



**Responsible Care® Re-verification**  
**Of**  
**NOVA CHEMICALS**

**MARCH 23<sup>RD</sup> 24<sup>TH</sup> 25<sup>TH</sup> 30<sup>TH</sup> and 31<sup>ST</sup> 2010**

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# **Responsible Care® Re-verification**

## **EXECUTIVE SUMMARY**

NOVA Chemicals is a member of the Chemistry Industry Association of Canada (C.I.A.C.) and a signatory to the C.I.A.C. Responsible Care® Ethic and Codes of Practice. As an Association member company there is a requirement for a triennial verification that the Company management systems support the Codes and Ethic of Responsible Care®. On March 23<sup>rd</sup> through 25<sup>th</sup> and March 30<sup>th</sup> through April 1<sup>st</sup> 2010 NOVA Chemicals underwent their fourth re-verification. The re-verification team was comprised of three verifiers assigned by the C.I.A.C. and two verifiers representing the community of Joffre, AB and Sarnia, ON.

Utilizing the C.I.A.C. April 2009 re-verification protocol, and through a series of personal interviews and observations, the team investigated the robustness of Company management systems ranging from process safety management, employee health and safety and environmental management to community outreach, social responsibility and sustainability. Any areas where the team felt there were gaps in code application will be addressed by findings requiring action. As Responsible Care® is a continuous improvement process the report will also contain suggested improvement areas. This re-verification report also contains a description of Company policies and functions the team judged to be either industry best practices or extra miles.

It is noteworthy that the report does not contain any findings requiring action. There are thirty-three improvement opportunities listed in such areas as Responsible Care visibility, environmental management and community dialogue.

This report also lists four industry Extra Miles and twenty industry Best Practices and one industry Good Practice.

Also part of this report, in section 3g is a general statement on risk communication and incident notification in the Sarnia area based on interviews with community members. Sole responsibility for the above community communication and notification does not rest with NOVA Chemicals but as a C.I.A.C. member and a member of both the Blue Water Community Advisory Panel and CVECO, the re-verification team would urge NOVA Chemicals to utilize their community influence to address this problem.

Cameron D. Dillabough, Team Leader

For more information on this or a previous re-verification or on the company's original report for verification of Responsible Care®-in-Place, please contact **Eric Hiddema Systems and Projects Manager, Responsible Care Shared Services.**

[hiddemer@novachem.com](mailto:hiddemer@novachem.com)

**Process for Obtaining Information**

The process began with the issue of a reverification information package in hardcopy with electronic links to applicable Company policies and procedures. This was followed by a one day planning meeting with the Corporate Systems and Projects Manager, Responsible Care.

The site visits and interviews began on March 23<sup>rd</sup> 2010 at the NOVA Chemicals Research and Technology Centre in Calgary and proceeded with a two-day visit to the Joffre site. On March 30<sup>th</sup> and 31<sup>st</sup> the team visited the Corunna sites and the St. Clair River site. The interview process began the first day in Calgary with the NOVA Chemicals CEO, Randy Woelfel, and proceeded with the Responsible Care Council (senior managers) interviews and interviews with Responsible Care Functional Council members and support groups, process operators and with various community members through focused meetings with community advisory panels in Joffre and Sarnia.

On completion of the process, the team will issue a report with the expectation that the report will be made available to the general public by NOVA Chemicals.

## **1. INTRODUCTION AND OVERVIEW**

### **1a) The company**

This is the report by the verification team on those operations of which are covered by the company's commitment to the Responsible Care® initiative of the Chemistry Industry Association of Canada. A description of the company in Canada and which operations are covered by this report can be found in Appendix 1.

### **1b) Responsible Care®**

Responsible Care® is an initiative of the Chemistry Industry Association of Canada (C.I.A.C.) by which the association's members and partners commit to be, and to be seen as, responsible companies within Canadian society. It is based on an ethical approach to the safe and environmentally sound management of chemicals – an approach which started in Canada but has since spread to over 45 countries around the world.

#### ***The Responsible Care® Ethic:***

*We are committed to do the right thing and be seen to do the right thing. We are guided towards environmental, societal, and economic sustainability by the following principles:*

- We are stewards of our products and services during their life cycles in order to protect people and the environment.*
- 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.*
- We respect all people.*
- We work together to improve continuously.*
- We work for effective laws and standards, and will meet or exceed them in letter and spirit.*
- We inspire others to commit themselves to the principles of Responsible Care®.*

The ethic is supported in Canada by six codes of practice covering relations with the communities where members' facilities are located and also responsible management throughout the product life cycle. Information on these codes of practice and related activities is available from company personnel listed in Appendix 2 of this report, or via the C.I.A.C website [www.canadianchemistry.ca](http://www.canadianchemistry.ca) (click on the "Who we are" tab for Responsible Care®).

### 1c) **Expectations of C.I.A.C members and partners**

Each C.I.A.C. member or partner company must formally commit to the ethic, principles and codes of practice of Responsible Care® as a condition of membership in the association.

Progress in implementing these obligations must then be reported to C.I.A.C., both to peers at special networking meetings and also via a formal reporting system to the association. Three years is the typical time allowed to new members for implementation. The association monitors progress and follows up by arranging for assistance where necessary to ensure that each company eventually meets its commitment.

When a company considers that its management processes are sufficiently comprehensive that they meet each of the 151 individual code requirements, it advises the association that implementation is complete to the stage of "Responsible Care®-in-Place". Completion in this sense does not imply that nothing further needs to be done, but that a key milestone has been reached in a process of continuous improvement.

### 1d) **Verification**

A company's declaration that the expectations of Responsible Care® are being met is an important first step in the verification process, which leads to confirmation and recognition of this by a team of industry and public representatives. Verification is conducted to strict protocols, developed by the association's members and others including several critics of the chemical industry and its operations. The first verification takes place when the company first states that its performance meets the expected level (*Responsible Care®-in-Place*). This verification is designed to confirm, for the company's peers in C.I.A.C. and the public, the existence of a company wide ethic and management systems which ensure that the principles and codes of practice of Responsible Care® are not only in place but are also practised and continuously improved within the organization.

Subsequent verifications are also conducted using a different protocol, approximately every three years after formal acceptance of the first verification, to ensure that the ethic and management systems of Responsible Care® are firmly rooted in all the company's operations. This is known as *ongoing re-verification*.

Each verification is conducted by a team consisting of:

- knowledgeable industry experts with experience in Responsible Care®;
- a representative of the public at large (usually with a public interest background and with experience in Responsible Care® gained from serving on the C.I.A.C. national advisory panel) and
- one or more representatives of the local communities where the company's facilities are located.

**1d) i) Verification of Responsible Care®-in-Place**

For the purposes of this examination, a portion of the 151 code requirements is sampled in depth. These items are grouped into seventeen management systems, each of which is examined using a series of questions. Some of the questions are sent to the company in advance of the verification visit, so that supporting documentation, etc. can be available for prompt examination if desired. Additional questions are asked at the discretion of the team during the visit.

The approach is “top-down” rather than the “bottom-up” used in conventional audits, and the style of questions is intentionally open-ended, so that the answer cannot be a simple yes/no but calls for explanation. The questioning process starts with the executive responsible for chemical operations in Canada, and works down through the organization to examine the senior level intent and the corresponding support by action at the operating level.

Questions are generally of the following nature:

- does the organization have an effective management system in place to ensure understanding of Responsible Care®?
- what is the process to determine and communicate the acceptable level of performance?
- what is the process for assessing the performance of the system and effecting follow-up to meet or exceed the acceptable level of performance?
- what is the process for ensuring up-to-date documentation?
- do sufficient resources appear to be, or are thought by employees to be, in place?

The findings are summarized in a report which highlights:

- actions required by the team before they consider the company meets the expectations of Responsible Care®;
- opportunities for improvement, which are recommended but not mandatory;
- recognition of any exemplary practices of the company which could be a model for other C.I.A.C. members.

The report is given to the company and C.I.A.C., and the company is expected to share the report with interested persons in its communities as part of its dialogue process. If the team considers that actions are required before sign-off, they will arrange for follow-up to confirm that these are complete, and advise the company and C.I.A.C. in writing when these have been met to their satisfaction.

Responsible Care®-in-Place verification:

Company name at time: Novacor Chemicals Ltd.

Date of verification (visit): December 13<sup>th</sup> through 16<sup>th</sup> 1994.

Locations visited: Corporate offices, Joffre & Moore manufacturing sites.

Team follow-up needed: No

Date of final sign-off: March 1995.

This Responsible Care®-in-Place verification report is available from the contact at the company from whom you accessed this report, or from the company contact shown on page 2 of this re-verification report.

**1d) ii) Re-verification**

Responsible Care® reverification: (most recent)

Company name at time: NOVA Chemicals Corporation.

Date of verification visit: May 29<sup>th</sup> & June 5<sup>th</sup> through 19<sup>th</sup> 2006.

Locations visited: Calgary and Pittsburgh Corporate offices. Joffre and Moore manufacturing sites.

Team follow-up needed: No.

Date of final sign-off: September 2006.

Approximately every three years after team acceptance of Responsible Care®-in-Place, the C.I.A.C. schedules further verifications using a modified approach. The team is similar to that for the original verification, with at least one team member from the previous verification but a different leader.

In re-verification, the team probes more deeply to examine how well the ethical basis of Responsible Care® is understood and adopted within the company, and also how effective are the company's management systems in applying the ethical principles throughout the company's operations. This involves not only whether the company intends to do the right things, but also how it monitors activities and results and takes corrective action when deviations occur (often referred to as the Plan-Do-Check-Act parts of the management system).

For re-verification, the company is given a more comprehensive list of documentation the team will need to see. Part of this must be sent to the team so they can study it in advance. The questioning process is also more open, in that the team does not have to cover every topic in depth but can probe where they feel it is most relevant for that individual company, plus any areas where the company itself would like feedback on its performance.

After studying the information, the team meets with the company to plan the visit stage of the verification, at which a schedule is agreed covering people the team wishes to interview in depth during the subsequent visit stage of the verification process. Most of these will be company personnel, but some will be representatives of organizations with which the company has business relationships – customers, transporters, etc. – and of local communities where plants, etc. are located.

The team examines to determine how strongly the Responsible Care® ethic appears to be part of the company's way of doing business, including awareness of Responsible Care® and its implications among the company's employees.

The examination then progresses into a broad-ranging review of the company's management systems for Responsible Care®, with a special investigation of certain topics highlighted by C.I.A.C. in the verification protocol.

The team looks at how effectively the company's management systems ensure that Responsible Care® principles and code obligations continue to be met, as established in the initial Responsible Care®-in-place verification. In subsequent verifications, however, the questioning process also considers how the company tracks and improves its performance regarding these obligations, including how performance measures are established and targets met (what is measured, what are the goals and how are they achieved). Actions taken on concerns, suggestions and recommendations raised in the last verification report are examined, as are significant issues and incidents that have arisen since the previous verification. The team then looks at how the company shared the results of this verification with the local community, and examines how robust the ongoing process of community dialogue appears to be and how issues and concerns are being identified and addressed.

The highlighted topics of special focus are ones where the feedback from the verification process and from the association's members has suggested the value of a closer examination of the general membership performance and comparison with the intent of the codes of practice. This does not necessarily imply that any given company is not performing well, but reveals the range of performance and identifies both cases where some improvement is recommended and also examples from which others can learn.

The highlighted topics include community dialogue, process safety management, site emergency preparedness and response, security regarding malicious threats that could impact public safety or well-being, health effects of products and plant emissions, product stewardship and "TransCAER" outreach. Also examined are emissions of greenhouse gases, and how companies with emissions of volatile organic compounds are meeting the intent of a C.I.A.C. agreement on this topic with the federal and provincial governments and environmental groups. Although C.I.A.C. has no defined performance expectations for broader social responsibility, the team also looks at how the company sees and fulfills its role in this area. The team may also comment on other specific topics where the company has requested feedback.

The report below presents the findings of the team from this re-verification of NOVA Chemicals. The report does not address all aspects of Responsible Care®, as this was covered by the report of the original Responsible Care®-in-Place verification. Instead, it focuses more on the items where the team felt there was an opportunity or need for improvement, plus any improvements or practices which are so significant that they should be shared with other C.I.A.C. members and partners as possible examples.

For more context or explanation of any of the items below, please get in touch with the contact at the company from whom you accessed this report.

In the following sections of this report, **findings requiring action are shown in bold face**. *Opportunities for improvement (recommended but not considered mandatory) are shown in italics*, while “extra miles” and best practices are shown underlined).

## **2. GENERAL FINDINGS OF THE TEAM**

### **2a) Statement on the Responsible Care® Ethic**

Throughout the interview process, the team checked for evidence that the Responsible Care® ethic was visible and at work in the company, guiding the company's judgement, decisions and actions.

#### **Team Findings**

As a result of interviews with the NOVA Chemicals CEO, several senior managers, line managers, hourly employees and Community Advisory Panels in Joffre and Sarnia there is a team consensus that the Ethic of Responsible Care underpins the day to day operations of the NOVA Chemicals facilities and is an integral component of short and long term continuous improvement planning for the Company.

### **2b) Overall Responsible Care® Management System**

It is a requirement of Responsible Care® that companies have documented, sound management systems capable of ensuring that all operations of the company across all business units, functions and sites meet the ethic, codes of practice and other expectations of Responsible Care® on an ongoing basis. A sound management system drives continuous improvement, and has the following attributes:

- Plan - review code requirements
  - benchmark best practices
  - get input from stakeholders
  - decide on best approach
  - set targets for performance
  - assign responsibility
- Do
  - document
  - train people
  - assign resources
  - carry out activities
- Check- audit
  - measure performance of system
  - measure performance from system
  - obtain stakeholders' feedback
  - assess employees' performance
- Act
  - follow-up on audit findings
  - communicate performance, get feedback
  - reward or correct employees
  - repeat *Plan* steps

There must be such management systems both for the overall management of the company and for each code element. This section covers the team's findings with respect to this overall management system, and section 3 below covers the specific code elements that were reviewed in the re-verification.

## Team Findings

There is a very comprehensive overall Responsible Care management system in place. This management system is designed to link the NOVA Chemicals Board of Directors and the NOVA Chemicals Management Board through the Responsible Care Council (RCC), to each functional area of the Company. The RCC is integrated with the Management Board via the RCC Chair, who is a member of both groups. The Management Board is integrated at the Board of Directors level with the CEO acting as the link between it and the Board of Directors.

The RCC is comprised of six key operational/functional leaders (Vice Presidents or Directors) who together are the leadership team for Responsible Care in the company. These six leaders lead the following functions in the company: manufacturing/operations, engineering, research & development, purchasing, logistics, public & government affairs and Responsible Care. The Canadian operational facilities report to the Chair of the RCC, which provides a direct operational link between site operations and the RCC. Each of these six leaders sponsor one or more teams, known as Responsible Care Functional Councils, which manage a specific aspect of Responsible Care across the company.

Each Responsible Care Functional Council utilizes the accepted Plan-Do-Check-Act model to ensure continuous improvement in their functional area. Each Functional Council has a charter clearly stating their mandate. The Functional Councils are comprised of dedicated site-based representatives and corporate personnel. These site-based representatives, including the Corporate office representatives, are the key people responsible for delivering and implementing the work of the Functional Council within their own site. This ensures that Responsible Care® initiatives are fully integrated throughout the Company. This last link in the Responsible Care integration chain the team views as vital to maintain the high level of Responsible Care integration and employee knowledge that was exhibited during the reverification. There is in place a Responsible Care audit management system that annually audits a portion of the Responsible Care Standards to detect any drift or slippage from the original 151 Responsible Care code elements. This is a vital key in the Plan-Do-Check- management system that drives the NOVA Chemicals Responsible Care management system.

The team judges the NOVA Chemicals overall Responsible Care management system to be an industry Best Practice.

The team judges as an industry Best Practice the NOVA Chemicals Responsible Care plan, developed annually, that demonstrates how Responsible Care is integrated into the development of Corporate goals and objectives.

The team judges as an industry Best Practice the Manufacturing East concept of “three plants-one site” that standardizes the approach to Responsible Care and safety management.

The team judges the NOVA Chemicals Facility Self Assessment management system as an industry Best Practice.

The team judges as an industry Best Practice the NOVA Chemicals confidential twenty four hour reporting hot line for potential infractions relating to the Corporate Ethics Policy.

1. *There is an opportunity for improvement to supplement the Responsible Care Management system audit process by addressing potential slippage in the Interpretation of the 151 code elements as they are applied to the Responsible Care management system. e.g. Ensure that the references to toll operators actually covers toll operators. Reference RC standards 420A and 520.*

## **2c) Follow-up on Findings in Last Verification Report**

The team reviewed how the company addressed the findings requiring action and opportunities for improvement cited by the previous verification team in their report to the company. Certain follow-up items are covered in the specific topics below.

### **Team Findings**

While all findings and opportunities from the previous reverification report were addressed, the team felt some responses to the findings and opportunities were vague and tended to state what management systems were in place rather than how things were corrected or not corrected with valid reasoning. The team would recommend the Corporate Incident Learning Process be utilized to record and manage report findings and opportunities.

2. *Re: previous finding #10. Based on the company response to this finding an opportunity for improvement exists to amend the appropriate management system to require a Responsible Care® based self assessment of third party subcontracted carriers and trans loaders.*
3. *Re: previous finding #20. Based on C.I.A.C. experience in Chile there is an opportunity for improvement to work with the Chemical Industry Association of Chile (ASIQUM) to promote and progress verification of C.I.A.C. member subsidiaries in Chile.*
4. *Re: previous finding #21. There is an opportunity for improvement to review this opportunity from the last report bearing in mind that the emphasis is on finding a “root cause” not applying root cause analysis.*
5. *Re: previous finding # 41. As an opportunity for improvement, the team encourages the Company to continue with their plans to develop a management system that would set goals and objectives and appropriate performance measures for Responsible Care awareness and visibility among employees.*

## 2d) **Response to Incidents and Concerns since the last Verification**

Since the way in which unplanned situations are handled shows the influence of the Responsible Care® ethic and responsiveness of the management system, the team looked at the issues, incidents and concerns that have arisen since the last verification and how the company has handled them. Some of these may be covered under individual topics below, as noted.

### **Team Findings**

As noted below the team judged the Corporate Incident Learning Process as an industry best practice and thus meets all requirements and expectations of the Responsible Care® codes and Ethic.

The team judges the NOVA Chemicals Incident Learning Process to be an industry Best Practice.

## 2e) **Performance Measures**

The 'check' step of a management system is the part that shows the effectiveness of the system, and a key question is: "What does the company check as its indicator of performance?" For a few items – emissions & wastes, occupational safety & health, incidents related to transportation or process operations – C.I.A.C. specifies measures for reporting under Responsible Care®. Most other areas are left to the discretion of each member or partner. The team was asked to review and comment on the measures used by the company to track and improve performance. Some of these are covered under specific sections below, but general comments are given here.

### **Team Findings**

During the reverification, the team was shown a comprehensive suite of performance measures including incidents related to worker safety, process safety management, transportation and green house gas emissions all of which are mandated by the C.I.A.C. The Corporate Performance Measures management system also generates annual improvement targets in these and ten other focus areas. Other performance measures are also developed for regional and site specific performance improvements. During the reverification interviews, the Company related their process to focus on improving contractor injuries in 2010. The team encourages NOVA Chemicals to continue in the quest for improvements in contractor worker safety.

The team judges as an industry Best Practice the suite of leading indicators presented in the Joffre Responsible Care Monthly Highlights report.

6. *There is an opportunity for improvement, when presenting Responsible Care performance data to external audiences, to present the data in the context of comparisons to industry peers.*

### **3. TEAM FINDINGS FOR SPECIFIC CODE MANAGEMENT SYSTEMS**

#### **3a) Process Safety Management**

The team looked at how the hazards and risks from potential episodic ('sudden') incidents are identified and controlled at the company's site, including awareness and understanding of the methods used for assessment and the techniques for hazard control, and how these are applied and kept current, including comparison with the *Site Self-Assessment Tool* of the Canadian Society for Chemical Engineering.

#### **Team Findings**

Process Safety and Risk Management is managed through a chartered Functional Council reporting directly to the RCC. In 2008, the company conducted a review of NOVA Chemical's overall process safety programs against the twenty elements contained in the Centre for Chemical Process Safety "Guidelines to Risk Based Safety". The published 2010 NOVA Chemicals Responsible Care plan objectives reflect the company's continuous improvement planning in the area of process safety.

The team judges as an industry Best Practice the management system at Manufacturing East that requires a comprehensive pipeline maintenance check every five years versus the industry norm of every ten years.

7. *There is an opportunity for improvement, at the corporate level, to provide guidance to the organization that will ensure the buffer zone policy incorporates the requirements of section 9i) of the 2001 Responsible Care® reverification protocol (engagement with the community to prevent encroachment. Reference the proposed new golf course in the area of the Joffre site.*
8. *There is an opportunity for improvement at Manufacturing East to develop a management system to ensure the Suncor facility has appropriate management systems in place to ensure inspection, maintenance, emergency response and spill response for their pipeline system carrying NOVA Chemicals products.*

#### **3b) Product Stewardship**

For this aspect of Responsible Care®, the team examined the company's process for:

- i) assessing the exposures of people to its products over their life cycles,
- ii) assessing the potential health implications of these exposures, communicating information to those potentially affected and taking action to prevent health impacts,

- iii) ensuring that their products are not used by terrorists, the illegal drug industry or others who might use them for illegal purposes; and
- iv) ensuring that the suppliers of chemicals are meeting the intent of Responsible Care®

### **Team Findings**

As previously noted for other Responsible Care management systems, product stewardship and product integrity is managed by a chartered Functional Council that utilizes the Plan-Do-Check-Act management principles to ensure compliance with Responsible Care product stewardship expectations while continuously improving through annual goal setting. The 2010 goals focus on ensuring NOVA Chemicals product hazard information complies with the Global Harmonization System and tighter regulations in various other jurisdictions.

The team judges the NOVA Chemicals Responsible Care Outreach Program for customers, suppliers, motor carriers and contractors to be an industry Best Practice.

The team judges as an industry Best Practice the comprehensive level of product hazard information on the NOVA Chemicals website.

- 9. *There is an opportunity for improvement, based on information provided in the third party register document (PSC020), to assess if the number of completed and past due self assessments and field evaluations supports the intent of the management system.*
- 10. *There is an opportunity for improvement to improve access to product and process hazard information on the NOVA Chemicals website. (Presently five access fields)*
- 11. *There is an opportunity for improvement to promote the recycling of NOVA Chemicals metal cable security seals with all third parties that have access to these seals.*
- 12. *There is an opportunity for improvement to present Life Cycle Analysis information of NOVA Chemicals products on the Canadian website using terminology easily understood by the general public.*

### **3c) Site Security and Emergency Response**

The team looked at how the company assesses and manages potential security threats, including those to facilities and/or personnel, transportation and offsite storage of materials and diversion of materials for illicit activities such as use as or in production of chemical weapons, explosives or narcotics.

## Team Findings

As with the other functional areas described in the Corporate Responsible Care management system, Site Security and Emergency Response is a separate chartered Functional Council, which reports directly to the RCC.

Because of the complexity and potential hazard level at both manufacturing centres site emergency response management and training is maintained at a high level. Due to the remoteness of the Joffre site the focus is on emergency response self sufficiency.

In addition, while the management of emergency response and emergency responder training is as comprehensive at the Manufacturing East site, the Manufacturing East site does have mutual aid assistance through the Chemical Valley Emergency Coordinating Organization that provides emergency response mutual aid in the Sarnia area.

The Joffre site functions as the corporate emergency call centre and depending on the need can activate the Global Crisis Management Plan.

Security management at each Canadian location was reviewed and all management systems met or exceeded the requirements and expectations of Responsible Care.

13. *There is an opportunity for improvement at the NOVA Chemicals Research and Technology Centre to understand any potential hazards posed by near businesses and industrial neighbours to ensure site emergency plans address these hazards.*
14. *There is an opportunity for improvement to amend the company crisis management plan to address managing commitments to people dislocated by a site or transportation emergency. (Reference section 3.8 of the Emergency Response Code).*
15. *There is an opportunity for improvement to consider the use of motion sensors or infrared cameras in the area of recent incursions at the Corunna site.*

### 3d) Environmental Management

In addition to examining the company's performance in reducing its environmental "foot print", the team specifically looked at the company's performance history and five year projections regarding green house gas emissions. This included projects already implemented, future projects and whether the projects were focused on emission reduction or if the emission reductions were a side benefit of such projects as improved energy efficiency, new technologies or new raw materials.

As a fact finding initiative the team also reviewed any projects implemented by the company to reduce water consumption. This initiative will assist C.A.I.C. in developing recommendations for addressing growing world wide concerns about water consumption.

### **Team Findings**

The NOVA Chemicals Environmental Functional Council manages a very comprehensive system of site remediation, environmental monitoring, release prevention, compliance assurance and goal setting. An important component of the goal setting function is strategic planning to ensure that both compliance monitoring and physical plant systems are in place to meet future emission reduction and compliance requirements. In 2009, NOVA Chemicals published a public document entitled “Managing Greenhouse Gas Emissions 2009”. This document is very comprehensive and informative listing past greenhouse gas reduction projects and a strategic plan for the future. The report can be accessed at: [www.novachem.com](http://www.novachem.com)

The team judges as an industry Best Practice the issuing of the 2009 Green House Gas Emissions report.

The team judges as an industry Best Practice the utilization of land-fill methane as an alternate energy source at the Painesville OH site.

The team judges the practice of recycling the Joffre site winter road sand to be an industry Best Practice.

The team judges as an industry Best Practice the involvement (as President) of the Leader of the NOVA Chemicals Environmental Functional Council in the Alberta Plastics Recycling Association.

The team judges the segregated recycling containers in the Corunna office area lunch room to an industry Good Practice and a model for the entire company.

The team judges as an industry Best Practice the resource conservation program that shuts down not in use, non essential computers by eight PM.

While the team recognizes the achievements by NOVA Chemicals in reducing all types of emissions the team will suggest in the form of an improvement opportunity some areas where the company could focus future efforts in reducing their overall environmental foot print.

16. *The team would encourage the company to consider the following environmental improvement opportunities:*
  - a) *Be proactive at investigating greener energy sources for manufacturing operations.*

- b) *Be more proactive in their efforts in the area of energy conservation by investigating restricted lighting programs, building heating efficiency analysis and process steam capture and reuse.*
- c) *Be proactive in assessing alternative energy sources such as solar thermal technologies, wind power, photovoltaic technologies and fuel cell technologies.*
- d) *Reducing green house gas emissions by introducing or integrating renewable energy technologies in the manufacturing process. As an example utilizing Stirling engines at the end of the process before the cooling tower stage.*
- e) *Develop policies and operational procedures to reduce or eliminate “phantom power” usage.*

17. *There is an opportunity for improvement to analyse the excellent informal environmental information exchange between the First Nations Band Leader and the Manufacturing East Regional Environmental Team leader, to determine if the process should be formalized pending any future personnel changes.*

**3e) Visibility and Employee Awareness of Responsible Care®.**

Here the team considered how the company seeks to make Responsible Care® a visible part of its facilities and its internal and external communications, and how it ensures that all employees understand the essence of Responsible Care® and its relevance to their job activities and decisions.

**Team Findings**

There is an all encompassing corporate level Management system for Responsible Care. At the operations level policies and procedures tend to focus on the environmental health and safety aspects of Responsible Care®. The team found that awareness of Responsible Care was inconsistent over the three sites visited. At two of the sites there was a high level of recognition of Responsible Care® while at a third site recognition was spotty.

Responsible Care branding is present on all company documents, business cards, the web site and other external documents. Visibility at Company facility entrances, internal notice boards and other public exposure venues could be improved.

The reverification team also recognizes the use of Safety Leadership Perception Surveys as a method of judging Responsible Care® awareness but would encourage NOVA Chemicals to apply their established comprehensive level of Responsible Care management to the area employee awareness and visibility.

18. *To further reinforce the documented annual Responsible Care® management plan there is an opportunity for improvement to:*

- a) *Ensure Responsible Care® is given more relevant visibility at site entrances and on site bulletin boards.*

- b) *Identify the sites as Responsible Care® supporters.*
- c) *Improve the depth of understanding at the operator level of the full breadth of the Responsible Care® codes beyond environment, health and safety.*
- d) *Include Responsible Care® information in visitor/contractor orientation video at the Manufacturing East and Manufacturing West locations.*
- e) *Consider assigning site Responsible Care® visibility to personnel responsible for internal and external communications.*

### 3f) **Workplace Health and Safety**

The team looked at the management systems in place to provide a safe work place, train employees in safe work practices, enforce safe work practices and provide employee health related prevention and tracking systems.

#### **Team Findings**

Work place health and safety is managed under the auspices of a number of Responsible Care Functional Councils (Safety, Health, Industrial Hygiene, Environment and Audits). Through these councils various corporate standards are developed to act as a basis for regional and site policies to ensure worker protection and company compliance to various jurisdictional laws and regulations. Each function, under Council responsibilities, is subject to annual performance measures and goal setting in support of continuous improvement. Manufacturing site goals and targets are developed annually to support those goals developed at the Functional Council level. The performance of these Functional Councils meets or exceeds the expectations the Responsible Care® codes.

The team judges as an industry Best Practice the worker health benefit plan that allows additional funding and benefits for non smokers.

The team considers the scheduled ergonomic exercise reminder on work station monitors to be an industry Best Practice.

The team judges as an industry Best Practice the NOVA Chemicals employee intranet training and training audit management system.

19. *There is an opportunity for improvement to assess the viability of adapting the Manufacturing East new employee policy of a more intense Safety Indoctrination, focusing on Responsible Care, after one year of employment to all permanent employees across the Company.*
20. *There is an opportunity for improvement at the St. Clair River site to evaluate the need for upgraded WHMIS marking on some plant internal and external pipe lines.*

21. *There is an opportunity for improvement to implement a process to continually update the safety performance sign outside the road entrance to the Corunna site.*

**3g) Transportation Security**

The team looked at how the company's management system assesses the risk of deliberate misuse of products or raw materials in transit and provides protection against such risks.

**Team Findings**

The logistics function and thusly transportation security is managed by the Purchasing and Logistics Functional Council. This Functional Council operates in a manner similar to the Functional Councils described previously in this report.

NOVA Chemicals is Customs-Trade Partnership against Terrorism (C-TPAT) Tier III certified which is a transportation related security certification by the U.S. Customs and Border Protection Agency.

In the documentation supplied (PSC020) there was not a specific reference to third party security requirements.

22. *There is an opportunity for improvement to amend PSC020 to specifically reference and audit third party security requirements.*

**3h) Risk Communication**

The team looked at the management system for regularly assessing the full range of risks that the site operations present to the community - from worst imaginable and worst credible scenarios down to more likely but lower risks - and for ongoing communication to, and dialogue with, the potentially affected communities.

**Team Findings**

There are Corporate Standards in place (RC Standards 140 & 330) to address the requirement for assessing the full range of site risks and communicating those risks to appropriate stakeholders. At Joffre the focus is on ensuring the Integrated Community Planning group and the CAP is aware of site risks and the site emergency response plan is integrated with the community emergency response plan. In addition the Company also conducts face to face meeting with residents of the Hamlet of Joffre. In the Sarnia area the risks posed by the three site units are shared with the Chemical Valley Emergency Co-ordinating organization (CVECO) and the Blue Water CAP.

**Additional Team Comments**

Based on discussions with community residents and Community Advisory Panel members, and reviewing recent local newspaper articles the reverification team feels that there is a serious issue in the Sarnia area concerning risk information

availability to the general public and notification of the general public when emergency situations occur at any Sarnia area facilities.

While the team recognizes that this is not an exclusive NOVA Chemicals issue, in the spirit of Responsible Care®, we feel there is an opportunity for NOVA Chemicals to utilize its' influence in the community to bring this issue to the fore front and urge Sarnia area Oil and Chemical companies to develop strategies for sharing risk information with the general public relative to 2010 and also address the issue of public confidence in the local emergency notification system. The team would recommend, as a reference, the C.I.A.C. document "Guidelines for Risk Communications" as a starting point in developing a community wide risk communication policy.

*23. There is an opportunity for improvement to review RC Standard 140 at the NOVA Chemicals Research and Technology Centre to support the reverification protocol requiring regular visits to near business and industrial neighbours (stakeholders) with site risk information and instructions for shelter in place.*

### **3i) Social Responsibility**

The team looked at how the company has provided benefits to, and worked to understand and further the social aspirations of, its local communities and broader society beyond the boundaries of environmental, health and safety performance.

#### **Team Findings**

NOVA Chemicals has a structured process for addressing the concept of Social Responsibility that is based on documented community investment principles. Targeted allocations for community investment are 50% education and science, 40% health and community services and 10% the arts. All regional and site investments flow from this corporate commitment of financial support. In addition to monetary commitments there is a "sweat equity" concept where by NOVA Chemicals supports localized charitable work championed by NOVA Chemicals employees. This support can take the form of paid time off for NOVA Chemicals employees in their quest to contribute to the charity of choice. Support for education has ranged from a large donation to support the Calgary Science Centre to scholarships for First Nations high school students in the Sarnia area. In support of diversity NOVA Chemicals participates in the Career Day Minerva Program in the Red Deer School District, which promoted grade eight and nine females exploring careers in non-traditional areas.

NOVA Chemicals also has a Business Conduct Policy that addresses several areas of business conduct including equal opportunity, discrimination, fiscal integrity and Responsible Care® expectations.

The team would encourage NOVA Chemicals to consider policies on diversity and accommodation of the disabled.

The team judges as an industry Best Practice the inclusion of Responsible Care management system references in the Corporate Business Conduct Policy.

The team judges as an industry Extra Mile the response of Joffre site emergency personnel and equipment to local off-site community emergencies.

The team judges as an industry Extra Mile the provision of driver instructions, in Punjabi, at the Joffre site truck entrance.

The team judges as an Extra Mile the accommodation, at the Corunna site, of a new employee's religious beliefs by offering a position that did not require the use of a respirator.

### 3j) **TransCAER Outreach**

TransCAER is the C.I.A.C. program for Transportation Community Awareness and Emergency Response. It involves the company's approach to preventing transportation incidents, its transportation emergency response plan, and also outreach to communities through which chemicals are transported, the communities being selected and assigned to each company by regional TransCAER committees formed from the members and partners in each region. The team looked at how the company has participated in TransCAER outreach and how it has handled the work thus assigned.

#### **Team Findings**

Through the Purchasing and Logistics Functional Council the required policies and procedures are in place to fulfill the Company's C.I.A.C. member obligations in the areas of transportation accident prevention and transportation emergency response. Historically NOVA Chemicals has been a stalwart company in supporting the concept of "outreach and emergency response training" to communities through which C.I.A.C. member company products and raw materials flow. Both Manufacturing West and Manufacturing East have been instrumental in the recent C.I.A.C. realignment of TransCAER expectations and communities assigned to member companies for outreach activities. N.B.: The recent realignment is a response to present C.I.A.C. member company transportation risk profiles and capabilities and not a decrease in commitment.

As a member of the Prairie Region TransCAER Committee the reverification team encourages the NOVA Chemicals representative to continue to leverage NOVA Chemical's C.I.A.C. status and experience to ensure implementation of the Prairie Region's TransCAER committee strategic plan.

### 3k) **Carrier Selection**

The team reviewed the management system utilized by the company to establish criteria for the selection of road, rail, pipeline and air carriers and for the on-going assessment of the carriers against those criteria.

### **Team Findings**

As part of the Purchasing and Logistics Functional Council Responsible Care Outreach procedures and the Process Safety and Risk Management Functional Council (pipe lines) procedures there is a comprehensive management system in place to fully comply with the carrier selection requirements and expectations of the Responsible Care® codes.

### **3l) Engagement with Elected Officials**

The team looked at the company's process for establishing an on-going relationship with elected officials in constituencies in which the company has a presence.

### **Team Findings**

Public and Government Affairs is a NOVA Chemicals Responsible Care Functional Council under the auspices of the RCC. As such there is a planned process of interface with elected officials from the federal level down through provincial, state and local municipalities. During visits to the Joffre and Sarnia area sites each manager whose responsibilities involved engagement with local officials displayed a good grasp of local issues that could affect NOVA Chemicals facilities.

### **3m) Dialogue Process with Communities**

The team looked at how the company's process for dialogue with its communities has been working since the Responsible Care® in-place verification, including the identification of stakeholders, community issues and concerns, how concerns were addressed and the choice of dialogue methods. The team looked at the effectiveness of the management system in ensuring the company is planning, implementing, evaluating and continuously improving its relationship with the community.

### **Team Findings**

The NOVA Chemicals Community Dialogue management system is viewed by the team as very comprehensive and achieves the expectations of the CAER code. Each operational region within the company has a dedicated position for community outreach and dialogue, which the team views as essential to ensure that this vital component of the CAER code is not diluted by being assigned as a secondary responsibility to another management function. The team also feels that it would be beneficial to the Community Outreach process if the Community Outreach function was a separate Functional Council as a means of standardizing the public dialogue process across the Company.

The team judges as an industry Best Practice the provision of a dedicated resource for community relations and external communications in both manufacturing regions.

The team judges the creation of the Corunna site "Near Neighbour" CAP as an industry Extra Mile.

24. *There is an opportunity for improvement to increase the visibility and standardize the Community Dialogue message by creating a separate Community Outreach Functional Council.*
25. *There is an opportunity for improvement to revise the Manufacturing East Community Dialogue management system with the following suggested improvements in mind:*
  - a) *Utilize the C.I.A.C's System for Community Outreach, Planning and Evaluation tool (SCOPE) as a means of developing an annual communications plan and measuring the effectiveness of community dialogue activities. (this particular opportunity could also apply to Manufacturing West).*
  - b) *Adopt the Manufacturing West community information package model.*
  - c) *Formalize the "Near Neighbour" CAP community dialogue process with the goal of regular two way dialogue.*
  - d) *Hold on-site open houses to put a human face on NOVA Chemical's operations.*
  - e) *Approach Lambton College and Blue Water CAP members to develop a plan to cycle their environmental program students through Blue Water CAP membership.*
26. *There is an opportunity for improvement to promote and assist in the recruitment of new community members for the Blue Water and Joffre Community Advisory Panels.*
27. *There is an opportunity for improvement for NOVA Chemicals to engage in a peer review process of their Community Dialogue management system(s).*
28. *There is an opportunity for improvement to provide a "date last reviewed/updated" notation on each Company webpage to promote public confidence in information provided on the website.*
29. *There is an opportunity for improvement for NOVA Chemicals to post the Responsible Care® reverification report on the NOVA Chemicals website, rather than providing a link to the C.I.A.C. website.*
30. *There is an opportunity for improvement at the Joffre site to extend their door-to-door visits to the surrounding residents throughout the integrated community response zone.*
31. *There is an opportunity for improvement to include a review of the NOVA Chemicals Wildlife Policy as part of the community dialogue process at both Manufacturing East and Manufacturing West.*

32. *There is an opportunity for improvement to investigate the use of electronic messaging devices as a method of improving and streamlining two-way community dialogue.*

33. *As an opportunity for improvement the team would encourage NOVA Chemicals to sponsor a community clean up day for communities adjacent to NOVA Chemicals facilities.*

**3n) Areas of Focus Requested by the Company**

There were not any specific focus areas requested by the company.

**3o) Additional Areas Addressed during the Re-verification**

Additional areas of focus were social responsibility and sustainability management systems that identified as “fact finding” topics as input to future C.I.A.C. re-verification protocol.

**Sustainability**

At present within NOVA Chemicals the concept of sustainability is included in the Corporate Social Responsibility management system as described in section 3i above which is managed by the Public and Government Affairs Functional Council. In re-verification support documentation there is a clear link within NOVA Chemicals between Responsible Care® and the concept of sustainability. NOVA Chemicals has a stated commitment to the accepted industry norm of the “Triple Bottom Line” approach to sustainability, which is an equal focus on the environment, social responsibility and economic well being of the company. NOVA Chemical’s response to the C.I.A.C. fact finding questions can be found in appendix 5.

**4. CONCLUSION**

It is the consensus of the Chemical Industry Association of Canada re-verification team that NOVA Chemicals has been re-verified as complying with the codes of Responsible Care® based on the 2009 re-verification protocol. The team has re-verified that the Responsible Care® codes and Ethic underpin the day to day operations and business decisions of NOVA Chemicals.

## **5. COMPANY COMMENTS**

Consistent with our commitment to Responsible Care®, we would like to recognize the value of the assessment undertaken by the Chemistry Industry Association of Canada's re-verification team. The process provided an excellent opportunity for NOVA Chemicals' leadership and Responsible Care Team to discuss fresh perspectives and insights with respect to our Responsible Care® systems and performance. The re-verification will help to reinforce our commitment to Responsible Care, strengthen our culture and help us improve our systems and performance.

We carefully reviewed the report and will give serious consideration to the opportunities for improvement identified by the Re-verification Team.

We also appreciate the many positive comments the Re-verification Team shared with NOVA Chemicals' personnel while visiting each of the NOVA Chemicals' facilities and highlighted in the report as "Extra Miles" or "Best Practices". We are grateful for the recognition provided to many of our employees. The positive approach will help reinforce our commitment to the Responsible Care® Ethic and Principles.

Eric Hiddema  
Systems & Projects Manager, Responsible Care  
CIAC Responsible Care Coordinator

## **APPENDIX 1: Company Description**

NOVA Chemicals is a privately held, Calgary Based, multinational chemical company. In 2009 the company was purchased by The International Petroleum Investment Company of the Emirate of Abu Dhabi. The International Petroleum Investment Company also hold a majority share of Borealis, a European based company with complementary product lines to NOVA Chemicals.

For a detailed description of NOVA Chemicals products, processes and general information of interest please visit: [www.novachem.com](http://www.novachem.com)

## APPENDIX 2: The Verification Team and Company Interviewees

### 1. The Verification Team

The verification team consisted of the following:

Name	Affiliation	Representing
Cameron D. Dillabough	C.I.A.C. verifier	Industry (team leader)*
Gerry Whitcombe	C.I.A.C. verifier	Industry *
Jim Wakefield	C.I.A.C. verifier	Community at Large *
Bert Bell	Joffre Site Community Representative	Joffre Community
Alex vonKnobloch	Sarnia Area Sites Community Representative	Sarnia Community

Team members assigned by C.I.A.C. are shown by an asterisk (\*).

### 2. Persons Contacted at the Company

#### CORPORATE AND NRTC INTERVIEWS FOLLOWED BY JOFFRE, CORUNNA AND ST.CLAIR SITE INTERVIEWS

Name	Position
Randy Woelfel	Chief Executive Officer
Grant Thomson	C.I.A.C. Executive Contact. Senior Vice President & President, Olefins & Feedstock
Eric Kelusky	Vice President, Technology
Bill Greene	Senior Vice President, Operations
Mark Lesky	Director, Responsible Care
Dan Douglas	Regional Safety & Emergency Response Coordinator, Manufacturing East
Eric Hiddema	Systems & Projects Manager, Responsible Care
Daryll Harrison	Director, Polyolefins Research & Development
Michel Berghmans	Leader, Engineering Research & Site Services
Mark Schwarz	Team Leader, Responsible Care Audit
Linda LeGoullon	Team Leader, Product Stewardship
Anna Madajczuk	Product Stewardship Advisor
Adrian Cassola	Leader, Product Integrity
Linda Santry	Senior Advisor, Product Regulatory Compliance
Dave Schwass	Senior Environmental Advisor
Sherri Merkel	Public & Government Affairs Specialist
Rod Immel	Team Leader, Responsible Care
Josh Cavanagh	Environment & Hygiene Coordinator
Mary-Jane Seltenrich	Associate, Codes of Practice and Emergency Response & Preparedness
Helen VanDyk	Associate, Responsible Care Training

Charles Carter	Scientist (Employee Interview)
Claire Ennis	Mechanical Engineer (Employee Interview)
Mike Francis	Scientist (Employee Interview)
Tim Giese	Research Technologist (Employee Interview)
Kevin Kuklisin	Research Technologist (Employee Interview)
Erica Robinson	Research Scientist (Employee Interview)
Nigel Clark	Director, Logistics Operations and Infrastructure
Kevin DeAngelis	Rail Fleet Maintenance Manager
Dave Blanchard	Dry Bulk Truck Coordinator
Kevin Campbell	NOVA Chemicals TransCAER Representative

<b>Name</b>	<b>Position</b>
Rick VanHemmen	Joffre Site Leader
Lois Erichson	Manufacturing Infrastructure Leader(Joffre Site)
Roxann Good	Manager, Canadian Public Affairs (Joffre Site)
David Weizenbach	Responsible Care & Laboratory Team Leader
Rich Stonehouse	Team Leader, Manufacturing Infrastructure
Al Tudhope	Team Leader, Manufacturing Infrastructure
Fraser Stewart	Process Safety Engineer
Karen Chow	Process Safety Engineer
Doug Batke	Safety Specialist
Ryan Hornett	Environmental Specialist
Shane Lamden	Environmental Specialist
Bill Glass	Coordinator, Purchasing and Supply
Jeff Angers	Safety Specialist (Employee Interview)
Tim Besuijen	Manager, Purchasing & Supply (Employee Interview)
Gwen Clarke	Canadian Public & Government Affairs (Employee Interview)
Sherry LaRose	Regional Coordinator Occupational Health (Employee Interview)
Gord Taylor	Senior Technical Advisor, Occupational Hygiene (Employee Interview)

<b>Name</b>	<b>Position</b>
Tom Thompson	Corunna Site Leader
Trevor Williams	Moore & St. Clair Site Leader
Al Sivell	Team Leader, St. Clair & Pilot Plant
Gary Donkers	Team Leader, Olefins
Krista Hagan	Sarnia Area Internal & External Communications & Community Relations
Pat Lea	Emergency Response Coordinator, Manufacturing East TransCAER Representative
Terry Burr	Manufacturing East Security Contractor

John Thompson	Leader, Regional Environment & Industrial Hygiene
Richard Ives	Regional Environmental Engineer
Sue Levesque	Regional Environmental Specialist
Rob Thompson	Team Leader, Human Resources
Karen Duffy	Regional Coordinator, Occupational Health
Noreen Liebrock	Leader, Corporate Health & Wellness
Ted Cooper	Leader, Regional Maintenance & Reliability
Mark Rainsberry	Team Leader, Maintenance & Reliability Contracts
King Ma	Process Safety Engineer
Sue Romphf	Director, Manufacturing East Procurement & Olefins Logistics
Carrie Maxim	Specialist, Logistics Planning
Cindy Mitchell	Transportation Coordinator
Margy Muller	Team Leader, Manufacturing, Pipelines
Bill Taylor	Senior Operations Coordinator, Pipelines
Winston Ramharry	Leader, Manufacturing East Technical Services
Fred Henselwood	Leader, Process Safety
Bob Harrison	St. Clair Pilot Plant Operations Coordinator
Emilio Iacobelli	Safety Specialist, Moore & St Clair Site Joint Health & Safety Committee
Justin Hagan	Fire & Emergency Response, Safety Specialist, Moore & St Clair Site Joint Health & Safety Committee
Greg Stoudt	Instrument/Electrical Technician, Moore & St Clair Site Joint Health & Safety Committee
Yuree Sung	Co-op Student (Employee Interview)
Kevin Bernier	Safety Specialist, Corunna Site Joint Health & Safety Committee
George McIlwain	Instrument/Electrical Technician, Corunna Site Joint Health & Safety Committee
Cory Murray	Corunna Site Process Technician (one year employee interview)

### APPENDIX 3: Opportunities For Improvement

1. *There is an opportunity for improvement to supplement the Responsible Care Management system audit process by addressing potential slippage in the Interpretation of the 151 code elements as they are applied to the Responsible Care management system. e.g. Ensure that the references to toll operators actually covers toll operators. Reference RC standards 420A and 520.*
2. *Re: previous finding #10. Based on the company response to this finding an opportunity for improvement exists to amend the appropriate management system to require a Responsible Care® based self assessment of third party subcontracted carriers and trans loaders.*
3. *Re: previous finding #20. Based on C.I.A.C. experience in Chile there is an opportunity for improvement to work with the Chemical Industry Association of Chile (ASIQUM) to promote and progress verification of C.I.A.C. member subsidiaries in Chile.*
4. *Re: previous finding #21. There is an opportunity for improvement to review this opportunity from the last report bearing in mind that the emphasis is on finding a “root cause” not applying root cause analysis.*
5. *Re: previous finding # 41. As an opportunity for improvement, the team encourages the Company to continue with their plans to develop a management system that would set goals and objectives and appropriate performance measures for Responsible Care awareness and visibility among employees.*
6. *There is an opportunity for improvement, when presenting Responsible Care performance data to external audiences, to present the data in the context of comparisons to industry peers.*
7. *There is an opportunity for improvement, at the corporate level, to provide guidance to the organization that will ensure the buffer zone policy incorporates the requirements of section 9i) of the 2001 Responsible Care® reverification protocol. (Engagement with the community to prevent encroachment. Reference the proposed new golf course in the area of the Joffre site*
8. *There is an opportunity for improvement at Manufacturing East to develop a management system to ensure the Suncor facility has appropriate management systems in place to ensure inspection, maintenance, emergency response and spill response for their pipeline system carrying NOVA Chemicals products.*

9. *There is an opportunity for improvement, based on information provided in the third party register document (PSC020), to assess if the number of completed and past due self assessments and field evaluations supports the intent of the management system.*
10. *There is an opportunity for improvement to improve access to product and process hazard information on the NOVA Chemicals website. (Presently five access fields)*
11. *There is an opportunity for improvement to promote the recycling of NOVA Chemicals metal cable security seals with all third parties that have access to these seals.*
12. *There is an opportunity for improvement to present Life Cycle Analysis information of NOVA Chemicals products on the Canadian website using terminology easily understood by the general public.*
13. *There is an opportunity for improvement at the NOVA Chemicals Research and Technology Centre to understand any potential hazards posed by near businesses and industrial neighbours to ensure site emergency plans address these hazards.*
14. *There is an opportunity for improvement to amend the company crisis management plan to address managing commitments to people dislocated by a site or transportation emergency. (Reference section 3.8 of the Emergency Response Code).*
15. *There is an opportunity for improvement to consider the use of motion sensors or infrared cameras in the area of recent incursions at the Corunna site.*
16. *The team would encourage the company to consider the following environmental improvement opportunities:*
  - a) *Be proactive at investigating greener energy sources for manufacturing operations.*
  - b) *Be more proactive in their efforts in the area of energy conservation by investigating restricted lighting programs, building heating efficiency analysis and process steam capture and reuse.*
  - c) *Be proactive in assessing alternative energy sources such as solar thermal technologies, wind power, photovoltaic technologies and fuel cell technologies.*
  - d) *Reducing green house gas emissions by introducing or integrating renewable energy technologies in the manufacturing process. As an example utilizing Stirling engines at the end of the process before the cooling tower stage.*
  - e) *Develop policies and operational procedures to reduce or eliminate “phantom power” usage.*

17. *There is an opportunity for improvement to analyse the excellent informal environmental information exchange between the First Nations Band Leader and the Manufacturing East Regional Environmental Team leader, to determine if the process should be formalized pending any future personnel changes.*
18. *To further reinforce the documented annual Responsible Care® management plan there is an opportunity for improvement to:*
  - a) *Ensure Responsible Care® is given more relevant visibility at site entrances and on site bulletin boards.*
  - b) *Identify the sites as Responsible Care® supporters.*
  - c) *Improve the depth of understanding at the operator level of the full breadth of the Responsible Care® codes beyond environment, health and safety.*
  - d) *Include Responsible Care® information in visitor/contractor orientation video at the Manufacturing East and Manufacturing West locations.*
  - e) *Consider assigning site Responsible Care® visibility to personnel responsible for internal and external communications.*
19. *There is an opportunity for improvement to assess the viability of adapting the Manufacturing East new employee policy of a more intense Safety Indoctrination, focusing on Responsible Care, after one year of employment to all permanent employees across the Company.*
20. *There is an opportunity for improvement at the St. Clair River site to evaluate the need for upgraded WHMIS marking on some plant internal and external pipe lines.*
21. *There is an opportunity for improvement to implement a process to continually update the safety performance sign outside the road entrance to the Corunna site.*
22. *There is an opportunity for improvement to amend PSC020 to specifically reference and audit third party security requirements.*
23. *There is an opportunity for improvement to review RC Standard 140 at the NOVA Chemicals Research and Technology Centre to support the reverification protocol requiring regular visits to near business and industrial neighbours (stakeholders) with site risk information and instructions for shelter in place.*
24. *There is an opportunity for improvement to increase the visibility and standardize the Community Dialogue message by creating a separate Community Outreach Functional Council.*

25. *There is an opportunity for improvement to revise the Manufacturing East Community Dialogue management system with the following suggested improvements in mind:*
- a) *Utilize the C.I.A.C's System for Community Outreach, Planning and Evaluation tool (SCOPE) as a means of developing an annual communications plan and measuring the effectiveness of community dialogue activities. (this particular opportunity could also apply to Manufacturing West).*
  - b) *Adopt the Manufacturing West community information package model.*
  - c) *Formalize the "Near Neighbour" CAP community dialogue process with the goal of regular two way dialogue.*
  - d) *Hold on-site open houses to put a human face on NOVA Chemical's operations.*
  - e) *Approach Lambton College and Blue Water CAP members to develop a plan to cycle their environmental program students through Blue Water CAP membership.*
26. *There is an opportunity for improvement to promote and assist in the recruitment of new community members for the Blue Water and Joffre Community Advisory Panels.*
27. *There is an opportunity for improvement for NOVA Chemicals to engage in a peer review process of their Community Dialogue management system(s).*
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32. *There is an opportunity for improvement to investigate the use of electronic messaging devices as a method of improving and streamlining two-way community dialogue.*
33. *As an opportunity for improvement the team would encourage NOVA Chemicals to sponsor a community clean up day for communities adjacent to NOVA Chemicals facilities.*

## **APPENDIX 4: Site Security**

There were not any findings or improvement opportunities noted in the area of site security.

## **APPENDIX 5: Sustainability Fact Finding Questions 2010 Responsible Care Reverification – March 2010**

***Describe any new things you, at the site and/or corporate level, have considered, are doing or have started to do with respect to these concepts:***

### **1. Work for the improvement of people's lives:**

Our polyethylene (PE) film packaging resins:

- Play an integral role in assuring the safety of the food supply in staple consumer items - cereal liners and fresh produce, meat, cheese and poultry packaging – and provide consumer conveniences including extended shelf life, easy storage, microwave friendly and re-sealable
- Are consistently better, safer and more cost-effective for use in developing economies — helping to lower the cost of food by reducing spoilage. In India it is estimated that use of plastic food packaging can reduce spoilage by 20-40%.

### **2. Work for the improvement of the environment:**

We have established companywide systems and procedures to ensure that we continuously improve our environmental performance and protect the well-being of our communities.

Corporate - Greenhouse Gas Emissions:

- We actively work to reduce GHG emissions intensity since 1990 and we have reported our performance publicly since 1994 - reducing our direct GHG emissions intensity by almost 16% from 2003 to 2008.
- We estimate our direct GHG emissions intensity from our chemical facilities will be reduced by approximately 25% in the 1999 to 2010 timeframe.

Product - Film down-gauging:

- Our PE barrier film resins can deliver up to a 30% reduction in film gauge. For the NA barrier film market, a 10% reduction in film thickness conserves 25 million pounds of PE resin per year — reducing the CO<sub>2</sub> emissions equivalent to nine million gallons of gasoline.

Product – Reduction in packaging waste:

- ARCEL foam resin reduces waste by protecting goods with less material — minimizing the impact on the environment. Since less packaging material is used, package size can be reduced by as much as 40 percent.

**3. Take preventative action to protect health and the environment:**

See sections above.

**4. Innovate for products and processes that provide enhanced value:**

- Our polyethylene (PE) film packaging resins play an integral role in assuring the safety of the food supply in staple consumer items and provide consumer conveniences including extended shelf life, easy storage, microwaveability and resealability
- Our PE film packaging resins enable packaging designers to create thinner packaging to meet both performance and sustainability objectives (using less natural resources and creating less waste) while:
  - increasing product protection
  - improving consumer convenience
  - enhancing retail shelf impact

**5. Innovate for safer products, safer processes and to conserve resources:**

NOVA Chemicals works co-operatively with others in our industry, multi-stakeholder groups, communities and governments to develop and implement effective solutions.

Safer processes/conservation of resources

- *Carbon capture program:* The projects we are involved with annually capture more than 150kt of CO<sub>2</sub>—the equivalent of removing more than 32,000 passenger cars from our highways each year.
- *Furnace Tube Technology:* ANK400 Furnace Coil Technology, developed by NOVA Chemicals, significantly increases on-stream time for ethylene furnaces using gas feedstock.
- *Co-Generation Power:* All of our Canadian manufacturing facilities utilize cogeneration to meet their power needs
- *Landfill Gas Use:* Our Painesville, Ohio, manufacturing site now utilizes landfill gas as a fuel source. Landfill gas is an alternate fuel source generated by the decomposition of municipal waste.

## **6. Engage with business partners to ensure stewardship and security of products, services and raw materials:**

As part of our product stewardship process we:

- Lead and participate in research to understand the potential health impacts of products before they are introduced to the marketplace.
- Characterize, manage and communicate product hazard and risk information.
- Work with suppliers and carriers to ensure they safely handle, package and transport the raw materials required to manufacture our products.
- Engage our customers, carriers and distributors to work cooperatively in order to safely handle, use and dispose of our products.

## **7. Understand and meet expectations for social responsibility:**

- We are committed to being a socially responsible neighbor.
- We maintain open, long-term relationships with all of our stakeholders through Community Advisory Panels, open houses, community forums and personal visits.
- We invest our communities - focusing on education and research, health and community services, and arts programs.
- We donate approximately 1% of our pre-tax profits in our communities;
- Our presence in the community:
  - creates and maintains quality jobs
  - fosters the purchase of numerous goods and services
  - pays taxes – corporate and personal
- We donate gifts-in-kind to support local community organizations, such as surplus computers and furniture.
- Our employees volunteer through the United Way Days of Caring and other outreach programs.

## **8. Promote awareness of Responsible Care:**

- Our culture is built on the ethic and standards of Responsible Care – its principles are woven into everything we do.
- The safe operation of our facilities, conservation of resources, product stewardship and community engagement are central to our longstanding commitment to Responsible Care
- We take a leadership position within our industry to promote RC principles and standards

- We communicate regularly with our employees about RC and our performance related to RC metrics
- We actively promote corporate and industry sustainability messages and ensures that the latest industry resources are available to our employees – equipping them to be ambassadors for our industry within our communities.