



**Chemistry Industry
Association of Canada**

**Association canadienne
de l'industrie de la chimie**

RESPONSIBLE CARE[®]

VERIFICATION REPORT

ARKEMA CANADA INC.

June 19 and September 29 to October 2, 2015

Caution

This report was performed a verification team of the Chemistry Industry Association of Canada (CIAC) to ensure that the above mentioned company conforms to their obligations required by Responsible Care as a member of CICA. The contents of this document reflect the judgment of this verification team using the information at their disposal at the time of the preparation of this document. It is up to the member company of CIAC to interpret the results and recommendations contained herein and to apply them at their convenience. Any partial or complete use of the contents of this document, or any decisions taken in good faith by a third party, is the complete responsibility of the third party. The member company is encouraged to share the results of this document with any interested parties, the Association, its member companies, their employees, consultants and any other person that participated in the preparation of this document, and will not be held responsible for any injuries or damages incurred by a third party following a decision or measures taken based on the contents of this report.

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SUMMARY

This report is the result of observations and conclusions made by the CIAC verification team for the verification of Responsible Care® at Arkema Canada Inc. The steps taken during the verification included the operational and planning meeting held on June 19, 2015, and the RC verification held jointly with the corporate auditing team of Arkema and the DNV registrar. The verification took place from September 29 to October 2, 2015 at Arkema's sole production site and plant situated in Becancour, Quebec. The planning meeting held was to determine the format to be taken during the RC verification and Arkema's corporate audit, to ensure that the RC verification team scrutinizes all essential elements for compliance to the practice codes of RC, which are operational, management and accountability codes.

The corporate audit covers the 10 elements of AIMS, version 4.1, ISO-9001, ISO-14001 and OSHAS-19001 certification for operations at the Becancour plant. The Arkema auditors' activities and those from the DNV firm focused almost exclusively on the elements in the operational code and partly on certain elements of management and accountability codes that are under the responsibility of plant personnel.

The RC verification also verified hydrogen peroxide sales activities by the Sales Team of Arkema, Inc. (USA) and other products produced by the Arkema plants on a global scale and sold by Arkema Canada, whose sales personnel is situated in Burlington, Ontario. The RC verification also covered logistic services, transportation, storage and distribution that are under the responsibility of personnel located at Arkema Inc.'s headquarters in King of Prussia, Pennsylvania, USA. The Arkema and DNV auditors did not include the relationship the company has with the community. The verification team must ensure complete compliance to management and accountability codes.

Taking into consideration all the aspects of commitment to Responsible Care during this verification, the team examined in detail the management systems, activities, procedures and practices of the Becancour plant together with the Arkema and DNV auditing teams. Two members of the verification team held a telephone conversation on RC activities with, as of July 2015, the newly appointed president of Arkema Inc. and Arkema Canada. The principles and ethics of Responsible Care were the subjects of interest on the agenda. Arkema Inc is a member of the American Industry Council (USA) and also conforms to Responsible Care. The company obtained RC certification in 2013 (RCMS) for management systems and HSE practices in effect at their head office.

The CIAC verification team attended the Becancour's Consulting Citizen Committee (CCC) during one of their regular meetings held on the evening of September 30, 2015, to discuss their views of Responsible Care and to understand their concerns regarding Arkema and the chemical industry.

This is the sixth completed GR verification for Arkema Canada Inc. The last verification was held on September 10 to 14, 2012. During the present verification, the team examined, amongst others:

- AIMS management system that includes ISO-90001, ISO-14011, OSHAS-18001 and a part of RC practice codes.
- Company activities subject to compliance to RC codes whose responsibility services are outside Canada, such as research and development (R&D), transportation, sales, storage and distribution.
- Canadian sales, storage and distribution under the responsibility of the offices in Burlington, Ontario, whose personnel are managed by Arkema Inc.
- The relationship between GR reference codes of practice and procedures/practices at the Becancour plant (AIMS/ISO) as well as the Burlington ON and King of Prussia PA sites.
- Procedures in place to identify malicious acts and their management.

- Process safety management including the risks and application of emergency response plan as well as risk communication plan.
- Company's approach on sustainable development.
- Management systems to maximize resource conservation.
- Identification of essential infrastructures to ensure continuity of operations during major emergencies.
- Policies and practices of social responsibility at local, Canadian and corporate levels.
- Arkema's contribution and openness in their dialogue with the community and the effective operation of CCC.
- Promoting RC's name amongst plant employees and outside organisms, such as product and service providers, customers, companies that Arkema does business with.
- Presence of RC's ethics in Arkema's daily activities and different interventions.

The verification team arrived at the conclusion that, following the examination of Arkema Canada's management systems and though observations formed during this report that the Ethics and principles of Responsible Care on sustainable development guide the decisions and actions of the company and that a self-correcting system is in place to ensure continuous improvement. The verification terminates with the issuance of this report and does not necessitate any follow-up by the verification team.

Signed : *Marcel Émond*

Date : November 20, 2015

Verification Team Leader

For more information on this report or any preceding Responsible Care verification report, please communicate with the plant or the company's Responsible Care Coordinator:

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SUMMARY OF OBSERVATIONS BY VERIFICATION TEAM

Deficiencies Requiring Priority Actions

1. The team examined risk analysis documentation by a consultant done in 2000 to evaluate the scope of worst case scenarios and alternate scenarios and found that the analyses had not been revised or updated to reflect and confirm their impact inside as well as outside the plant (circle of influence) and had not been modified to include these risks despite the many changes done at the plant and the arrival of advanced technology. Not having updated the risk analysis on the worst case and alternate scenarios since 2000 constitutes an omission requiring a priority action (RE-120 et OP-28)
2. Promotion of RC's name inside the Arkema plant and during business dealings outside the plant were insufficient according to the spirit and letter of the practice codes. This finding is a deficiency requiring a priority action (ex: GE-100 à 102, GE-115, GE-116, GE-124, RE-132, GE-152) and the company should implement a process and practices to efficiently promote RC's name.
3. The verification team noted that the sales and supply chain of hydrogen peroxide and sales in Burlington, ON (other products) do not do a formal and documented evaluation of their customers after the first delivery and at regular intervals thereafter and, according to the degree of risk associated with the product, to ensure that the product is being manipulated safely at all times. This is a deficiency that requires a priority action (ex: GE-95, GE-117/118/119/120).
4. There does not exist a management process or procedure to ensure that their customer's drivers who present themselves at the plant for a load of hydrogen peroxide, are well trained on the safe manipulation of hydrogen peroxide, and that they have a basic knowledge of the safe manipulation of the product after having left the plant to complete their delivery.

Work in process

No work in process to note.

Improvement Opportunities (**)

1. *** Implement an internal audit process to ensure that conformance to all elements of the practice codes not covered by the AIMS/ISO management systems were verified.*
2. *** Modify the performance review form for hourly employees to evaluate that the preceding year's objectives were or were not attained.*
3. *** Modify the performance review for laboratory employees by adding a section reserved for safe behavior of the employee on the performance review.*
4. *** Canadian Sales management must read the verification reports submitted by the Canadian Association of Chemical Distribution (CACD) after auditing its 3 distributors to ensure that they meet all Arkema requirements regarding the manipulation and sale of its products.*

5. *** It is suggested that Arkema gives to the members of the CCC the same GR training given to its employees and may even use the CIAC web training.*
6. *** It is suggested that Arkema uses its role as leader together with the other company members present on the CCC to facilitate contact with the city's representatives to obtain the required web space to inform the population of CCC activities.*
7. *** Corporate procedure on management of hydrogen peroxide should be updated to consider the different concentrations (70%/50%/35%) of this product and ensure security and uniform safety for corresponding risks (Ex.: Section 6).*

Successful practices

1. ***The Sales Department continues to follow-up on their suppliers of raw material and evaluates their performance annually by taking note of all their deficiencies, by rating their performance and by estimating the cost of these deficiencies to be discussed with each supplier, asking them to correct the issues. This approach is considered a successful practice.***

1. INTRODUCTION

1.1 Responsible Care Verification

1.2

As a member of Chemistry Industry Association of Canada (CIAC), the most senior officer responsible for operations in Canada annually swears to the CIAC and its peers that the operations of the company conform to the expectations of *Commitment to Responsible Care* and are *guided by the Ethics and Principles of Responsible Care on sustainable development*.

Ethics and Principles of Responsible Care® on Sustainable Development

We commit ourselves to doing the right thing and, to be seen as doing so.

We commit ourselves, as well as our technologies and our commercial practices, to sustainable development – improving society, the environment and the economy. The Responsible Care principles are essential to our success and obliges us to:

- Improve people’s lives and the environment without causing further damage;
- Be responsible and attentive towards the public, especially with local authorities, who have the right to understand the risks and advantages of our activities;
- Take preventive measures to protect the health and the environment;
- Innovate while designing safer products and processes that will conserve resources and offer more value;
- Commit to our partners to ensure the healthy management and safety of our products, services and raw materials during their cycle of life;
- Understand and meet the expectations of our social responsibility;
- Work with everyone in order to develop public policies and standards that will improve sustainable development, act to promote legislative requirements, to respect and even surpass the spirit and the letter of the law;
- Promote sensitization to Responsible Care and encourage others to commit to their principles.

One of the factors of this commitment to Responsible Care is that Arkema Canada Inc. must, every three years, participate in an outside verification whose aim is to:

1. Give to our executive contact an outside perspective of their evaluation of the company and to verify that the company meets the expectations provided in the Commitment to Responsible Care, as well as informing them of matter that requires particular attention;
2. Identify opportunities to help the company with their practices and performance, comparing them to their peers and thereby supporting continuous improvement;
3. Contribute to the credibility of Responsible Care amongst company personnel and their contacts as well as public contacts in the industry globally;
4. Identify successful practices of the company and present them to their peers, members of the CIAC;
5. Support the identification of weak points common to all members of CIAC, to develop tools and information guides to improve the performance of all their members.

The verification will be done using a unique protocol, developed by the members of the association as well as others, including individuals that are critical of the chemical industry. The verification is done with a team composed of:

- Industrial experts with experience in Responsible Care;
- A public representative (usually someone with a history of the public and experience in Responsible Care acquired while serving on the CIAC National Consulting Committee); and
- One or several community representatives where the company's plant and installations are located.

Once completed, the verification report will be publically available on CIAC's website (www.canadianchemistry.ca). Arkema Canada Inc. must also distribute the report to interested parties in the community and to others, which is an integral part of the dialogue process.

Additional information on Responsible Care and/or the verification process can be found on the CIAC website www.canadianchemistry.ca, or by communicating with the CIAC at glaurin@canadianchemistry.ca or (613)292-8663 extension 233.

1.2 About Arkema Canada Inc.

- Arkema Canada Inc.'s sole manufactured product is hydrogen peroxide in different concentrations.
- The Becancour plant is the only Canadian production site and produces only hydrogen peroxide in different concentrations.
- Arkema Canada Inc. has a Canadian Sales Office situated in Burlington, Ontario. This office sells a multitude of products manufactured by other Arkema sites situated in the United States or elsewhere in the world.
- The Burlington office rents storage space for storing some of these products before distribution. The majority of Arkema products manufactured in the United States are delivered directly to Canadian customers.
- There are approximately 48 employees at the Becancour plant and 8 employees assigned to sales, administration and regulations located at the Burlington office.
- As of January 2015, the presidency of Arkema Canada Inc. was assumed by the President of Arkema I Inc. (USA).
- As of 2014, Arkema Canada Inc. Sales personnel is under the responsibility of Arkema Inc. (USA) management.
- The company's website is accessible under the heading Arkema.com.

1.3 About this verification

Arkema Canada Inc.'s RC verification took place from September 29 to October 2, 2015 at the Becancour plant. The CIAC's verification took place together with the AIMS corporate management system audit (Arkema) as well as ISO-9001, ISO-14001 and OSHAS-18001 management systems with a DNV registrar. Adhesion to ISO and OSHAS management systems is optional for Arkema sites. Plant management systems (AIMS) are partially audited each year followed by a complete audit every 3 years. Arkema's AIMS audit team is responsible for the audit but the DNV registrar ensures that the prerequisites for maintaining ISO-9001, ISO-14001 and OSHAS-18001 standards are met. CIAC verification team personnel worked together with Arkema auditors and DNV representatives to confirm the efficiency of the management system at the Becancour plant mainly for compliance with the management code. The CIAC verification team also verified the elements of the

management codes and accountability not covered by the AIMS management system. The verification team proceeded to interview the president of Arkema Inc. as well as the person responsible for the application of the codes of practice for the Canadian sales activities based in Burlington, Ontario, and with company personnel located in the United States responsible for the management of hydrogen peroxide (sales, distribution and transportation) for the Becancour plant. The team examined several documents to confirm that the applicable procedures and practices complied with the elements of the 3 practice codes. During the verification process, the team also interacted with personnel at the plant and several contacts outside the company. In Appendix 1, you will find a list of the interviews and their affiliations.

This is the sixth verification completed for Arkema Canada Inc. The first verification for the Oakville (Burlington) site was completed in 1997 and the first verification for the Becancour site occurred in 2000. The last verification for Arkema Canada (Burlington/Bécancour) dates back to September 2012.

The verification team was comprised of the following people.

Name	Affiliation	Representation
Marcel Émond	GMEÉ	<i>Team Leader</i>
André Denis	HDS Environnement	<i>Industrial Auditor</i>
S/o	S/o	<i>Public Auditor</i>
Robert Barbeau	Citoyen retraité	<i>Community Representative</i>
Carl Yank	S/o	<i>Industrial Auditor in training</i>

2. TEAM OBSERVATIONS REGARDING COMMITMENT TO RESPONSIBLE CARE (CODES, STEPS, COLLECTIVE EXPECTATIONS)

During Arkema Canada Inc.'s verification, the verification team examined documentation and practices to ensure that the company met expectations to Commitment to Responsible Care (152 elements and 28 steps and collective expectations). Taking into consideration all the aspects of Commitment to Responsible Care, the team focused their examination on points identified by the company or the team that related to:

- The follow up of improvement opportunities identified in the 2012 report.
- Conformance to practice codes and elements for activities under the responsibility of Arkema personnel located in the United States and France.
- Scrutiny of reference document /concordance to the 3 codes and 152 elements for conformance to Responsible Care for Arkema Canada Inc.
- Careful and targeted monitoring of Arkema's global management system (PFVA/PDCA) together with the Arkema auditor team and DNV registrar by reviewing procedures, practices and results of AIMS and ISO/OSHAS management systems to confirm their application and efficiency.
- Management and communication of plant risks and transportation/distribution activities - (OP-12 to 16).
- Process safety management - (OP-28 to 30).
- Elements of the code that relate to essential infrastructures and continuity of operations - (OP-49 to 55).
- Company's approach on resource conservation/ operation footprints - (OP-76 to 80).

- Communication, promotion and application of Responsible Care both inside the company as well as outside (suppliers/clients/carriers/distributors, etc.) - OP-104 to 114/GE-115 to 124/code regarding accountability.
- Interview with the president of Arkema Inc.; Ethics code, RC principles for sustainable development and social responsibility - (Appendix A).

While communicating their observations, the verification team will frequently reference the following observation categories:

1. **Deficiencies requiring a priority action** documents examples where the verification team observed specific actions by the company (or absence thereof) that are inconsistent with the codes, steps and collective expectations written in the Commitment to Responsible Care. Whenever possible and based on their experience and judgment, the team will communicate the whys of the inconsistency and how this observation is proof of a possible breach in the management system and/or ethics and principles, that understates the company's actions. The team may also give advice on how to address the situation.
2. **Work in progress** documents examples where the team observed actions already initiated by the company to address the breaches and flaws identified during the verifications, internal and external, and through the revision of previous activities, or that the company established major improvement opportunities.
3. **Successful Practices** documents examples that the team believes the company has implemented and greatly supports performance excellence, therefore, must be communicated to other members.
4. **Improvement Opportunities (**)** identifies examples where the team observed actions and decisions taken by the company that are in agreement with expectations written in the Commitment to Responsible Care but that the team believes the company can improve by considering alternatives or additional evaluations in their planning and decision processes.

The improvement opportunities are identified throughout the report by ** and the successful practices are identified in **bold characters**.

The verification team observations on how the company addressed their Commitment to Responsible Care are as follows:

2.1 Team Observations on Operational Code

2.1.1 Plant and equipment conception and construction

The situation is the same as the one that prevailed in 2012. Conception of the manufacturing process is under the responsibility of Arkema SA (France), where research and development centers (R&D) and conception and manufacturing of engineering and technology of hydrogen peroxide are situated. Arkema SA designs the engineering standards used for the conception and construction of its plants. Locally, the Becancour plant has their own engineering personnel who applies the standards and procedures of Arkema SA and, whenever needed, are assured the technical and engineering support of Arkema SA on the conception, construction and operation of plant equipment. When needed, the Becancour plant will hire specialists from an engineering consulting company in the region. All work done by a consultant is supervised by Arkema's personnel.

2.1.2 Operational Activities

The management systems required for conformance to AIMS version 4.1 and to ISO/OSHAS are documented and each operational task and activity are supported by a procedure and/or directive. Arkema AIMS version 4.1 management system comprises of 10 sectors with 61 sub-elements. The Becancour plant established an annual internal audit system to ensure conformance when external audits are performed by personnel from Arkema SA and the DNV registrar. There are no internal audits on RC elements even though a large portion of AIMS audited elements contribute to RC conformance.

The team examined documentation on risk studies performed by a consultant in 2000 to evaluate the scope of worst case scenario and alternative scenarios and concluded that these studies had not been revised or updated to account for and confirm that their impact, inside as well as outside the plant (influence circle), had not changed despite numerous modifications done at the plant and the arrival of advanced technology that had not been simulated. Not updating these worst case scenario and alternative scenario studies since 2000 is a deficiency requiring a priority action (RE-129 and OP-28).

All the risks to the operations and the environment are identified and quantified, and mitigating measures were implemented when needed. These incidents/accidents/near misses are reported and investigated, and root causes and corrective action plans are put in place. The personnel receives the necessary training to do their jobs safely and must pass comprehension tests. Any modification to equipment and/or procedures is followed by a training session that targets employees implicated. The Becancour plant follows up on performance criteria (KPI) and makes corrections when needed. Twice a year, plant management trains all employees on specific subjects related to the protection of health, safety and the environment. Plant management, with the support of their personnel, also have a safe behavior verification system of their employees (POC) to identify and eliminate at risk behavior at work. Members of the management team visited the plant to observe and identify improvement points or correct gaps, and the contents of these visits are discussed during Management Committee meetings. The plant has an industrial hygiene program to ensure the health of its employees and this program is monitored every 5 years by the CSSS (Qc). The next review will be held in May 2016.

2.1.3 Safety and Security

The company employs specialists to ensure that all plant activities are performed safely and securely. All operating processes are evaluated to identify the risks to personnel and operations, and the procedures are documented and strictly applied. All incidents and accidents must be reported and investigated and, according to their severity, must be communicated to North America's top management to ensure efficient follow-up to the corrective action plan. Arkema SA and Arkema Inc. (USA) management requires that performance criteria (KPI) be identified and strictly managed to help achieve the plant's annual operational plan. Evaluation of at risk behaviors (POC) is a crucial step in eliminating gaps in work practices and habits. There were 632 behavioral observations performed in 2014. Arkema Canada requires that their on-site service providers conform to the same safe standards and practices. They also evaluate their carriers and their storage facilities at regular intervals to ensure that their products are safely manipulated. The verification team examined several reports to ensure conformance to personal and operational safety.

The safety of the site is ensured by an agency that controls entrances and exits to the site. Suppliers' deliveries are done during the day (before 18:00) and visitors, subcontractors and suppliers are controlled by the guard who also gives the required basic safety training for those authorized to circulate in the plant. The site is fenced in and equipped with surveillance cameras placed in key locations and monitoring is done by the guard and the control room in the production department. Each employee and visitor/subcontractor has a key card that controls their movements throughout the plant. Safety activities are documented.

The computer system is protected by individual access codes and access to physical equipment and programs is limited to the IT specialist. Data is stored and protected at independent sites for Arkema SA and Arkema NA.

In order to eliminate the risks involved in the manipulation of hydrogen peroxide, the company has strict procedures and practices in health, safety and security, for the training and certification of their carriers' drivers employed directly by them, and for the transportation of hydrogen peroxide from the plant to their customers' sites.

The company has management processes and practices to safely control transportation activities under their responsibility. Twice a year, they have their carriers' health and safety performance evaluated by an independent firm to verify their conformance to Arkema directives. Arkema ensures the integrity of their tank trucks through quarterly preventive inspections and during the annual certification. Annual integrity checks of flexible hoses under pressure are done.

However, these procedures and practices are not required by carriers mandated by their customers, and there is no monitoring done to check, amongst others, the driver's identity (risk of sabotage/terrorist) and their knowledge of the safe manipulation of hydrogen peroxide at the customer's end.

There is no management process or procedure to ensure that their customer's drivers, who pick up a delivery of hydrogen peroxide at the plant, are well trained in the safe manipulation of hydrogen peroxide and have the basic knowledge to ensure the safety of the product after they left the plant. (Ex. : Operational codes section 4ii).

2.1.4 Protection of the Environment

All operations are performed in pressurized isolation and the only atmospheric emissions are accidental, fugitive and in the tank farm during loading and unloading operations. These emissions are minimal. Waste water is controlled by a retention system and analyzed before sent to the sewers. The site must operate according to the standards dictated by their authorization certificate issued by MDDELCC. Several parameters are followed regularly to minimize air and water discharges and plans for reducing emissions are implemented. The plant will decrease the extent of its fugitive losses to once again improve its performance in reducing emissions, no matter how minimal they be.

For a little over a year, the plant had an intermittent problem with the toxicity of its effluents and submitted a project to the MDDELCC to correct this situation. At the time of the verification, the company was still waiting for its certificate of authorization by the MDDELCC to commence the project and correct this problem.

2.1.5 Resource Conservation

In the Production Department, personnel uses performance programs to minimize the use of raw materials and energy. Performance criterion are implemented and managed hourly and daily. The Becancour plant maximizes recycling of nonconforming product. In their annual operational plan, the plant targets projects that reduce the use of energy, decreases the amount of atmospheric emissions, and discharges to sewers. Locally, Arkema Canada documents its activities to support sustainable development and communicates them to Arkema SA to be included in their corporate brochure. The plant recycles its alumina instead of disposing of it as waste.

Globally, Arkema provides its plants with a budget equivalent to 1.5% of its profits (ArkEnergy) to be used for capital expenditures that improves the environment or conserves resources. Within this budget, the Becancour plant had 3 projects approved in 2015, for a total value of 200K\$.

2.1.6 Promoting Responsible Care by Name

The company is proactive with its service providers at the plant and asks that they conform to Responsible Care in matters of health, safety and protection of the environment. They verify their carriers and storage facilities in Canada. The RC logo is installed on the administrative building's interior and exterior walls. However, the verification team noted some weaknesses in the promotion of Responsible Care by name. The employees were completely aware of matters pertaining to health, safety and protection of the environment but, barely understood Responsible Care and, for the large majority of them, are unable to connect their daily activities to the codes and practices of RC. RC visibility is inexistent in the process buildings (no posters or logos). The verification team noted that during their discussions with company representatives regarding sales activities and national and American distributors, they do not promote Responsible Care by name and do not even discuss RC with their customers or suppliers. No customer or supplier contracts or evaluation forms mention RC. Promotion of RC on their forms is not a general practice; as an example, their business cards. There is an absence of specific RC objectives in the annual plan of the plant for knowledge and promotion of RC, internally with its employees and externally with their suppliers and customers. Since 2011, the code requires that member companies promote RC by name and link their management practices with RC principles.

Promotion of RC by name inside and outside the plant, in Arkema's business dealings is lacking according to the spirit and the letter of the practice codes. This finding constitutes a deficiency requiring a priority action (ex.: GE100 to 102, GE-115, GE-116, GE-124, RE-132, GE-152) and the company should implement processes and practices that effectively promote RC by name.

2.2 Team Observations to Management Code

2.2.1 Company Expectations

The Becancour plant continuously evaluates all risks related to raw materials, the use of chemicals in its production and products, its operations and protection of the environment. As for its customers, procedures and practices are in place to ensure the safe manipulation of their product by customers while protecting the environment. The verification team examined several Arkema procedures regarding safe management of their customers, distributors and carriers for conformance to the elements in the RC practice codes. The selection criterion for their distributors is that they be members of the Canadian Association for the Distribution of Chemicals (CACD) and that they conform to the CACD distribution code. This practice is not documented. For the more dangerous products, they even inspect the customer's site for conformance to requirements and this, before the first delivery. The contents of the auto-evaluation questionnaire filled out by the customers for less dangerous products is verified at random for authenticity of their replies and to determine if a deeper analysis is required.

*** Management of Canadian Sales Dept. should acknowledge the verification reports by the CACD of their 3 distributors for conformance to Arkema's requirements regarding manipulation and sale of their products.*

**The verification team noticed that, after the first delivery, Sales and Supply Chain Department for hydrogen peroxide and for Burlington (the other products sold) do not formally evaluate and document their customers at regular intervals and according to the dangerousness of the products to ensure that the products are being safely manipulated at all times.
(Ex.: GE-95, GE-117/118/119/120).**

After reading the corporate procedure on the management of hydrogen peroxide, it was not obvious in Section 6 that the directives were applied to all the concentrations or only the 70% concentration. Since the risks of 50% and 70% peroxide are similar in nature, plant procedures do not make the distinction.

*** Corporate procedure on managing "hydrogen peroxide" should be updated to take into account the different product concentrations (70%/50%/35%) and to ensure uniformity on safety and security for equivalent risks (Ex.: Section 6).*

The verification team followed the Arkema/DNV auditors regarding plant operational and environmental risks and examined pertinent documentation including follow-up to HSE performance criterion. All plant service providers must follow Arkema's HSE training and be certified (Cognibox process) before being eligible for a contract.

Arkema Canada trains each employee on company regulations, management and operational procedures and each employee must pass a comprehension test before performing his tasks.

Becancour plant operates according to the criterion on its authorization certificate (CA) with conformance to all standards and regulations regarding discharges and emissions. When needed, the plant has projects to reduce its environmental footprint.

2.2.2 Third Party Expectations

Arkema Canada expects its service providers and customers to use the same approach as they do regarding practices of health, safety, security and protection of the environment. All necessary documentation is available on Arkema's website. Arkema continuously verifies themselves in HSE matters and, when needed, evaluates their site. Sales and/or technical representatives visit customers when needed and manage non-conformity reports when a deficiency or a requirement is identified.

2.3 Team Observations on Accountability Code

2.3.1 Communities near Operating Plants

Becancour plant managers communicate regularly with the Citizen's Community Committee (CCC). There are 5 companies in the Becancour Industrial Park that actively participate in the CCC meetings. This committee is autonomous and expects that the more important industries in the Becancour Park manage their activities in a responsible way. The company reports any activities that they deem may interest the CCC and receives, in a positive manner, all their suggestions or demands to improve their safe behaviors and decrease industrial inconveniences for the surrounding population. The CCC met 5 times in 2014. The company meets elected city officials and first responders (firefighters) when needed.

There have been no citizen complaints since 2012.

On September 30, 2015, the verification team attended a regular CCC meeting. The AIMS/DNV audit team members were invited to this meeting to be made aware of and to understand the way the committee functions and to exchange with the citizens before the beginning of the regular meeting. They appreciated this type of exchange on HSE questions and AIMS audit process. The CCC members were interested in receiving RC training as there were several new members in the group. They would also like to increase the audience on CCC and share with the population their knowledge and experience of their participation in the CCC. One of the ways would be to obtain communication space on the City's website and they mentioned that the companies present at the CCC should be able to help them.

*** They suggested that Arkema gives to the members of the CCC the same RC training that it gives to its employees and even use the CIAC's web training.*

*** It was suggested that Arkema uses their role as leader with the other member companies present at the CCC to help contact the city's representatives to obtain website space required to inform the population of CCC activities, when needed.*

2.3.2 Others

The management team is involved in the local and regional scene as their managers participate in various regional CIAC activities related to the protection of health, safety, and the environment and also by promoting RC. They also participate as members of different committees during CIAC meetings held with various government departments of Quebec.

3. TEAM OBSERVATIONS REGARDING COMPANY'S MANAGEMENT SYSTEM

One of the requirements of Responsible Care is that companies have self-correcting management systems capable of identifying and responding to deficiencies thereby promoting continuous improvement throughout the company, its commercial activities, its plants, its functions and monitoring implementation of its commitment to Responsible Care.

The management team verified Arkema Canada's management systems and compared their characteristics to a self-correcting management system identified in the CIAC Guide on management systems. Here are the team's observations on the company's management system:

Arkema's AIMS management system is based on protocols of the International Safety Rating System, version 6, to which ISO-9001;2008 on quality, ISO-14001;2008 on environment and OSHAS-18001 on operational safety were added. The AIMS system is managed by Arkema SA and/or Arkema Inc. and the contents and requirements of ISO/OSHAS were confirmed by the presence of a DNV registrar. AIMS management system is divided into 10 sections and 61 elements. The auditors use a verification guide comprised of 688 possible questions to ensure conformance to these elements.

The AIMS audit of the Becancour plant only covers activities that are the responsibility of plant personnel. Responsible Care covers all elements of the 3 codes including management systems and practices on products sold by Arkema Canada Inc. and the sale of hydrogen peroxide by Arkema Inc., as well as logistic activities. Management systems for those activities not under the responsibility of the Becancour plant must ensure the safe handling of Arkema products at all times, from "cradle to grave" and the RC 3 practice code requirements.

The verification team examined the requirements of the reference grid elements of RC practice codes and the link between AIMS version 4.1 management system procedures. Certain elements were missing, which were mainly for activities under Arkema Inc.'s or Arkema SA's responsibility (refer to text on page 19 "cycle checks" for more information). Becancour's sole customer is Arkema Inc. and Arkema SA is the designer and process manager for the production of hydrogen peroxide.

During the verification, the team examined the AIMS audit schedule and identified a section of AIMS that ensured conformance to RC codes. These elements completely covered requirements for operations and partly covered the elements of the management and accountability codes. During a telephone conference, the team met and/or discussed with Arkema Canada and Arkema Inc. management, conformance to RC for sales, transportation, storage and distribution.

They also discussed, during a telephone conversation with the president of Arkema Inc., Responsible Care principles for sustainable development and the application of RC ethics. Since January 2015, Arkema Inc.'s president also has the responsibility for Arkema Canada's business affairs. The president of Arkema Inc. mentioned that he completely endorses the goals and activities of Responsible Care.

The verification team divided themselves into 2 groups to efficiently team up with AIMS auditors and the DNV representative on activities that ensure conformance to code elements.

The contents of the management system are the same since the last verification in September 2012.

The CIAC verification team attended the auditors' closing meeting and were satisfied with their conclusions. There is one major non conformity which is the search and identification of root causes on an incident and accident investigations. There are several minor non conformities, observations and improvement opportunities mainly on improving a management system that is always in continuous improvement mode by applying best practices from other Arkema plants throughout the world. The Becancour plant must submit their action plan to correct their major non conformity by December 17, 2015. Plant managers have until September 2016 to follow up on the numerous minor non conformities, observations and improvement opportunities noted by the AIMS/DNV audit team members. There were several noteworthy practices observed by the auditors throughout the week. The AIMS audit report is for internal use only.

Therefore, the CIAC verification team was not privy to the AIMS team comments but were given a general idea of how to better target procedures, practices and activities in place at the plant.

3.1 Observations on Planning Cycle

During the Planning cycle of the management system, the company decides what their objectives would be and how they would attain them. The company does not only control its inside operations but also takes into consideration the expectations of external interveners, regulations, Commitment to Responsible Care and any other landmarks for industrial performance. By examining the Planning cycle of Arkema Canada Inc.'s management system, the team observed that:

The verification team, together with the AIMS/DNV auditors, examined the Planning cycle. Arkema Canada Inc. has management systems to determine the company's objectives both global and national. Arkema Canada must conform to AIMS/ISO/OSHAS overall requirements in operating their Becancour plant as well as Responsible Care elements for sales, transportation, storage and distribution of their products, from their plant or any other Arkema production centers. Performance indicators are identified and are monitored monthly through ISOVISION/IMPACT databases. This database is accessible to all Arkema management (Canada and USA).

Plant risks are identified for process safety and equipment maintenance as well as for the health and safety of their employees and the protection of the environment. The company maintains a preventive maintenance plan and has a predetermined schedule for all plant equipment. Everything is documented and communicated to implicated personnel and organisms. Every 5 years, identified risks and operational procedures are reviewed. Laws and regulations are examined and the company has a system in place to ensure conformance to these laws and regulations. Incidents, accidents and near misses are reported, investigated for their root cause and corrective action plans implemented. Everything is documented in IsoVision software (plant) and IMPACT (corporate) and is monitored monthly during Management Committee and during multiple department reviews.

For short and long term planning, Arkema Canada Inc. takes into account Arkema SA and Arkema Inc. requirements and demands. Akema Canada has an annual operation plan where their annual objectives are identified to meet the requirements of good business conduct and HSE. The input used for the preparation of

these objectives are corporate requirements, results of internal audits, incident and accident investigations, non-conformity reports and annual management reviews. An action plan and deadlines are developed for each objective. Everything is documented. All the employees receive the required training to efficiently and safely accomplish their tasks.

Arkema Canada Inc. (Becancour plant) has an articulated emergency response plan (ERP) including a pandemic plan and concurs with Arkema Inc.'s emergency plan to respond to emergencies regarding their products. Locally, the plan is regularly enacted with drills inside the plant that sometimes include outside responders.

Arkema SA has an operational continuity plan for each division and Arkema Inc. is responsible for the Hydrogen Peroxide Business Continuity Plan.

The plant documents all its processes and organizational procedures through cartography.

3.2 Observations on DO Cycle

During the DO cycle of the management system, the company converts its decisions from the PLANNING cycle into action and ensures that everyone has the expertise and knowledge required. It is understood that the company has an organizational structure, attributes responsibilities to appropriate personnel, gives adequate training and tools for the execution of these action plans and develops standards, processes and programs, when needed.

As for the DO cycle of Arkema Canada Inc.'s management system, the team observed the following:

Arkema has an organizational structure that clearly describes the tasks and responsibilities between Arkema SA (France), Arkema Inc. (USA), and Arkema Canada Inc. The Plant Manager reports to the Global Manufacturing Director of Arkema Inc. (USA). Becancour's plant management team and Burlington's technical sales office are responsible for conformance to RC in Canada.

The Becancour site and Canadian Sales Office in Burlington, ON apply Arkema Inc. corporate policies and procedures and adapt them to their specific type of activity (sales, transportation and storage for the Burlington site, and production, transportation/logistics for the Becancour site). All production activities, sales and HSE are supported by procedures that are revised at regular intervals. All employees have a job description and responsibilities and they receive the required training to accomplish their tasks safely and efficiently. The Becancour plant's external communication is done mainly through the CCC but also with regional and local organisms, when necessary.

The Becancour plant establishes annual objectives for all sectors of activity and monitors the results every two weeks during the Management Committee meetings. Operation supervisors meet weekly and each service holds monthly meetings to monitor their activities. An annual performance review is done on every employee and also if necessary, when needed. The highlights of each department are discussed every 2 weeks at the Management Committee meeting. Everything is well documented.

The Purchasing Dept. continuously monitors their raw material suppliers and annually evaluates the performance of all their suppliers noting all deficiencies, giving them a performance rating and estimating

the cost of these deficiencies for further discussion with each supplier and demanding a correction to the problems. This approach is considered a successful practice.

The Management team and supervisors identifies performance criterion (KPI) required to meet the business plan objectives and performance in HSE. The KPI, according to their nature, are monitored daily, weekly and/or monthly and are well documented and available to all employees concerned. Corrective action plans are implemented to obtain the required performance. The company installed TV monitors in the plant cafeteria and continuously broadcasts information on Arkema activities and also includes training on health, safety and protection of the environment that are beneficial to its employees.

The verification team examined, in detail, the human resources portion of their management system, which occasionally heads certain activities in health and safety such as the integration of new employees, performance reviews and training. The company gives the equivalency of two weeks of training per year per employee. Management showed that the PDCA process was well applied for accomplishing tasks. However, there are two elements that may show improvement on performance reviews. The performance review form for hourly employees does not include the results of the objectives set for the employee for the preceding year as it does for staff employees. The performance review form for laboratory personnel does not have a specific section in health and safety that evaluates their safe behaviors.

***** Modify performance review form for hourly employees to evaluate the results of the objectives set forth for the preceding year.***

***** Modify performance review form for laboratory employees by adding a section to evaluate the employee's safe behaviors.***

3.3 Observations on EXAMINE cycle

During the EXAMINE cycle of the management system, actions done through the DO cycle are evaluated to ensure they are executed according to the action plan, that the desired results were obtained and that they promote continuous improvement. In general, the management systems and their components are revised according to the employee's competencies with delegation of responsibilities, internal and external verifications taken, incidents identifying causes and performance measures taken and revised.

By checking the EXAMINE cycle of Arkema Canada Inc.'s management system, the team noticed that:

All the incidents, accidents and near-misses (almost incidents) were reported and documented (form). They were investigated for root causes and the corrective action plans were monitored through ISO-Vison/IMPACT software. The Becancour plant also has a Behavior Based Safety program (POC) to eliminate risks at their source. These behavior based observations are done by all the employees with supporting documentation.

Plant management meet weekly to manage operational plans, equipment maintenance and HSE activity reviews. All critical equipment is identified and submitted through a specific preventive/predictive maintenance program. The preventive/predictive maintenance program of all equipment accounts for 60% of the work done by maintenance personnel.

The Management Committee meets monthly to ensure that the business plan is under control and that the work being done to attain the objectives and realization of action plans including HSE activities, meet all expectations.

There is an annual management review for all activities regarding business conduct and objective achievement and the preparation of the plan for the following year. Highlights of the 2014 annual management review were thoroughly examined by the AIMS auditors (section 10 of AIMS protocol). Verification of AIMS/ISO-9001/ISO-14001 and OSHAS-18001 management systems were amongst the internal audit. Customer and supplier audits were also part of the external audits performed as required for conformance to ISO-9001:2008 and RC practice codes as well as conformance to AIMS version 4.1 management system by Arkema and DNV auditors. Also, corporate audits (Arkema USA) are performed every 3 years on health, safety and protection to the environment as well as process safety management (PSM). All these activities are documented including corrective action plans to correct deficiencies or to realize identified improvement opportunities. Conformance to RC practice codes was not part of an internal verification since the last verification in 2012.

*** Implement internal audit process to verify conformance to all practice codes not covered by the management system or by AIMS/ISO audits.*

The verification team examined cross reference documents to confirm conformance to 152 RC code elements. The team found that the Becancour plant had still not implemented an internal verification process to ensure that all services under Arkema Inc. (sales, transportation, distribution) and Arkema SA (technology and engineering) conform to the elements in the 3 RC codes of practice (shown as N/A in the reference grid).

3.4 Observations on ACT cycle

During the ACT cycle of the management system, the company transforms the results from the VERIFY cycle into corrective actions for continuous improvement. It is necessary to revisit the PLAN cycle to see if there were changes to the objectives, action plans, policies and processes that help attain the company's objectives. Revision of the ACT cycle must take into consideration that the company took charge of the verification and revision of deficiencies; if the company's performance was communicated internally and externally; that the employee and contractor performance was honored and corrected, etc.

In examining the ACT cycle of Arkema Canada Inc.'s management system, the team observed that:

The IsoVision (French) software system is used to monitor all management activities for the Becancour plant and IMPACT software (English) is used for Arkema Inc./SA. IsoVision software is structured to receive all information on reports, investigations and follow-ups to such an event, of the follow-up and progress of action plans including management audits and RC verifications. A responsible person is assigned for each event. IsoVision is a tool used by management and personnel who are required to follow-up on projects or action plans.

Management (Management Committee) is responsible for monitoring the work that has to be done and is identified as such in IsoVision.

The verification team examined, with Arkema's corporate auditors and DNV registrar, several incident reports (NCR) to better evaluate the efficiency of their reports and investigations and looked for corrective action plans for all incidents and accidents.

4. TEAM OBSERVATIONS ON RESPONSIBLE CARE ETHICS AND PRINCIPLES ON SUSTAINABLE DEVELOPMENT

Each CIAC Member Company commits formally to the ethic “do the right thing and be seen doing as such”. This ethic, with its principle being sustainable development, has the objective of guiding the company’s decision-making processes and practices. During the verification, the team examines how the ethic is adopted and applied throughout the company and how the principles are consistent with the way the company is managed.

The verification team closely observed the decision and action process, and compared Arkema Canada Inc.’s characteristics to those of a company guided by RC ethics and principles on sustainable development as shown in Responsible Care Commitment (Appendix E). They also found that local management has a limited influence on product management, customer services and other activities under the responsibility of head office (transportation/distribution/storage).

Team observations on the practice of Responsible Care ethics and principles regarding sustainable development are as follows:

- Their ethical approach respects and exceeds the letter and the spirit of the law for activities under their control.
- Year after year, the company is perceived by CCC members as being open and continuously improving themselves.
- The company tries not to minimize any damage while improving people’s lives and protecting the environment. Operational risks of the Becancour plant are identified and control measures are in place. Emergency practice drills are enacted several times a year internally and some drills even include external responders (firefighters/police, etc.).
- The company informs the general public, CCC members and first responders of the risks, dangers and what actions to take in the case of an emergency.
- The company takes necessary preventive measures to protect the health and the environment. It conceives and implements plans to reduce emissions to air and water.
- The company proactively manages their KPI and monitors its activities for continuous improvement.
- The company implements improvement plans and capital for resource conservation.
- The company requires that their service providers (plant/transportation/distribution/storage) conform to Responsible Care related activities, especially those that pertain to HSE.

Responsible Care ethics and principles on sustainable development are a part of Arkema Canada’s management system and of the approach they use to conduct their operations. The company has a complete and structured program in health, safety and protection of the environment and it works constantly to decrease their environmental footprint. The company takes the necessary measures to improve themselves. Arkema SA publishes their plan and activities separately and supports a global organized effort on sustainable development. As mentioned in item 2.1.5, resource conservation is part of its effort for sustainable development.

Our interview with the president of Arkema Inc. confirmed the company’s total commitment towards RC principles and activities throughout Canada and the United States, especially in HSE.

Since 2014, the verification team found that Becancour plant management is not as visible in the public place to promote Responsible Care, their ethics and principles.

The internal communication program emphasizes health, safety and protection of the environment for employees and the company's outside communication with multiple responders is very well structured. However, they must include RC and its HSE activities (refer to article 2.1.5 of this report).

5. VERIFICATION TEAM CONCLUSION

After verification of the company and the observations in this report, the verification team arrived at the conclusion that the ethics and principles of Responsible Care on sustainable development guide the decisions and actions taken by the company and that a self-correcting system is in place to ensure continuous improvement. The verification ends with the publication of this report and requires no further actions by the verification team.

Marcel Émond

Team Leader for CIAC verification

November 20, 2015

COMPANY'S REPLY REGARDING VERIFICATION TEAM'S REPORT

In the name of Arkema Canada Inc., I reviewed this verification report. The observations and conclusions found in this report were discussed with the verification team.

Arkema Canada Inc. will communicate the findings of this verification with its peers at the next meeting and will discuss these findings with our interveners, including community representatives close to our site.

We will take into account the improvement opportunities identified by the verification team and assist the CIAC in sharing our success practices with other members of the association. We will develop and execute action plans in response to the deficiencies requiring a priority action. Our progress on the execution of these plans will be discussed at our annual re-commitment to Responsible Care and will be communicated to the verification team at our next verification.

Josée Lafrenière
HESQ Manager
Arkema Canada inc.
2015-11-16

INTERVIEW LISTS

A: Company Personnel

Name	Position	Location
Vacant	Plant Manager	Bécancour
Michel Hamelin	Human Resources/administration Manager	Bécancour
Marc Descoteaux	Engineering & Maintenance Manager	Bécancour
Jocelyn Vermette	Production Manager	Bécancour
Luc Lacroix	Purchaser and Maintenance Coordinator	Bécancour
Pierre Pépin	Controler	Bécancour
Josée Lafrenière	HSE and Qualité Manager	Bécancour
Luc Lecompte	Environment & Laboratory Coordinator	Bécancour
Michel Baillargeon	Distribution & Logistics Coordinator	Bécancour
Ross Anderson	Application Services Mgr & Product Steward.	Arkema Inc. (USA)
Rich Rowe	President & CEO Arkema Inc.	Arkema Inc. (USA)
Robert Roth	Technical & Regulatory Affairs Mgr	Arkema Canada Inc. (Burlington)

B: External Interveners

Nom	Compagnie / Organisme	Position	Location
Kevin Pecqueur	Arkema SA	Lead Auditor	Paris
Didier Vallier	DNV	Registrar Auditor	Paris
Delphine Figuière	Arkema SA	Auditor	Paris
Jean-Luc Trouvat	Arkema SA	Auditor	Paris
Thierry Ziegler	Arkema SA	HES Manager Arkema SA	Paris
Guillaume Wack	Arkema Inc.	HSE Manager Arkema Inc.	Houston
Citizens (7)	Citizen's Committee	CCC Members	Bécancour.