the chemical industry. The Costa Rican chemical industry does not have a large amount of chemical production but its focus is concentrated around the use of chemicals in manufacturing and their distribution. Accidents during the transport of chemicals have led to environmental damage; therefore, transportation and environmental protection were areas of focus.

The goal of our project was to develop a road map, for the implementation of RC in Costa Rica that responds to the needs and interests of the Costa Rican chemical industry, and to aid in the initial implementation steps. The road map shows all the implementation steps and lists options and recommendations for the successful implementation of RC in Costa Rica. To this end, we created a portfolio of chemical companies, a promotional pamphlet, and a road map for the implementation of RC in Costa Rica. We researched RC centers, and interviewed

companies in the chemical industry in order to evaluate their interest in the program and gain feedback for our promotional material. We held an informative workshop to present information on RC and to generate interest in the program. To improve our promotional material, we surveyed the attending companies in order to understand their perception of RC and to discover what they considered the most influential information in a promotional pamphlet.



## **Chapter Two: Literature Review**

To gain insight into our project we needed to understand the reasons for implementing RC in Costa Rica. To accomplish this we researched the status of the Costa Rican industry, the history, and the motivation of CNP+L. We also needed to understand RC, the expected outcomes, and the implementation process. This background information allowed us to tailor the road map to Costa Rica.

### **2.1 Chemical Incidents**

Over the past few decades, the chemical industry has received a bad reputation for being irresponsible with their handling of chemicals. Exactly 25 years ago, the Bhopal disaster, in Madhya Pradesh, India, killed an estimated 20,000 people after an accidental release of 40 metric tons of Methyl Isocyanate gas from a pesticide plant (Cheremisinoff et al., 2008; Givel, 2006). Although this disaster drew worldwide attention to the deadly outcomes of chemical accidents, local events continue to attract public scrutiny. An accident occurred at Siministros Industriales de Costa Rica in Alajuela in May 2007. The plant exploded sending fire 175 feet in the air and it took 150 firefighters to extinguish the fire. An evacuation occurred for local residents, and firefighters suffered from toxic smoke inhalation (Sherwood, 2007). In general, chemical incidents can result in birth defects, health hazards, water contamination, air pollution, and soil contamination the impacts of which can last for decades or more.

### **2.2 Public Opinion and Expectations**

The public and some human rights groups have viewed actions taken by the chemical industry and RC members in a positive manner. The International Labor Organization (ILO) acknowledges the increasing number of outreach programs to educate communities in close proximity to chemical plants ("Chemical industry opts," 1999). Voluntary initiatives are sometimes focused in the upper management of companies without directly involving the general employees. In the United States in 1993, only 59% percent of employees knew about and participated in an initiative in their company, but by 1999 that had increased to 83% ("Chemical industry opts," 1999). Chemical industries are credited with using voluntary initiatives instead of requiring government regulations, because initiatives can be adjusted to deal with local situations more efficiently than regulations (Baram, 2009).

The public also has complaints about the chemical industry including RC companies. The Environmental Work Group accused RC companies of using the name to change their image, without creating any programs to improve the industry. RC was accused of meeting

current environmental laws instead of surpassing and improving standards (Environmental Work Group, 2009). Although the American Chemical Council does report on carbon intensity, they are not required to publish company specific information revealing absolute emission figures (Valk, 2009). The ILO states that multinational companies in developing countries are not protecting their workers, and it specifically mentioned oil operations in Venezuela and parts of Africa. The ILO also identified the destruction of ecosystems in South American countries due to oil and mining operations (Baram, 2009).

The public expects the chemical industry to improve the standard of living, and protect natural resources (Dorword-King, 2009). Improving the standard of living means that companies are providing products that improve health (including employee and public safety), longevity of life, or comfort level. The public's expectations have begun to focus on improving local environmental conditions rather than global conditions (Dorword-King, 2009). To effectively address the public expectations, it is important to directly affect the local community. Some strategies could include local cleanup programs, turning old industrial land into parks, or community education programs. For example, the Society of Plastics Industry and the American Plastics Council created a program working with the Center for Marine Conservation (CMC) to clean up shorelines all over the United States. The program has removed over 27.5 million pounds of trash ("CMC's international coastal," 2009)

RC companies' expectations generally include three categories, safety and environmental protection, communication and cooperation, and continuing to produce products that are valuable to society (Pittroff, Krahling, & Preisegger, 2001). The Solvay Group developed techniques for reusing SF<sub>6</sub> without disposing of previously used chemicals. They also developed a new transportation container and system to reduce the possibility of accidents. Their use of SF<sub>6</sub> in power grids has resulted in a 27% decrease in energy usage and a 21% decrease in global warming potential (Pittroff, Krahling, & Preisegger, 2001). The Solvay Group also publishes a newsletter, which tells the users of their chemical the latest regulations regarding the chemical, as well as the safest practices for chemical handling. The Altom Transportation Company, of Chicago, Illinois, established an emergency spill response team for any accidents that occur, and provided hazardous materials training for all employees. To improve fuel efficiency they only use tractor-trailers with diesel engines that use biodiesel fuel (Wilson, 2009).

The public's concerns and the companies' concerns both tend to be about the same subjects, but they vary as to what extent the subjects are regulated. The public's concerns forced the EPA to pass a law requiring coal plants to monitor emissions at every emission point throughout each facility. The problem for coal plants is that each monitoring system and

constant monitoring costs US \$40,000-\$80,000 and some coal plants can have over 50 emission points (Valk, 2009). This regulation would address public concerns, but would not be feasible for the coal plants. In conclusion, the public has high expectations for the chemical industry, however, sometimes these expectations are unrealistic.

### **2.3 Costa Rica's Current Status**

Costa Rica was once almost completely covered by forest; however, now only about 25% remains untouched, because historically there was a lack of incentives for conservation and reforestation. Despite the large amount of deforestation, Costa Rica has the largest national park system in Central America. The system, including nature reserves, parks and recreation areas, covers about 4% of the country, with protection for 14% of the land area of the country. Costa Rica has fourteen different animals that are endangered species, not to mention various reptiles, plants and birds (Advameg Inc., 2009). With the delicate balance in the remaining ecosystems in Costa Rica, and with Costa Rica's growing reputation as an ecotourism destination, the threat of harm through improper use of chemicals is a serious concern.

The manufacturing and distribution industries in Costa Rica have experienced an average annual growth rate of 5.3% and account for 23% of the national domestic product. In 2007, Costa Rica exported US \$9.343billion worth of goods and 78% of exports were from manufacturing. . Computer chip manufacturing, for example uses numerous chemicals such as lead, acetone, and isopropyl alcohol. Many of these chemicals are highly toxic, which accounts for the fact that the rate of systemic poisoning is higher for chip manufacturing workers than those in any other manufacturing sector (Franklin et al., 2000). The Intel plant in Costa Rica, which manufactures computer chips, currently employs 2,900 people (MIGA, 2006).

### **2.4 National Cleaner Production Center**

The United Nations (UN) started the National Cleaner Production Centers program (Centro Nacional de Produccion más Limpia, CNP + L in Costa Rica) in 1995. CNP+L's goal is to create a capacity in the host country to accept cleaner production technology in the industrial sector and to provide the knowledge necessary to create viable solutions to solve production problems including waste management and emission control (Luken et al., 2004). The establishment of a center in Costa Rica occurred during 1998. The center worked with companies such as Laquinsa and Geocycle to improve environmental practices. CNP+L recognized the need for a chemical safety program due to many chemical incidents in recent years such as the Puerto Limón and Alajuela incidents. CNP+L has chosen RC, with its goals of

avoiding chemical incidents, reducing environmental impact, and improving public perception, as the program best suited to make positive changes in the chemical industry in Costa Rica.

## **2.5 History of Responsible Care**

In 1983, the Canadian Chemical Producer's Association (CCPA) asked its members to voluntarily sign an agreement concerning proper industrial behavior. This agreement would ensure the protection of the employees, customers and the public against the hazards of production, distribution, and storage of chemicals. In February 1984, CCPA members signed a report, which contained the guiding principles of RC. After the Bhopal disaster, all participating companies were urged to look for potential weaknesses and report their findings. These weaknesses included waste management, safety procedures, pollution, and communication of information with surrounding communities. In December 1984, every member ratified the inaugural version of RC, and RC was officially formed soon after.

In the burgeoning stages of RC, the CCPA made a mandate to meet or exceed current chemical emissions regulations. This was a major cornerstone for RC because it emphasized an ethical commitment to keep employees, consumers and the general public safe. RC's focus evolved from taking practical precautions to ensure safety in 1984, to the current mission of RC, "to improve the safety, health, product stewardship and environmental performance of a company's products and processes" (History of RC, 2009).

The program now encourages partnerships between associations and their member companies, which continuously improve the safety, environmental, and health knowledge of their products, processes, and technologies in order to avoid harm to the environment and people. Companies are expected to listen and work with the surrounding public in order to understand and address the public's expectations on performance, achievements, and shortcomings. Members of the program are expected to voluntarily cooperate with governments and organizations in the development and implementation of effective regulations and standards, and to meet or go beyond them. They are also encouraged to share advice that helps promote the responsible management of chemicals throughout the lifecycle of the product (ICCA, 2005). Currently, RC's goals are based on the Global Charter, which contains nine key elements that range from engaging in practices to diminish the "human footprint" to establishing a good rapport with public sources, and provides the basis for each country's guidelines (ICCA, 2006). There are 53 countries operating under the Global Charter's guidelines (See Figure 2).



Figure 2: Map of Responsible Care Countries

## 2.6 Outcomes of Responsible Care

Membership in RC has had numerous positive outcomes since its founding. Companies report saving money and time through improved efficiency, safety, and environmental performance. This also has resulted in positive community feedback (CCPA, 2005). In 1988, U.S. member companies reduced releases to the environment by 73 percent and more recently, in 2005-2006, were able to maintain hazardous air pollutant (HAP) levels while increasing production (ACC). Members have gained recognition that they are part of the “leading edge” in worker safety and chemical responsibility. Benefits for members also include reduced risks, liabilities, crises, insurance rates, and interest rates on loans. Additionally, member associations benefit from increased leverage in policy debates and enhanced representation for themselves and the industry they represent (CCP, 2005). Since 1995, RC companies have been able to decrease, reportable distribution incidents by 43 percent even while the volume of chemical shipments increased by 16 percent (ACC). Improved employee moral along with an increase in worker, environmental, and customer protection are also results of RC (CCP, 2005). RC companies were able to sustain a worker safety record that is four times safer than the average of the U.S manufacturing sector and twice as safe as the chemical industry overall between 2007 and 2008. Overall, members have increased worker safety by 72 percent since 1990 (ACC).

The three fundamental principles of RC are based on social responsibility. Positive corporate social responsibility is the ethical obligation of companies to play an active role in protecting the community and the environment. Negative social responsibility holds a company accountable for the effects of its products and by-products (Kaliski, 2001). RC practices positive corporate social responsibility by preventing accidents and reducing environmental damage. RC requires companies to share information with stakeholders to create an open dialogue to address

any concerns. These practices help to build trust between RC member companies and the surrounding communities, which results in a positive public perception. A correlation has been found between positive social and environmental performance and positive financial performance (Orlitzky et al., 2003).

## 2.7 Implementation of RC

To become internationally recognized an RC center fulfills eight requirements. These requirements include the establishment of the guiding principles, the name and logo, the codes and guides, indicators, communications, sharing of safety information, encouragement of companies, and the verification process. Specifically, guiding principles define the general goals of the RC program. The codes and guides provide assistance to help companies reach their goals and indicators provide statistics to measure improvement. As the implementation of RC has spread around the world, a clear process is in place to facilitate the infrastructure. First, an RC committee is formed and it establishes the name, logo, and codes and guidelines for the individual country. Next, the RC committee hosts training sessions to help companies accomplish their goals, and develops indicators to measure their progress. Lastly, the guiding principles and proof of companies' progress towards these goals are sent to the International Council of Chemical Associations (ICCA), which heads all the RC centers, for review and acceptance as an internationally recognized center (Status Report, 2007). See figure 3 below for the steps for implementing RC.



Figure 3: Steps for Implementing Responsible Care

## 2.8 Joining the National Responsible Care Program

Companies who want to be part of the program must follow a set of guidelines and steps, set forth by the RC committee, as shown in Figure 4, to show their dedication for improvement in their industry and involvement in the RC program (ACC, 2007). A company first completes a self-evaluation to indicate its strengths, weaknesses, and areas of concern. This evaluation uses

the aforementioned indicators, and shows whether they comply with current RC standards. These results lead to the creation of a plan for the company as to how it can improve its performance, followed by the execution of that plan. This process of evaluation and corrective action should be continuous, even after the company is a member of RC. Once the company has met the standards set forth by RC, it will submit a formal document, normally signed by the chief executive officer, stating its voluntary commitment to RC (RC Status Report, 2008).

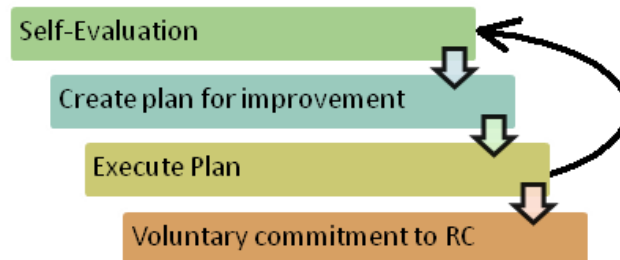


Figure 4: Steps for joining Responsible Care

. RC is a program that promotes the safe handling, storage, and usage of chemicals to protect the environment and improve safety for workers and surrounding communities. The benefits of RC lead to a reduced number of chemical accidents. While worldwide accidents such as the Bhopal disaster led to the start of RC, local accidents involving chemicals have led CNP+L to want to start an RC program in Costa Rica.

## **Chapter 3: Methodology**

The objectives of our project are to develop a road map for the implementation of RC in Costa Rica, and to create promotional materials and a portfolio of interested companies. In order to complete these objectives, we needed to assess the companies' interest in RC, review other RC promotional material, and evaluate prior RC implementation techniques. We designed the road map to provide CNP+L with a systematic process for implementing RC. We designed a promotional pamphlet to interest companies in RC by highlighting social responsibility both in terms of health and safety and in terms of public relations. The portfolio of companies provided contact information for companies, and an assessment of their interest in RC.

### **3.1 Case studies**

In order to develop implementation strategies in Costa Rica, we examined RC initiatives from Brazil, Canada, and Colombia, Mexico, and U.S.A. These countries and Costa Rica not only share proximity but also were the most willing to assist. We gathered information on their guiding principles, indicators to measure performance, checklists to help members achieve goals, and methods of sharing information between companies. We used the collected information as an example for recommendations pertaining to certain aspects of Costa Rica's RC program.

### **3.2 Information Gathering**

The first step of the road map is to gauge interest in RC and to convince companies to join. To contact these companies we consulted the GUIA Industrial 2009 Guide, a directory of Costa Rican chemical companies registered with the Chamber of Industries. We used three information-gathering strategies, interviews, an informative workshop and surveys, to help accomplish all of our objectives.

Interviews were used to assess each company's familiarity with RC, willingness to join RC, and support for the RC protocol. Our interviews were a sample of convenience of five chemical companies for which CNP+L had contact information. These companies were Florex, Laquinsa, Dow, HB Fuller, and Geocycle Costa Rica. These five companies are well-respected leaders in the chemical industry because of their success over the years, and are leading the industry in levels of production (Sergio Musmanni, personal communications, November 06, 2009). We anticipated that their acceptance of RC would influence other chemical companies to join this initiative. We used the information from the interviews to design a pamphlet that should be persuasive and interesting to companies.



The informative workshop served as a tool to generate interest in RC in multiple companies simultaneously while also providing an interactive forum for questions and answers. This informational presentation was beneficial to companies because they learned about RC while collaborating with their colleagues. We invited all chemical related companies with available contact information. Questions were fielded after the presentation, and a standardized survey was given out to gather information. By giving the survey out after the presentation, it allowed us to present all of the information prior to their responses. Surveys were sent to companies who were unable to attend the informative workshop. The data from the surveys were interpreted in the same way as the interviews. We recorded areas of concerns mentioned by the companies to make sure we addressed them when creating the road map and pamphlet. See survey in Appendix H.

### **3.3 Conclusion**

Through the previously described methods, we gathered information on other countries' RC programs, and companies' interest in the program. The portfolio was created using the three modes of communication and the directory. The directory provided the contact information for the companies, and the communications allowed us to assess their interest in the RC program. The road map was constructed based on the implementation models from other companies. Concerns voiced by companies were also addressed in the road map. The promotional pamphlet was designed based on promotional materials from other RC countries and concerns expressed by the companies.

## **Chapter 4: Findings and Recommendations**

The companies that we interviewed varied in size from six to 1400 employees. They are involved in different industries including veterinary products, cleaning supplies, and waste management. All of them are in the process of being ISO14001 certified, or are already certified. Even though they are diverse in size and type, they had similar concerns regarding RC. Their main concerns were sharing and competition, environment and surrounding communities, public opinion, and green washing, a term that describes unverifiable claims that they are environmentally friendly.

### **4.1 Sharing and Competition**

The sharing of information between companies is an important part of the RC program, and is necessary for the program to function properly. Companies assist each other in reaching the standards of RC by sharing techniques and practices for the safe handling, use, and transport of chemicals. This sharing is most beneficial to the companies with lower standards because they learn what the companies with higher standards did in order to achieve those standards. In addition, the low standard companies will learn multiple methods to achieve these standards so they can choose the one that best suits their particular company.

Some companies, for example Florex, did not understand how this would be beneficial to companies who already have high standards. Companies can have overall high standards but still be lacking in an aspect. These companies would learn strategies to improve their efficiency. However, for the companies that are not lacking in any area, they will learn different techniques to improve their high standards or the efficiency and cost effectiveness of their operations. For example, two companies with very low levels of air pollution might achieve that in two different ways. One company filters their outgoing air, while the other uses raw materials that produce fewer pollutants. Upon sharing this information with each other, the companies might realize that the other method would be better or they might use both methods and further reduce their levels of air pollution.

Since RC emphasizes companies share information with each other, companies were concerned about competition. Most of the companies in RC will be in similar industries and thus some of them will be in direct competition with each other outside of the organization. They will not want to share any information that will give the other a competitive edge in the market. However, this should not be a concern for companies because they will only share information that relates to safety or the environment, and not any proprietary information. In addition, some companies worry about competition within RC, however there is no competition within the

program because there is no ranking system and companies are never compared to other RC companies.

Cost was another concern brought up by some companies; however, it was not a main concern. Companies were concerned about the cost of improving their production in order to meet the RC standards. They also felt that they would need to raise the prices of their products in order to compensate for the required changes and this would cause them to be less competitive in the market. However if these claims were true, then RC companies around the world would not be able to operate and benefit from the program. Most of these costs are offset by the benefits of RC such as reduced loan rates, reduced workers compensation, reduced insurance rates, and improved efficiency.

## **4.2 Environment and Surrounding Communities**

When discussing chemical effects on the environment with Laquinsa's owner, Gerardo Porras, his main concern was water contamination. He posed the hypothetical situation of chemicals being spilled in the water of the surrounding communities and eventually causing birth defects in local children. He felt that water contamination would be the most influential topic to convince the industry to establish a chemical safety program (Personal Communication, Gerardo Porras, 11/19/2009). Although Laquinsa was the only company who mentioned water contamination specifically, most of the companies we interviewed such as DOW, Geocycle, Increquim, and Florex all expressed concerns about the environment and surrounding communities. Costa Rica was named the "world's greenest, happiest country" in 2009 by the Happy Planet Index (Seager, 2009), but it still needs a chemical safety program to prevent harm to the environment and surrounding communities.

## **4.3 Public Relations**

Although there is not an RC program in Costa Rica, the companies still have their own expectations of how they should be operating. Laquinsa was one of only two companies in Costa Rica to accept interviews with reporters following the Puerto Limón incident, and they were the only company to allow reporters to tour the facility to verify the safety precautions that were in place to prevent a similar accident (Personal communication, Gerardo Porras, 11/19/2009). Eduardo Porras said that all chemical companies in Costa Rica are expected to at least be working towards ISO14001 standards (Personal communication, Eduardo Porras, 12/14/2009). ISO14001 standards deal with environmental protection. For an RC program to be successful in Costa Rica, all of the companies in the program will need to clearly demonstrate

their commitment to protecting and improving the communities and environment. The RC goal of continuously improving safety procedures, and reducing environmental impact would help to show each company's commitment.

#### 4.3.1 Green Washing

Jorge Vieto, general manager at Geocycle, mentioned the topic of green washing when discussing his concerns about the program. He thought companies would join the RC program to improve their image, but not commit to the goals of RC. The best way to prevent this is to verify their claims. A reliable verification method would leave less room for doubt from the public.

#### 4.4 Setting Standards

In our interviews with Laquinsa and Florex, there was a concern regarding how the standards would be set for RC. Both companies expressed concerns that there would be low standards in RC due to the presence of low standard companies in the program. They also felt that if RC had low standards, then the program would not be taken seriously. If the standards were too high however, then it would be difficult for companies with low standards to join the program. Therefore, a compromise needs to be found to satisfy the needs of companies with different standards.

#### 4.5 Road Map

As shown in Figure 5, below, we separated the road map into three stages. Stage One contains steps that need to be taken to establish an RC committee. Stage Two outlines what the RC committee needs to accomplish. Stage Three contains steps to be taken after companies are working towards the goals of RC.

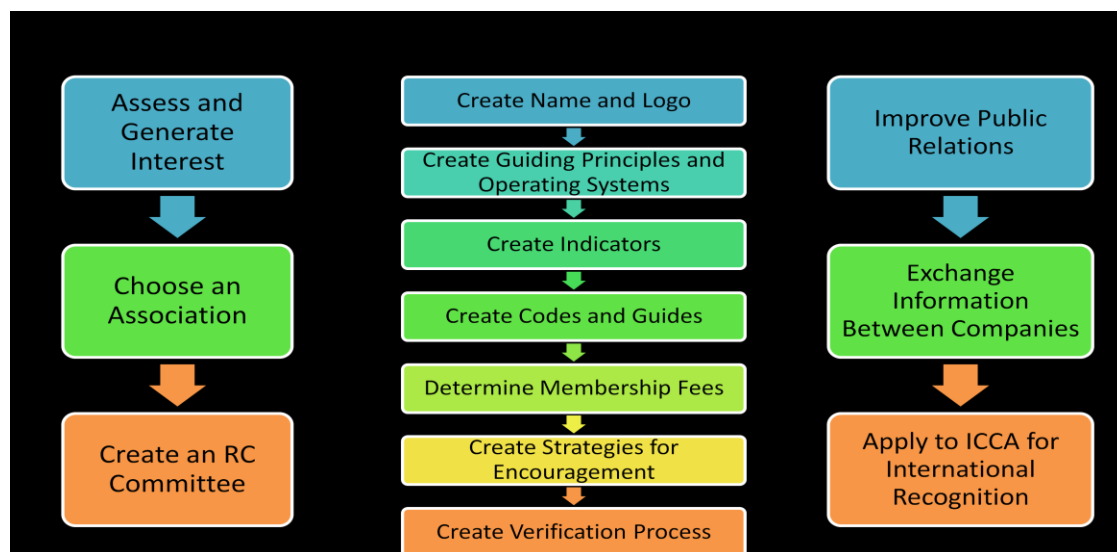


Figure 5: Implementation Plan

## **1. Assess and generate interest in the RC program**

To start an RC chapter the founding organization needs to assess and generate interest in the program. Everyone we interviewed along with most of the representatives present at the informative workshop expressed interest in RC and was concerned with the preservation of the environment and the protection of the surrounding communities. We identified the environment and the surrounding communities as the most effective foci for the promotion of RC in Costa Rica. When advertising the RC program we recommend concentrating on protecting the environment, preventing harm to surrounding communities, benefits for companies and improving public relations. See our pamphlet in appendix F and see appendix G for Responsible Care's official pamphlet.

Other countries have at least 15% of the companies that make up the chemical industry interested in RC before applying to the ICCA for international recognition. (Personal communication, Debra Phillips, 10/02/2009) The seven companies currently are enough to form the RC committee and the make the guidelines. However, we recommend at least 15% of the chemical industry be interested in RC before applying to the ICCA. See Portfolio in appendix A for contact information and level of interest of companies.

## **2. Choosing an association and establishing a Responsible Care committee**

### **A. Choosing an association**

Three possible initiating organizations are CNP+L, el Colegio de Químicos de Costa Rica (Químicos), and la Camara de Industrias de Costa Rica (CICR). According to Brian Wastle, Vice President of Canadian RC, the responsibilities of the chosen initiating organization are to apply for membership in the RCLG, develop the RC governing processes, attract chemical companies to join and create the administration that will function as the center of the Costa Rican RC. Additionally, the organization will renew the logo and licenses of the program when they expire. The administration will manage the accounting, and the collection of environmental, health and safety performance information from members. The administration will also provide progress reports to the ICCA as well as update the members on new initiatives, meeting times, and places (Personal Communication, Brian Wastle, 12/7/2009). Table 1, below, shows the three possible initiating organizations ranked based on six different categories, with one being the best.

<b>Organization</b>	<b>CNP+L</b>	<b>El Colegio</b>	<b>CICR</b>
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		de Químicos	
<b>Administrative Staff</b>	3	1	2
<b>Office Space</b>	2	1	3
<b>Conference Rooms</b>	1	1	1
<b>Training</b>	1	2	1
<b>Funding</b>	3	2	1
<b>Industry Contacts</b>	3	1	2
<b>Total</b>	13	8	10

Table 1: Comparison of Three Possible Initiating Organizations

The overall rankings in Table 1, based on the lowest total, are el Colegio de Químicos first, CICR second, and CNP+L third. With this in mind, we recommend el Colegio de Químicos be the initiating organization. The main benefit of choosing Químicos would be the direct relationships with the chemical industry. This would decrease the networking that would have to be done otherwise. In addition, Químicos would provide office space and administrative staff that would make it more convenient to the members. If el Colegio de Químicos were the initiating organization, CNP+L and CICR would still support RC through an agreement called the Memorandum of Understanding (MOU), which defines their relationship with the other organizations. According to Brian Wastle, all supporting organizations must have at least one member in the RC committee. The main role of the supporting organizations is to offer advice and assistance about the governing structure and the application to the RCLG for membership (Personal communication, Brian Wastle, 11/30/2009).

## **B. Creating a committee**

An RC committee is formed consisting of representatives from the sponsor organizations and from interested companies. The responsibilities of the committee will be creating the name and logo, choosing an operating system and creating guidelines, creating indicators, creating codes and guides, and developing funding strategies.

### **i. Create name and logo**

To create the name and logo, the RC committee should review the international logo and adopt an appropriate title and logo, which clearly identifies the program as being part of Responsible Care. We recommend the title to be “Responsabilidad Integral” because it is the Spanish translation for RC. The RC

committee can change the color of the logo but the basic shape, and design must remain the same. The slogan placed below the logo can be changed but must be approved by the ICCA. For example, Colombia's slogan is "El compromiso de la Industria Química con el Desarrollo Sostenible." The RC committee must develop rules for the use of the name and logo and communicate these rules to all member companies. Establish use of the logo within the organization and in member companies. With the help of a local attorney, apply to the national patent and trademark office for ownership of the logo. Also with the help of Debra Phillips, the managing director of RC in the U.S.A, nationally register the logo (Personal communication, Debra Phillips, 12/03/09). See appendix B for examples of logos from other countries.

**ii. Create an operating system and guiding principles**

The RC committee will need to create an operating system, which outlines how improvements will be made in RC such as a one-tier system, two-tier system, or a self-improvement system. After a system is chosen, the committee must create a set of guiding principles. General guiding principles include environmental, health, and safety knowledge and performance (Responsabilidad Integral, 2009).

The first option is a one-tier system with the same guidelines for every company in the program. This option is the most prevalent in the other RC programs around the world. In this option, the guidelines will be set high so that companies with high standards and low standards will all have to work towards the same goals. This option will be harder for companies with low standards because they will have to do more work to reach the guidelines. The low standard companies will need more support from the high standard companies and the RC committee in order to achieve these goals.

A second option is a two-tiered system. In the two-tiered system, there would be two sets of guidelines, a lower set, and a higher set. The companies with lower standards would work towards the lower set of guidelines and the high standard companies will work towards the higher set of guidelines. When the lower companies meet the first set of guidelines they will then work towards the higher set of standards.

A third option would be a system of self-improvement. There are two options for this system. In the first option, companies would conduct a self-evaluation. Based on this self-evaluation they would set goals for improvement. They would then submit their evaluation and goals for improvement to the RC committee for evaluation. Either the committee would approve these goals or they would make their goals more challenging and then send them back to the company. Then the company, with help from the RC committee and other RC companies will work towards these goals. Once the company reaches its goals, they will go through third-party verification, and then repeat the process of self-evaluation and improving. A second option for this system would be based on percentage improvement. Companies would make improvements based on percentage goals set by the RC committee. These goals could differ from company to company. For example, a goal could be to decrease emissions by five percent.

We recommend the self-improvement system based on percentages because it will establish fair goals for the wide range of companies in RC and provide concrete data to report to the public, the ICCA, and shareholders. The guiding principles should address environmental protection, health and safety, providing information on responsible management along the product chain, and reporting openly to and collaborating with the public. See appendix C for examples of other countries guiding principles.

**iii. Create indicators**

The committee should review international models to create indicators against which the improvements and performance of companies can be measured. Member companies and interested parties should provide feedback to improve the indicators. The indicators should be applicable to all companies and should be comparable on an international level. The members should develop and approve a timetable and reporting process for the indicators. Indicator measurements should be taken and made public. See appendix D for samples of indicators.

**iv. Create codes and guides**

Costa Rica must establish a series of codes, guides, and checklists to help the companies reach the goals of Responsible Care. Costa Rica's committee should review the international models mentioned earlier to help formulate their codes, guides, and checklists. These help to reach the goals of the guiding principles,



which involve environmental protection, health and safety, providing information on responsible management along the product chain, and reporting openly to and collaborating with the public. Costa Rica should publish a timetable of when certain codes and guidelines will occur. Member companies, and any additional interested parties, can provide their feedback. We recommend training sessions as a part of the codes and guides to explain how to address a concern and improve the indicators. Brazil, Colombia, and USA have offered to assist in the training sessions. See appendix E for sample codes and guides.

**v. Funding**

The RC committee needs to determine how RC will be funded. Usually the members, supporting associations, sources outside the chemical industry who want to support the RC initiative, and initially the founding organization, pay for RC. The members of RC will have to pay membership fees that could depend on net revenues or the size of the company. If net revenues are chosen as the method of payment then companies will send their financial reports to RC and the fee will be based on the earnings of that company for a fiscal year. If the size of the company is chosen then the Costa Rican RC will have to decide what constitutes a small, medium and a large company and then based on those categories charge a corresponding fee.

The initiating organization usually does not pay for the maintenance of RC. For example, RC Canada is self sufficient from the chemical producing members of the organization. In the initial stages, it might be necessary to pay for the cost of administrative help or the founding organization could use their current staff to help establish RC initially.

There are potential associates that are not directly involved in the chemical industry, but would like to support RC's efforts. Potential companies that would support RC outside the chemical industry could be referred to as "Friends of Responsible Care". Other RC centers have associate membership categories that include companies who supply goods and services such as equipment suppliers, engineering companies, and legal firms.

RC programs in Mexico, U.S.A., and Canada have expanded the membership base of RC. La Asociación Nacional de la Industria Química (ANIQ) in Mexico have included chemical distributors into their category of chemical associates. U.S.A.'s RC has a Friends of Responsible Care program, which consists of

specialty equipment manufacturers, consultants, law practices, and non-profit organizations. In the U.S.A., these associates pay annual dues and receive discounted rates at RC annual conferences. In recent years, Canada has expanded their associates to include trucking and railroad companies. These companies pay fees to RC and supply people to work on committees. Costa Rica's RC could adapt this extension of RC to increase income, and involvement outside the chemical industry.

We recommend that RC charges a membership fee based on net revenue because the fees will be fair for each company. We recommend that RC create a "Friends of Responsible Care" program to recognize sources external to the chemical industry that will increase revenue and awareness of the program.

### **3. Public Relations**

The committee should review other countries' strategies for public relations to establish an ongoing communication between companies and interested parties inside and outside the membership. The communication should involve health, safety, and environmental matters. Special consideration should be given to the concerns and inputs of local communities. When creating regulations for a Costa Rican RC program the committee has to keep the interests of each company in mind, while also satisfying public concern. To aid in this process the committee could include members of the community and members from the businesses to make sure any regulations are fair to both parties.

We recommend that the committee encourages member companies to host events, open houses, factory tours, and town hall style meetings to improve public relations. We also recommend setting standards that surpass national regulations, making standards available to the workers, because the workers are another source of promotion into the surrounding community, and requiring companies to publish every indicator that deals with emissions and waste.

### **4. Cooperation and Support**

Costa Rica's committee and the member companies should meet regularly to share information on performance, improvements, safety techniques, and progress on previous steps. It is important to inform companies that only information regarding safety needs to be shared and not production techniques. On a broader scale, the committee should also communicate with other RC centers around the world to share information, motivate companies, and ask for assistance.

Support from other RC centers around the world is necessary to aid in the proper implementation of RC. Other RC centers have the experience, knowledge, and technical resources that can help an RC center be established in a shorter time. Figure 6, below, outlines the assistance other countries have offered to provide.

Canada	<ul style="list-style-type: none"><li>• Consultant for any queries</li></ul>
USA	<ul style="list-style-type: none"><li>• Sponsor center</li><li>• Help to conduct training</li></ul>
Brazil	<ul style="list-style-type: none"><li>• Technical training assistance</li><li>• Assistance in application process to ICCA</li></ul>
Colombia	<ul style="list-style-type: none"><li>• Technical assistance</li><li>• Guidance on creation of the guiding principles</li><li>• Training</li></ul>

Figure 6: Assistance from Other RC Centers

We recommend contacting other RC centers in other countries if assistance is needed and communicating on a regular basis to discuss ideas, accomplishments, and thoughts.

## 5. Encouragement

The RC committee should review the international models to develop mechanisms to recognize high performers and assist low performing companies. The RC committee should encourage companies with lower standards to join by advertising that they will receive assistance in improving their standards. The RC committee should recognize the most improved companies of the year to help encourage all companies to constantly improve their standards. We recommend that RC hold conferences to keep companies involved and abreast of current issues.

## 6. Verification

The guidelines as well as the proof of the companies' progress must be sent to the ICCA for review and approval. The Responsible Care program in the United States has offered to sponsor Costa Rica and assist in the verification and implementation of

Responsible Care. Costa Rica's RC should use third party verification in order to avoid any accusations of green washing.

When the Costa Rican RC committee considers the option of how verification will be conducted, it should select whichever process will be void of corruption and considered the most trustworthy by members and the public. Colombia and Brazil both have similar third party verification systems, where a company is checked to ensure that the claims they make are accurately represented. While these systems are currently considered valid, Brazil encountered problems with the public when articles written by journalists questioned the validity of the program even though a third party organization was being used. Green washing was an issue that was discussed but was overcome because the program proved many times trustworthy through constant member improvements.

Canada's RC uses a third party verification system that we found to be the most objective and neutral. The system utilizes a three-person team including a member of the community, a third party verification organization and a representative from a member company. The team verification ensures the results are fair and accurate. This process reduces the possibility of green washing and increases the trust in the verification process. Brian Wastle said that most companies use a community advisory board to nominate someone from the community who everyone trusts to perform the inspection on the community's behalf (Personal communication, Brian Wastle, 11/30/2009).

Another possible third party verification choice that could provide similar results as Canada's system involves having a three person team including someone from a third party verification organization, a member company in the same industry and a member of the community. This changes the dynamic of Canada's program by adding someone from a similar field that would be more informed about the codes and regulations. This would improve the credibility of the verification process. The negative aspect of having someone from a competing company help in the verifying process is the possibility of skewed results. However, the possibility that a competing company will skew results is low because the inspected company might inspect them in the future. Although this system is less convenient due to the difficulty in organization and creation of schedules, it will be the best verification system to prevent claims of green washing.

Another possibility includes adding two more criteria to Canada's method, which would increase the integrity of the companies chosen. The first criterion is a community representative chooses the third party verification agency. The second criterion is a lottery

system that randomly chooses a company to represent the members of RC in the three-person group.

We recommend using a third party verification system that includes a member from the community, a representative from an RC company and a third party verification agency. The third party verification company is chosen by the community representative and the member company is chosen through a lottery system. This system is intended to avoid claims of green washing.

## **7. Future Recommendations**

To help expand the RC program more companies need to be recruited to join. For example, the American Chemistry Council requires all of its members to join the RC program as a condition of membership. If Químicos or CICR establishes RC in Costa Rica, we recommend they make a similar condition mandating membership in RC. Conferences should be held to promote RC to the various industries, and they should promote at the various conferences held by the industry.

## **4.6 Recommendations**

From the analysis of our results, we have suggested recommendations for implementing RC in Costa Rica:

- To motivate companies to join RC the advertising foci should include protecting the environment, preventing harm to surrounding communities, benefits for companies and improving public relations.
- To successfully operate RC we recommend that the committee:
  - Select el Colegio de Químicos because of their direct relationships with chemical companies and administrative staff will aid in the implementation
  - Charge membership fees for RC based on member companies net revenues because it is the most fair system and it would be difficult to establish size limits that would be fair to all companies
  - Establish a Friends of Responsible Care program to help increase funding and awareness of RC outside of the chemical industry.
  - Use a third party verification system that includes a member from the community, a representative from an RC company and a third party verification agency. The community representative chooses the third party verification company and a

lottery system chooses the member company. This system is intended to avoid claims of green washing.

- Use a self-improvement system based on percentage improvement to best suit the varying standards of companies and provide concrete data for the public.
- Award a “most improved company award” to motivate companies to continue improvements.
- Companies should host open houses, factory tours, and community meetings to improve public relations.

These are our recommendations that will most likely result in the successful implementation of RC. A Costa Rican RC program will help to protect the environment, influence the industry to make positive decisions and improve communication within the industry and with the public. Future projects that could aid this process are establishing the guidelines for the RC committee, and analyzing each company’s financial commitment, including the membership fees and costs to meet the guidelines. Another project could conduct active recruitment and promotion of the program.

## **Chapter 5: Conclusion**

RC is a program that is needed in Costa Rica because it will improve the standards of all chemical companies. It will improve employee health and safety and reduce the environmental impact of chemical companies. This program will improve the image of the chemical industry in Costa Rica so the public and the government no longer view them in a negative way. If an accident does occur, this program will prevent the entire chemical industry from being viewed as negligent.

These improvements in the chemical industry will improve the country as a whole by improving the environment and preserving resources for the future. RC will help Costa Rica preserve the environment, which Costa Ricans cherish. This will also protect the economy because 22% of the economy is ecotourism (CICR, 2009). In conclusion, RC is a program that is in 53 countries around the world and it is time for Costa Rica to be the first in Central America to join the initiative.

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# Appendix A

## Portfolio

Company Name	Type of Industry	Contact Person	Position	Company physical address	Company email address	Company Telephone number	Company Website	Other	Interested in RC?
3M Costa Rica	Tape	Gustavo Angulo	Gerente general	Carretera a Heredia, de la Estacion de pensaje la Valencia, 1km E. carretera a Santa Rosa, Santo Domingo de Heredia.	jvarela5@mm.com	(506) 22771000	<a href="http://www.3m.com/cr">www.3m.com/cr</a>		
Abonos del Pacifico S.A. (ABOPAC)	Agrochemicals	Bernardo Morsink S.	Gerente general	Santa Ana, 2.5 km O. del centro Empresaria l Forum 1, sobre la autopista a ciudad Colon.	<a href="mailto:informacion@abopac.com">informacion@abopac.com</a>	(506) 22051000	N/A		
Agroquimicos DAF de Costa Rica S.A.	Agrochemicals	Rodriguez G.	Presidente	200 m. S. y 100m O., del cruce de San Nicolas a Taras.	<a href="mailto:agrocost@racs.co.cr">agrocost@racs.co.cr</a>	(506) 25374300	N/A		
Alcames Laboratorios Quimicos de Centroamerica S.A.	Pharmaceutical	Renan Aguilar M.	Gerente general	De la Bomba Texaco en San Sebastian, 100m E., Sobre C. 3.	<a href="mailto:alexandra.vindas@alcames.com">alexandra.vindas@alcames.com</a>	(506) 22262735	<a href="http://www.alcames.com">www.alcames.com</a>		
American Sanitary Company	Cleaning agents, perfumes	Federico Webb Ch.	Gerente general	Naranjo de Alajuela, 200 m S. del Cruce de Cirri contiguo Plantel del MOPT	<a href="mailto:fwebb@americansanitary.net">fwebb@americansanitary.net</a>	(506) 25241692	N/A		
Bayer S.A.	Sales of chemicals, pharmaceuticals agrochemicals	Jean Vayssier	Gerente general	550m E. del Cruce de Cinco Esquinas de Tibas, Calle Blancos	<a href="mailto:annette.rosenow.ar@bayer-ca.com">annette.rosenow.ar@bayer-ca.com</a>	(506) 22436000	N/A		

Calox de Costa Rica S.A.	Pharmaceutical	Gerardo Bello M.	Gerente general	100m S. de Tostador El Dorado antiguo Edif. Motorola.	<a href="mailto:caloxcr@racsa.co.cr">caloxcr@racsa.co.cr</a>	(506) 22480506	N/A
Cefa central Farmaceutica S.A.	Cleaning agents, perfumes	Marilis Llobet E.	Gerente general	200 m S. y 50 m E., de la Embajada Americana	<a href="mailto:info@cefa.co.cr">info@cefa.co.cr</a>	(506)2519-0000	<a href="http://www.corporacioncefa.com">www.corporacioncefa.com</a>
Cemex Costa Rica, S.A.	Cement production, co-processing of hazardous materials and waste						N/A
Chemtica internacional S.A.	Agrochemicals	Lilliana Gonzalez M.	Gerente general	Entrada principal al INBIO parque 400 m N., casa antigua esquinera mano izquierda.	<a href="mailto:info@mail.pheroshop.com">info@mail.pheroshop.com</a>	(506)2244-8337	<a href="http://www.chemtica.com">www.chemtica.com</a>
Clorox de Centroamerica S.A.	Cleaning agents, perfumes	Felipe Toledo	Gerente General	300 m S., rotulo Motel la fuente, San Francisco de 2 Rios.	<a href="mailto:amesco@racsa.co.cr">amesco@racsa.co.cr</a>	(506)2250-0000	N/A
Continex Representaciones S.A.	Sales of Chemicals	Enrique Soler S.	Gerente general	Oficentro Torres del Campo, 3er Piso, frente Centro Comercil El Pueblo, Bº Tournon	<a href="mailto:continexrep@continex.net">continexrep@continex.net</a>	(506)2258-9797	<a href="http://www.continexrepresentaciones.com">www.continexrepresentaciones.com</a>
COOFARM A - Cosmeticos y Farmaceuticos de Centroamerica S.A.	Cleaning agents, perfumes						
Corporacion Cek de Costa Rica S.A.	Other chemical sectors	Sergio Barahona O.	Gerente general	300 m E. Bar La Bamba, Colima de Tibas	<a href="mailto:hherrera@corporacionceks.com">hherrera@corporacionceks.com</a>	(506)2241-2121	N/A
Corporacion Tecnol Industrial TiS.A.	Sales of Chemicals	Carlos Aguilar	Presidente	Cartago Res. Molino Tercera Etapa Lote	<a href="mailto:caguilar@industriatotal.com">caguilar@industriatotal.com</a>	(506)2551-7000	N/A

Degusta Admixture s Inc.	Paintings , coatings and inks								
Distribuidora Chemsol de Costa Rica S.A.	Sales of Chemicals	Ciro Guerra R.	Gerente general	De Waterland 50 m O., 200m N. y 100 m E. , La Asuncion	<a href="mailto:info@chemsol.net">info@chemsol.net</a>	(506)2239-5454	N/A		
Distribuidora Florex Centroamericana, S.A.	Cleaning agents, perfumes	Carlos Araya A.	Presidente	25 m O. de la Terminal de Buses Empresarios Unidos	<a href="mailto:carlos.araya@florexcr.com">carlos.araya@florexcr.com</a>	(506)2447-2323	<a href="http://www.florexcr.com">www.florexcr.com</a>		
DOW Agrosciences		Carlos Masis	Commercial Manager		<a href="mailto:mramirezorazco@dow.com">mramirezorazco@dow.com</a>	2258-7110		Required to Join , Employees: 25	YES
Duralac S.A.	Paintings , coatings and inks	N/A	N/A	200 m E., 100 m N.y 100m E. de Auto Matra, La Uruca	<a href="mailto:vanessac@duralac.com">vanessac@duralac.com</a>	(506)2257-7075	N/A		YES
Ecolab S.A.	Sales of Chemicals	Otoniel Aguilar	Presidente	Zona Franca Bes, El Coyol de Alajuela, 7km O. del Aeropuerto Internacional Juan Santamaria	<a href="mailto:franklin.ortega@ecolab.com">franklin.ortega@ecolab.com</a>	(506)2438-1725	N/A		
Energias Biodegradables de Costa Rica S.A.	Biodiesel production	Eladio Madriz G.	Gerente general	De Recope El Alto, 100m S. y 100mO., Ochomogo Cartago	<a href="mailto:energiasbiodegradables@ice.co.cr">energiasbiodegradables@ice.co.cr</a>	(506)2537-4510	N/A		
Fertilizantes Sal del Istmo S.A. (FERTICA)	Agrochemicals	Oscar Henriques P.	Presidente	50 m E. de Las Ofic. De Pizza Hut en Pavas	<a href="mailto:Mercadeo@ferticacr.com">Mercadeo@ferticacr.com</a>	(506)2231-2555	<a href="http://www.fertica.com">www.fertica.com</a>		
Formuquinsa	Agroquímicos y productos de salud animal	Eduardo Brenes Perera	Gerente Administrativo	Romhoser	<a href="mailto:ebrenes@formuquinsa.co">ebrenes@formuquinsa.co</a>	83029501		Employees: 120	YES

Formulaciones Químicas S.A.	Agrochemicals	Danilo Bolanos H.	Gerente general	100 m S. y 50 m E. de Mc Donalds-Curridabat	<a href="mailto:mvargas@foemuquisa.com">mvargas@foemuquisa.com</a>	(506)2283-1818	N/A		
Fortech Microabrasivos S.A.	Other chemical sectors, Electroni Waste Recycling	N/A	N/A	Zona Franca, Parque Industrial Cartago, Edif. Nº 29 de Manufacturera Bali, 200 m S.	<a href="mailto:fortech@racsa.co.cr">fortech@racsa.co.cr</a>	(506)2573-8634	N/A		
Gas Nacional Zeta S.A.	LPG Gas Distribution	Noel Edmundo Bustillos D.	Gerente general	150 m O. Deposito Agrícola Bº La Lima Cartago	<a href="mailto:nbustillos@grupozeta.co.cr">nbustillos@grupozeta.co.cr</a>	(506)2239-3311	N/A		
Geocycle Costa Rica	Co-processing of hazardous materials and waste for Holcim	Jorge Vieto							
Glaxosmithline Costa Rica S.A.	Pharmaceutical	N/A	N/A	300 mts E. de la Rotonda de Betania, carretera a Sabanilla	N/A	(506)2206-6000	<a href="http://www.gsk.com">www.gsk.com</a>	YES	
H.B. Fuller Centroamerica S.A.	Paintings, coatings and inks	Mauricio Araya	Quality Assurance Manager	Km 24, Ruta 1, Carretera Interamericana, El Coyol de Alajuela	<a href="mailto:mauricio.ara@hbfuller.com">mauricio.ara@hbfuller.com</a>	(506)2216-6100	N/A	Empleados: 250	YES
Henkel Costa Rica Ltda.	Sales of Chemicals	Greivin Hernandez R.	Gerente general	San Joaquin de Flores de la Lovable Celebrity, 100 m S. y 75 O., Heredia	<a href="mailto:henkelcr@racsa.co.cr">henkelcr@racsa.co.cr</a>	(506)2277-4800	N/A		
Holcim Costa Rica S.A.	Cement Production	Sergio Egloff Gerli	Presidente	De la Panasonic, 1 km S., 1 km O., San Rafael de Alajuela.	<a href="mailto:dilenia.poveda@holcim.com">dilenia.poveda@holcim.com</a>	(506)2205-3000	N/A		

Inbox Technology and Services S.A.	Sales of Chemicals	Juan Ruffino	Gerente general	De la esquina NorEste del antiguo Edif. AID, 200 m E. y 75 m N., Rohrmoser	<a href="mailto:inboxsa@inboxsa.com">inboxsa@inboxsa.com</a>	(506)2291-0089	N/A		
Increquim S.A.	Desinfectantes, sanitizantes, y desengrasantes biodegradables a base de amonios cuaternarios	Eduardo Rivera Porras	Profesional Regente	Tejar, Cartago	<a href="mailto:eriveral@riacsa.com">eriveral@riacsa.com</a>	88958204		Empleados: 6	YES
Industrias Equilab S.A.	Cleaning agents, perfumes	Genaro Castro A.	Presidente	600 m S., 25 m E. de la Marsella Cedros de Montes de Oca	<a href="mailto:equilab@racsa.com">equilab@racsa.com</a>	(506)2224-4953	<a href="http://www.industrialequilab.com">www.industrialequilab.com</a>		
Industrias Infinito S.A.	Non ferrous mineral extraction	Arnoldo Rudin A.	Gerente general	Oficentro Ejecutivo La Sabana Torre 6 Piso 6 Sabana Sur	<a href="mailto:mmatamoras@infinito.co.cr">mmatamoras@infinito.co.cr</a>	(506)2290-2055	N/A		
Irex de Costa Rica, S.A	Cleaning agents, perfumes	Ricardo Amador C.	Presidente	500 m O. y 100 m. Sureste antiguo Caf Dorado	<a href="mailto:info@irex.co.cr">info@irex.co.cr</a>	(506)2279-3333	<a href="http://www.irex.com">www.irex.com</a>		
Kativo Costa Rica S.A.	Paintings, coatings and inks	Jorge Solano C.	Gerente general	200 m N. del Cementerio de Moravia, Edif. Protecto Glidden.	<a href="mailto:jorge.solano@hbfuller.com">jorge.solano@hbfuller.com</a>	(506)2240-2217	N/A		
Kopar Latinoamericana S.A.	Sales of Chemicals	German Alfaro G.	Gerente general	Sabana Norte Edif. Gran Campo #3 frente al Restaurant e El Chicote	<a href="mailto:galfaro@kopar.com.mx">galfaro@kopar.com.mx</a>	(506)229-6905			



Laboratorios Lisan S.A.	Pharmaceutical	Rodolfo Carbonni A.	Presidente	San Francisco de Dos Rios, contiguo antiguas Bodegas de la Cerveceria Costa Rica	<a href="mailto:lotorala@lisan.cr">lotorala@lisan.cr</a>	(506)2259-9797	N/A	
Laboratorios Quimicos Industriales SA. (LAQUINSA)	Agrochemicals	Gerardo Porras	Gerente general	1.5 km E. de la Nacion, Llorente de Tibas	<a href="mailto:consulta@laquinse.co.cr">consulta@laquinse.co.cr</a>	(506)2247-1000	<a href="http://www.lauinsa.co.cr">www.lauinsa.co.cr</a>	YES
Petrogas S.A.	LPG Gas Distribution	Walter William Calderon H.	Gerente general	La Lima, Cartago 300 m O. y 300 m N. de la Bomba Shell	<a href="mailto:petrogas@racsa.co.cr">petrogas@racsa.co.cr</a>	(506)2573-7212	N/A	
Praxair Costa Rica S.A.	Industrial Gases	Christian Sauter	Gerente general	Av. 16, Cs. 4 y 6.	<a href="mailto:praxair_costa_rica@praxair.com">praxair_costa_rica@praxair.com</a>	(506)2295-6400	N/A	
Punto Rojo, S.A.	Cleaning agents, perfumes	Luis Fdo Beeche P.	Gerente general	300 m N. Tribunales de Justicia, Alajuela	<a href="mailto:purosa@puntorojo.com">purosa@puntorojo.com</a>	(506)2437-0600	N/A	
Quimicas Laminak Industrial S.A.	Paintings, coatings and inks	Julio Lopez P.	Presidente	Carretera Heredia, 500 m N. de MABE	<a href="mailto:gerencia@laminakcr.com">gerencia@laminakcr.com</a>	(506)2260-9393	<a href="http://www.laminakcr.com">www.laminakcr.com</a>	
Quimicos Holanda - Costa Rica S.A.	Sales of Chemicals	Norma Roldan	Gerente general	Barreal de Heredia	N/A	(506)2508-5300	<a href="http://www.brenntagla.com">www.brenntagla.com</a>	
Quimicos Vegetales - Quivel S.A.	Cleaning agents, perfumes	Efrain Camero	Gerente general	Calle Los Llanos del Coyol de Ind. Carnicas 700 m O., detras del Plantel de Tropigas	<a href="mailto:recepcionista@quivelcr.com">recepcionista@quivelcr.com</a>	(506)2438-6575	N/A	
Reca Quimica S.A.	Paintings, coatings and inks	Cesar Goni F.	Gerente general	1 km O. de Recope, Alto de Ochomogo - Cartago	<a href="mailto:rocio.munoz@hbfuller.com">rocio.munoz@hbfuller.com</a>	(506)2216-6300	<a href="http://www.protecto.net">www.protecto.net</a>	
S.C. Johnson de Centroamerica S.A.	Cleaning agents, perfumes	N/A	N/A	Rincon Grande Pavas, Urbanizacion Santa Fe, entrada a Lomas del Rio	<a href="mailto:krodri2@scj.com">krodri2@scj.com</a>	(506)2213-5000	N/A	

Sur Química, S.A.	Paintings , coatings and inks	Enrico Giordano S.	Presidente	La Uruca, del BNCR 200 m O. y 300 m S. (Edif. De Pinturas Sur)	<a href="mailto:ksanchez@gruposur.co">ksanchez@gruposur.co</a>	(506)2211-3800	N/A
Syngenta Crop Protection S.A.	Agrochemicals	Jose Antonio Estevez	Gerente general	700 m E. de la intersección del Aeropuerto Juan Santamaria , contiguo Zona Franca Saret Plaza Aeropuerto Ofic. D-1	<a href="mailto:syngenta@racsa.co.cr">syngenta@racsa.co.cr</a>	(506)2431-4707	N/A
Tecnopinturas del Norte S.A.	Paintings , coatings and inks	Guillermo Moya M.	Gerente general	Av. 12, Cs. 17 y 19 , Bº Lujan	<a href="mailto:technopinturas@delnorte.com">technopinturas@delnorte.com</a>	(506)2258-2310	<a href="http://www.delnorte.com">www.delnorte.com</a>
Transmerquim de Costa Rica S.A.	Sales of Chemicals	Hector Abril R.	Presidente	800 m E., Servicentro Cristo Rey, Alto Ochomogo, Carago.	<a href="mailto:costarica@transmerquim.com">costarica@transmerquim.com</a>	(506)2537-0010	N/A
Trisan S.A.	Agrochemicals	Patricia Trinler S.	Gerente general	100 m S de Traller Romero Fournier, contiguo Imp Nacional	<a href="mailto:info@grupotrisan.com">info@grupotrisan.com</a>	(506)2290-0050	N/A
Tropigas de Costa Rica S.A.	LPG Gas Distribution	Noel Edmundo Bustillos D.	Presidente	50 m E. del Cenada, diagonal Cajero BCR	<a href="mailto:tropigas@racsa.co.cr">tropigas@racsa.co.cr</a>	(506)2438-2815	<a href="http://www.tropigas.co.cr">www.tropigas.co.cr</a>

## Appendix B



a. Responsible Care logo in Colombia



b. Responsible Care logo in Brazil



c. Responsible Care logo in U.S

## Appendix C

### a. Colombia Responsible Care's Guiding Principles

1. Continuously improve the environmental, health and safety knowledge and performance of our technologies, processes and products over their life cycles to avoid harm to people and the environment.
2. Use resources efficiently and minimize waste.
3. Report openly on performance, achievements and shortcomings
4. Listen, engage and work with people to understand and address their concerns and expectations.
5. Cooperate with governments and organizations in the development and implementation of effective regulations and standards, and to meet or go beyond them.
6. Provide help and advice to foster the responsible management of chemicals by all those who manage and use them along the product chain.

### b. Canada Responsible Care's Guiding Principles

1. We are accountable to the public, who have the right to understand the risks and benefits of what we do and to have their input heard.
2. We respect all people.
3. We work together to improve continuously.
4. We work for effective laws and standards, and will meet or exceed them in letter and spirit.
5. We inspire others to commit themselves to the principles of Responsible Care.

## Appendix D

### a. Example of Colombia's Indicators

Responsible Care -® has Social, Environmental, Employees safety and Health, Distribution and Transport, Product stewardship and Economic indicators:, which are described next and some of them are illustrated:

#### **Social**

They represent the consolidation of the harmonic relationships between the companies and the local communities. They evidence the woman's participation, the generated employments, the help to local communities and the progress of the companies related to the reception mechanisms and the interests' procedure about Health, Environmental Protection and the Safety of the Processes the company develops.

1. Number of Employees (men and women)
2. Number of Contractors (men and women)
3. Training in EHS
4. Inquiries of the Local communities in EHS
5. Social investment
6. External and Internal Emergency simulations

#### **Environmental**

They indicate the commitment of the Member Companies to implement measures guided to the efficient use of the resources and the preservation of the quality of the water, air and ground, by means of the prevention of the pollution from its origin.

1. Water Consumption
2. Energy consumption
3. Flow of water / poring total volume
4. Pollutants loading in terms of: COD, BOD5, Solids in suspension, Fats and Oils, Nitrogen Compounds, Phosphorous Compounds, Heavy metals (As, Cd, Cr, Cu, Pb, Hg, Ni, Zn), other substances of interest (Dec.1594).
5. Atmospheric emissions: Total Particles in Suspension, Oxides of Sulfur, Oxides of Nitrogen, Monoxide and Dioxide of Carbon, Volatile Organic Compound and other substances of interest.
6. Dangerous and not dangerous industrial wastes.  
hammering.

#### **Employees Health and Security**

They reflect the management of the companies about the identification of risks and unsafe conditions, to maintain and to improve the health of the Employees and to give them an appropriate information and formation about Health and safety.

1. Fatalities
2. Bigger incidents in the premises

3. Smaller incidents in the premises
4. Inability Frequency Index - IFI
5. Harsh Inability Index of IHI
6. Occupational illnesses
7. Internal emergency simulation

## **Distribution and Transport**

They show the safe-deposit level that the company has achieved for Distribution and Transport operations of raw materials, products and wastes, with the purpose of reducing the risks for the health of the employees, contractors, clients and communities located in proximities to the routes of transport or the storage places.

1. Bigger incidents in Distribution and Transport
2. Transporters, Distributors and Storekeepers Training.
3. % of products Tagged and labeled in accordance with the NTC 1692
4. % of Vehicles identified with Labels of United Nations and NTC 1692
5. % of Vehicles equipped with basic elements for emergencies attention
6. % of Vehicles equipped with a communication system
7. % of companies that have Plan of Contingency for incidents attention in roads
8. % of companies joined to Centers of Information on Chemical Substances created to give emergencies attention. (Telephone line 24 hours)

## **Product Stewardship**

They look for reflecting the activities that the company carries out to guarantee that the manufactured and/or distributed products are safe for the human health and for the environment, during each one of the phases of its life cycle (from the design and the production, to the recycling or elimination).

1. % of Raw materials with safety cards and with Emergency cards in Spanish
2. % of Manufactured articles and/or commercialized with safety cards and with Emergency Cards in Spanish
3. Training to clients to get a sure use of the product (hr)

## **Economic**

They look for ponder the importance the members companies have inside the economy of the Country and the economical efforts they carry out to satisfy the requirements of Responsible Care - ® Colombia to protect the Environment, Health and the Safety (EH&S).

1. Production
2. Sales
3. Exports
4. Investments in EHS
5. Operational expenses in EHS

## b. Example of the U.S indicators

### i. Environmental Impact

HAPs are recognized as a key measure of environmental performance. Tracking HAP emissions over time provides an important look at performance trends. As a means on tracking HAPs, Responsible Care Companies extract this information from the TRI database. A subset of TRI is Hazardous Air Pollutant (HAP) Releases; Responsible Care companies now track HAPs as a performance metric and began reporting on HAPs in 2008. HAPs focus specifically on air emissions and are the focus of the EPA residual risk regulations under the Clean Air Act, and future risk-based and technology-based standards

### ii. Employee, Product & Process Safety

Currently, the U.S. Occupational Safety and Health Administration (OSHA) require chemical companies to report safety information about their own employees, but reporting on contract workers is not required.

In 2005, ACC reported for the first time the injury and illness rates for contractors. This information goes beyond regulatory requirements and provides an indication of the training, hiring and protection practices of the chemical industry as they pertain to contract employees. These data were collected for the first time in calendar year 2003, and it is expected that reporting accuracy will improve over time

### iii. Energy

Responsible Care® companies have compiled their energy efficiency information, and public reporting of their progress in aggregate began in 2005. Data for all companies are aggregated to provide an overall view of ACC members' annual performance.

### iv. Chemical Industry Security

Under the Security Code – which addresses facility, cyber and transportation security – companies conduct comprehensive facility security vulnerability assessments, implement security enhancements and obtain independent verification of facility enhancements. Implementation of the Code follows a strict timeline and requires mandatory periodic reporting on progress.

The Responsible Care Security Code is widely recognized by the Department of Homeland Security and state and local governments as a model for the chemical industry and other U.S. industries.

The American Chemistry Council is encouraging Congress and the administration to pass legislation that ensures all our nation's chemical facilities are secure from the threat of terrorism under the watchful eye of the federal government.

### v. Product Stewardship

Product Stewardship is the shared responsibility for understanding, managing and communicating the impacts to human health and the environment through the life cycle of chemical products..

The GPS was launched in February 2006 and require companies to implement new ways to manage and communicate risks about their chemical products. These new actions are fully integrated into the Responsible Care requirements and management systems. To track the

implementation of GPS, ACC began in 2008 to collect performance information in three areas of product stewardship.

### **Prioritizing Chemicals**

Each ACC member must prioritize its chemicals according to risks, specifically designating high priority chemicals, using considerations such as uses, exposures, toxicity, production volumes and other relevant factors

### **Public Availability of Health and Safety Information for Chemicals**

Once chemicals are prioritized, companies are expected to conduct detailed risk characterizations for these products according to their respective priorities. These risk characterizations consider the risks, uses and life cycles of the chemicals and results in management measures to assure the safe use and handling of a company's chemical products. A critical management measure is making health and safety information available to the public. This is also one of the cornerstones of GPS. Therefore ACC also asks its members to report on the public availability of product stewardship summaries for their chemicals.

### **Accountability**

Every Responsible Care company is required to certify that a management system has been put in place and must demonstrate progress toward improved performance. To obtain certification, companies undergo headquarters and facility audits conducted by independent, accredited auditing firms.

The management system certification requirement is a new Responsible Care commitment. Companies began working toward certification in January 2004. Completion of headquarters and facility audits, the first phases of the certification process, are reported on a company-specific basis. Unlike other performance data on this website, which are reported annually, progress toward completing certification audits will be updated quarterly.



# Appendix E

## Colombia's codes and guides

Code 1:	Neighborhood/local communities Preparation for Emergency Response
Code 2:	Distribution and Transport
Code 3:	Process Safety
Code 4:	Environmental Protection
Code 5:	Product Stewardship
Code 6:	Employees Health and Safety
Code 7:	Security

### Code 1: Local communities Preparation for Emergency Response

#### Objectives:

- To improve communications between the companies and the local communities and to make sure that the companies facilities count with appropriate programs to openly communicate all the information related to all the claims or concerns on the subjects of safety, health and environmental protection.
- To protect both the employees and the neighboring communities ensuring that each facility has an Emergency Plan to react before any type of incident in a quick and efficient way, and that it is referred to the Emergency local plan.

### Code 2: Distribution and Transport

#### Objectives:

- To reduce the risks that the transport and distribution of products, raw material chemical substances and waste materials imply to the public, transporters, distributors, contractors, employees and to the environment.
- To promote the preparation and the employee's understanding to prevent emergencies and to increase transporters and suppliers' safety.

### Code 3: Process Safety

#### Objectives:

- To allow the Member Companies in the establishment of appropriate systems for prevention and control of the risks related to the production, storage and manipulation of raw material and components.
- To avoid any type of incidents (accidental fire, explosions, or emissions) during these stages thus achieving a safe operation and employees, local communities and environment protection.

### Code 4: Environmental Protection

#### Objectives:

- To reduce continuously the pollutants and waste materials, giving prior attention to source, followed by the use (reuse and/or recycling) and finally to the energy recovery treatment and/or the final disposal.

## Code 5: Product Stewardship

### Objectives:

- To reduce the risks in all and each one of the stages of the product life cycle (from the design and manufacturing to the recycling or final disposal). To achieve that it is safe and respectful with the environment.
- To aware the suppliers, contractors and customers about these principles through informative sessions.
- To multiply all information about the products through Safety Bulletins and Technical specifications.

## Code 6: Employees Health and Safety

### Objectives:

- To protect and safeguard the health of those working or visiting the company's facilities.
- To improve the Company's Health and Safety conditions.

## Code 7: Security

### Objectives:

To help the companies to protect, along the value chain, people, the physical property, products, process, information and the information systems, based on a integrated risk management which allows to identify, evaluate and consider the vulnerabilities, to prevent or to reduce the incidents, to improve the training and the response capacity and to maintain and improve the relationships of the key stakeholders.

## Canada's codes and guides

- **Community Awareness & Emergency Response (CAER)**

This code states that every research and development, manufacturing, storage, distribution and waste management site will have an active community awareness and emergency response program in place. The local site manager is responsible for implementing a program to address emergency situations on site, and actively assist authorities in emergency response planning for neighboring industry and the community. Specialized equipment and expertise will also be provided to local authorities in the case of an emergency.

- **Research and Development**

The Research and Development Code of practice covers all stages of new development of new chemicals and chemical products, processes, equipment and uses. The code applies from the very moment research is approved and extends through every stage to introduction into the market. Companies must ensure that R&D operations are handled in a way that protects people and the environment from hazards. No new product may be introduced and no research or development considered unless it is done in accordance with this code.

- **Manufacturing**

This code is designed to protect people and the environment from hazards during the manufacturing process. Emergency response plans for dealing with incidents on and around the plant site must be in place, and information must be made available to employees, people on site and interested people in the community about the materials handled, processes and equipment used, related hazards and associated risks, and the procedures in place for their control.

- **Transport**

The Transportation Code is designed to ensure that chemicals and chemical products are transported in a way that minimizes the risk of injury to people moving the goods, to people along the transportation route, and to the environment. Third party companies hired to carry companies' goods are expected to operate according to the principles of Responsible Care. Companies must evaluate carriers of their materials on safety performance and programs, inspection and maintenance procedures for equipment, and selection and training of drivers and support staff. If carriers cannot meet the expected standards, they will not be hired. Employees of third party carriers, and people living in communities along the transportation route, should have access to the same health and safety information as company employees.

- **Distribution**

The Distribution Code is intended to cover company activities relating to the sale of chemicals, chemical products or services, and the movement of those goods from suppliers for conversion or resale. Although some transportation procedures are covered under this code, transportation has also been covered under a separate code due to its importance. The Distribution Code states that every company will have a program designed to continuously improve safety through the reduction of incidents during the distribution process and to protect people and the environment from hazards through hazard reduction, procedures, education and the use of protective equipment

- **Hazardous Waste Management**

This code is designed to protect the health and safety of people and the environment by addressing all operations related to hazardous waste elimination, reduction, recycling, recovery and reuse. It relates to the handling, storage, transportation, treatment, destruction and disposal of hazardous waste, and the closure and care of disposal sites. The principles of Responsible Care apply to public and private co-disposal sites used by companies, as well as their own wholly owned treatment and disposal sites. Companies are encouraged to find ways to reduce, reuse and recycle materials as an alternative to disposal. Materials that cannot be reused should be treated or destroyed to render them harmless. When the material cannot be rendered non-hazardous, it must be contained in a secure manner and monitored to ensure protection of people and the environment. If a company cannot conform to the code of practice, it must cease those operations which produce the hazardous substance. Customers must also be made aware of the code and must abide by it when handling companies' products or materials.

## **Appendix F**

Responsible Care pamphlet (view from inside the pamphlet)



## Protección de Costa Rica

Costa Rica es un país hermoso, con sus playas, bosques tropicales y una variedad de especies en peligro de extinción. Los costarricenses atesoran la belleza de su país y el respeto a sus comunidades. El medio ambiente y las comunidades circundantes pueden ser perjudicados por los accidentes causados por el mal manejo de productos químicos. Como Costa Rica no tiene un programa para el manejo seguro de sustancias químicas hay un mayor riesgo de accidentes relacionados con productos químicos. Por eso es importante que las empresas costarricenses, que transportan, utilizan, almacenan, o producen productos químicos, asuman responsabilidad y protejan al país participando en el programa de **Responsabilidad Integral**.

**Costa Rica sería el primer país de América Central en implementar Responsabilidad Integral**

## Resultados Positivos

**Protección del Medio Ambiente:** Proteger el medio ambiente reduciendo las emisiones y los riesgos de accidentes químicos.

**Legislación:** Una mayor voz en la conformación de políticas públicas.

**Mejora de Relaciones con la Comunidad:** Mejorar las relaciones con las comunidades aledañas al responder a sus preocupaciones y prevenir los daños derivados de accidentes químicos.

**Mejora de las Relaciones entre las Empresas:** Las empresas miembros comparten prácticas exitosas para el manejo de productos químicos con otros miembros.

**Mayor Competitividad:** Programa brinda a las empresas miembro una ventaja competitiva porque los consumidores reconocen su compromiso con prácticas más seguras como parte de la Responsabilidad Integral.

**Mejora de Procesos:** Se integra con los requisitos de las normas ISO (14001 y 9001) y otros sistemas de gestión.

**Mejora de la Eficiencia:** Entre 1990 y 2006, empresas de Responsabilidad Integral de la Unión Europea fueron capaces de reducir su intensidad energética en un 4,6% anual y la reducción de gases de efecto invernadero en un 30%.

**Ahorre dinero:** Reduzca los costos por la mejora de la eficiencia y reducción de los seguros, de las tasas de interés sobre los préstamos y los costos de compensación.

## Su Capacidad de Influenciar la Sociedad

Encuesta de interés y comisión de Responsabilidad Integral

Trabajo y Capacitación

Los indicadores e intercambio

Revisión de Consejo Internacional de Asociaciones Químicas

Con el fin de implementar Responsabilidad Integral en Costa Rica es necesario el apoyo de las industrias. Una vez que el apoyo del programa ha sido reconocido un comité compuesto por las empresas miembros de Responsabilidad Integral e instituciones de apoyo tiene que ser formado. La comisión debe crear un conjunto de directrices y códigos específicos para Costa Rica sobre la base de modelos internacionales. Después de que suficientes representantes de las empresas han firmado los compromisos con las directrices, estos deben remitirse a la ICCA para su aprobación. Si se aprueba el centro de Responsabilidad Integral será reconocido internacionalmente.

Responsible Care pamphlet (view from outside the pamphlet)





## Responsabilidad Integral: Afectando las generaciones futuras

**Responsabilidad Integral** es una iniciativa voluntaria de la industria química mundial que comenzó en Canadá en 1985 y se ha extendido a 53 países.



*Países con Programas de Responsabilidad Integral (naranja)*

### Las Metas Actuales

- Reconocer y responder a las preocupaciones de la comunidad.
- Mejorar continuamente el conocimiento sobre la seguridad, la salud, y el medio ambiente.
- Informar abiertamente sobre el desempeño, los logros y los retos.
- Mejorar el desempeño y la eficiencia para reducir al mínimo los residuos y la contaminación
- Prestar ayuda y asesoramiento para fomentar la gestión responsable a lo largo del ciclo de vida del producto.

### Información de Contacto

Para mostrar su apoyo por favor contactar a Akira Hidalgo en [ahidalgo@cicr.com](mailto:ahidalgo@cicr.com). Si desea participar más activamente en la creación de las directrices por favor, expresar su interés en formar parte del Comité de Responsabilidad Integral.

Mas información en:  
[responsiblecare.org](http://responsiblecare.org)  
[www.icca-chem.org](http://www.icca-chem.org)



### Sostenibilidad



### Gestión de los Productos



### Seguridad



## Responsabilidad Integral

Patrocinado por CNP+L



## Appendix G

Official Responsible Care pamphlet (view from inside the pamphlet)



## **A Responsible Ethic Drives Sustainable Innovation**

Responsible Care is the chemical industry's global voluntary initiative under which companies, through their national associations, work to continuously improve their health, safety and environmental performance, and communicate with stakeholders about their products and processes. Responsible Care is the ethical underpinning that enables the creation of essential products that contribute to a sustainable tomorrow. These products and technologies support global efforts to reduce energy use, minimize greenhouse gas (GHG) emissions, and lighten the human footprint on our earth and its resources. This is Responsible Care.

The chemical industry seeks to live up to the high expectations of its stakeholders by demonstrating that it is a safe and responsible steward of its products, and the processes that create them. Responsible Care companies work with their customers and suppliers to extend their commitments to safety and stewardship throughout the chemistry value chain.

Responsible Care embodies the chemical industry's commitment to raise its performance around the world. Working with the communities in which they do business, chemical companies are improving their performance while delivering the products that make life better. Responsible Care companies and associations share best practices and support their adoption worldwide. In this spirit, Responsible Care is expanding to emerging chemical economies including Eastern Europe, Russia, China, the Middle East and Africa.

The International Council of Chemical Associations (ICCA) serves as the guardian of Responsible Care globally, monitoring its implementation and ensuring its integrity. Today, 53 chemical industry associations are active in Responsible Care.

## **A Commitment to Results**

Responsible Care also means measurable performance, and today, companies around the globe have positive stories to tell. For example, in the European Union, Responsible Care companies have cut their energy intensity by 4.6% annually between 1990 and 2006. GHG emissions, meanwhile, fell by almost 30%. In the U.S., Responsible Care companies have reduced greenhouse gas intensity by 23% since 1992. In 2006, the Japanese chemical industry reduced their unit energy consumption to 82% of 1990 levels and Korean chemical companies saved 622,000 ton of oil equivalent (TOE) in 2006 compared with 1998 levels.

### ***Verifying Responsible Business Practices***

Through Responsible Care, companies commit to go beyond self-assessment and adopt performance verification processes by external parties. While some associations have introduced mandatory third party verification of company performance, others partner with governments to validate performance. In Malaysia in 2007, ICCA in conjunction with the Japanese Chemical Industry Council held a workshop to inspire expanded external performance verification within the Asian chemical industry.

### ***Through Responsible Care, Chemical Companies are Committed to Openness and Dialogue***

National Responsible Care managers collect and report to ICCA environment, health, safety, product stewardship and Responsible Care implementation data for their countries. Data is then shared with stakeholders, an important element in the industry's commitment to measurably demonstrate progress in its chemical management activities and ensure the integrity of the Responsible Care initiative worldwide.

***View performance data at  
[www.icca-chem.org](http://www.icca-chem.org) and [www.responsiblecare.org](http://www.responsiblecare.org)***

## **Global Progress Made Possible by Top-down Commitment and Industry-wide Execution**

The proven practices of Responsible Care begin with a top-level commitment from every company CEO and extend out to employees, communities, and to partners in other industries, government and global business communities. CEOs pledge to adhere to Guiding Principles and their visible support of the Responsible Care initiative is expected to be evident within their companies and felt by employees.

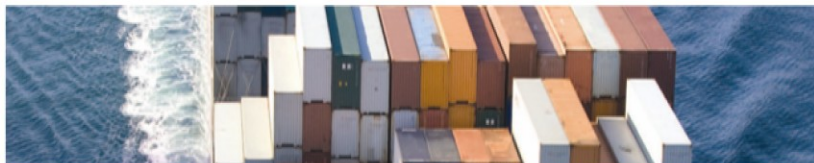
As part of their obligations under Responsible Care, companies commit to an enhanced, transparent and effective global governance process to ensure accountability in the collective implementation of Responsible Care. This strong governance process is implemented through ICCA and incorporates such issues as tracking and communicating performance commitments; defining and monitoring the implementation of Responsible Care obligations; supporting national association governance; helping companies and associations to achieve Charter commitments; and establishing a global process for revoking, if necessary, the Responsible Care status of any company or association that fails to meet its commitments.

The global Responsible Care initiative is "an inspiring model of self-regulation that other industries should consider following."

— Former UN Secretary General Kofi Annan

Official Responsible Care pamphlet (view from outside the pamphlet)





### **Taking Chemicals Management to the Next Level – the Responsible Care Global Charter and the Global Product Strategy**

Now in its third decade, Responsible Care is a key part of the global industry's contribution to the United Nations' Strategic Approach to International Chemicals Management (SAICM). With the development of the Responsible Care Global Charter and the Global Product Strategy, the world-wide chemical industry is answering stakeholder expectations for continuous performance improvement.

The Responsible Care Global Charter provides the vision for future development of the initiative. It establishes a broader and more vigorous agenda by focusing on new and important challenges facing the chemistry industry and society including sustainable development, effective management of chemicals along the value chain, greater industry transparency and increased global harmonization among Responsible Care programs in countries around the world.

The Global Product Strategy was developed to expand and coordinate industry's commitment to product stewardship and the safe use of chemicals throughout their life cycles. ICCA implements the Global Product Strategy through the Responsible Care initiative, to increase public and stakeholder awareness and confidence that chemicals in commerce are appropriately managed throughout their lifecycle. Responsible Care associations and their member companies are developing new, transparent ways to report on their continued efforts to improve product information and stewardship practices.

### **Across the Globe, Responsible Care Companies Share a Commitment to You**

The chemical industry is one of the world's most vital business sectors. Its products provide solutions in areas such as healthcare, agriculture, clothing, construction, transport, leisure and many others. Today's chemical industry includes a new generation of companies committed to sustainable development, responsible product stewardship and open dialogue with their stakeholders. We are proud of our achievements toward securing our sustainable future. Through Responsible Care, companies continue to strive for innovative ways to achieve the vision of the World Summit on Sustainable Development that, by the year 2020: "All chemicals will be produced and used in ways that minimize risks for human health and the environment."



Learn more at:  
[www.icca-chem.org](http://www.icca-chem.org) and  
[www.responsiblecare.org](http://www.responsiblecare.org)



# **Responsible Care®**

**AN INITIATIVE OF THE ICCA, WORLDWIDE  
VOICE OF THE CHEMICAL INDUSTRY**

**Sustainability | Product Stewardship | Safety**



**Responsible Care®**  
OUR COMMITMENT TO SUSTAINABILITY

[www.responsiblecare.org](http://www.responsiblecare.org)



## **Appendix H**

### **Responsible Care Survey**

Name:

Phone Number:

Position/Title:

Address/Location:

Email:

Company:

Number of Employees:

Brief summary of chemical use:

#### **Questions**

1. Do you feel Responsible Care would be beneficial for Costa Rica? Please explain.
2. Do you think your company would be interested in joining Responsible Care? Please explain
3. What do you like about Responsible Care?
4. What do you dislike about Responsible Care?
5. What is the most influential information about Responsible Care?
6. What additional information would you like to know about Responsible Care?