



**Chemistry Industry Association of Canada**    **Association canadienne de l'industrie de la chimie**

# **RESPONSIBLE CARE<sup>®</sup>**

## **VERIFICATION REPORT**

### **ARKEMA CANADA INC.**

**October 2 to 5, 2018**

#### **Warning**

This report was realized by a team of auditors united by the Chemical Industry Association of Canada (CIAC) in order to guide the above-mentioned company in respecting their obligations to Responsible Care as a member of CIAC). The contents of this document reflect the judgement of a team of auditors according to the information made available to them at the time of the preparation of this document. It is the duty of the CIAC member-company being verified to interpret the results and recommendations included in this report and to enforce them at their convenience. Any use of this report, in part or in whole, or any decisions taken by a third party are the responsibility of the third party. Even though CIAC member-companies must share the results of this document with any interested party, the Association, member-companies, employees, consultants or any other intervener that participated in the preparation of this document are not responsible for any wrong or damage that a third party may have suffered following a decision or measure taken based on this report.

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# SUMMARY

This report contains the observations and conclusions of the CIAC verification team for the verification of Responsible Care of Arkema Canada Inc. The verification steps were discussed during the operation and planning meeting that took place on October 1, 2018 between the members of the verification team to finalize subjects that would be jointly verified by the AIMS audit team and DNV-GL (Becancour plant only) and those who were apt to verify RC not covered by AIMS/DNV-GL. The RC verification was then done jointly with Arkema's corporate audit team and the DNV-GL registrar. The joint verification took place from October 2 to 5, 2018, at the production site of Arkema Canada Inc. situated in Becancour, Quebec. The AIMS DNV-GL audit team ensured that the procedures and practices at the Becancour plant conformed to the 10 elements of the AIMS management system and conformed to ISO-9001;2015, ISO-14001;2015 and OSHAS-18001 that cover the elements of the code of operations and several specific elements of management and the responsibilities that applied to the Becancour plant activities.

The RC verification covered the sales of hydrogen peroxide sold solely by Arkema Inc. (USA) and the other products fabricated by Arkema plants worldwide and sold by Arkema Canada Inc., whose sales personnel are located in Burlington, Ontario. RC verification (CIAC) covers activities such as logistics, transportation, storage and distribution, that are the responsibility of personnel located at the Arkema Inc. head office in King of Prussia (KoP), Pennsylvania, USA and, for other Canadian activities located in Burlington, Ontario. Arkema AIMS auditors and those from DNV-GL do not specifically cover the relation the company has with the community.

Taking into consideration all the aspects of commitment to Responsible Care during this verification, the RC verification team examined, jointly with the Arkema auditor team and those from DNV-GL, the elements of the code of operations including management systems, activities, procedures and practices of the Becancour plant. RC verification team conducted telephone interviews and examined pertinent documentation with Arkema's personnel concerning sales, transportation and other logistic activities to ensure conformance to the elements of the three codes of practice.

The members of the RC verification team also conducted a telephone interview with the president of Arkema Inc. regarding RC activities, mainly to discuss the application of ethics and guiding principles of RC. Arkema Inc. is a member of the American Chemistry Council (ACC) and also conforms to RC. The company obtained RC certification in 2013 (RCMS) at their head office for their management systems and practices in Health, Safety and Environment and were re-certified in 2016.

It is noted that Becancour's Consulting Citizen's Committee (CCC) has been inactive since 2016. This Responsible Care verification is the seventh one for Arkema Canada Inc. The last verification was performed from September 29 to October 2, 2015. During the present verification, the team examined, among others:

- Company activities subject to conformity to Responsible Care codes that are the responsibility of Arkema Inc. (USA) for Arkema Canada Inc. Activities; transportation, sales, storage and distribution.
- Canadian sales, storage and distribution activities that are the responsibility of the Burlington, Ont. office. The personnel report to the leaders of Arkema Inc.
- The relation between Responsible Care Codes of Practice Reference Guide and the procedures/practices of the Becancour site (AIMS/ISO) as well as the Burlington ON and Arkema Inc. Leaders (King of Prussia, PA) for the activities that do not fall under Becancour plant responsibilities.
- Policies and practices for local, Canadian and Corporate social responsibility.
- Contribution and transparency of the plant management team towards community dialogue and efficient operation of the CCC.

- Promotion of Responsible Care by name among its employees and outside organisms such as product and service providers, customers and companies that Arkema Canada does business with.
- Presence of RC ethics throughout the daily practices of different interveners of Arkema.

Jointly with the team of auditors AIMS and GNV-GL, among others;

- The 10 elements of AIMS management system that encompass ISO-9001, ISO-14001, OSHAS-18001 management systems and several of the 152 codes of practice of Responsible Care.

Among others;

- Procedures in place to identify acts of malice and how they are managed.
- Multiple activities and practices to ensure operational safety and protection of the environment.
- Upgrade Risk Analysis done in 2000 (worst case scenario and alternate scenarios)
- Management of safety process including risk identification, application of emergency response plan, and risk communication plan.
- Company's approach to sustainable development.
- Management systems to maximize resource conservation and reduce energy consumption.
- Process to identify essential infrastructures to ensure continuity of operations in case of a major event.

The verification team examined follow ups and implementation of corrective plans for the 4 omissions requiring a priority action (LEAP) and the 7 improvement opportunities identified in the 2015 RC report. The verification team is satisfied with corrective plans implemented since 2015. There was one omission (LEAP) from the RC 2015 verification still in progress during this verification and the incomplete activity is identified in Work in Progress (WIP) in this report.

The verification team concluded that the management systems of Arkema Canada Inc. and the observations detailed in this report, that the ethics and guiding principles of Responsible Care on sustainable development guide the decisions and actions taken by the company and that a self-corrective management system is in place to ensure continuous improvement. The verification is ended with the issuance of this report and requires no further follow up by the verification team.

Signed : *Marcel Émond*

Date : November XX, 2018

Verification Team Leader

For further information on this report or the preceding Responsible Care verification report, please communicate with the plant in your community or the company's Responsible Care coordinator.

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## **SUMMARY OF OBSERVATIONS BY VERIFICATION TEAM**

## Omission requiring a priority action (LEAP)

No identified subject or activity.

## Work in progress (WIP)

WIP : The management team of the Becancour plant no longer have direct communication with the citizen representatives since the end of the regular meetings with the CCC. If possible, find a way, with the other CIAC members in the industrial park, to reactivate community dialogue with the citizens.

TEC: The hydrogen peroxide Product Stewardship manual is presently under revision. It shall include guidelines necessary to clarify the actions taken by the sales force for different hydrogen peroxide concentrations before first delivery and ongoing customer verification to confirm safe handling of hydrogen peroxide. The revised contents of the manual should confirm compliance with the Arkema procedures/guidelines and ability of the customers to handle hydrogen peroxide (i.e.: change of customer personnel, deficiencies reported by Arkema sales force, etc.).

## Improvement Opportunities (I.O.)

I.O. – No mention of conformity to RC in the process sheets for internal audits.

I.O. – Inspection form for tank trucks (FAB-27) does not confirm the verification of the pre-departure inspection done by the driver before leaving the plant with a loaded tank truck/Isotainer. The company should ensure that the driver does the pre-departure inspection as required by the transportation law.

I.O. – HSEQ manual, the job description for the plant manager does not mention conformance to or promotion of RC.

I.O – Focus on promoting RC in outside documents, eg : during training sessions with outside people (eg. : MDDEL employees, SAAQ employees), procedures given to customers - Hydrogen peroxide spill procedure , plant website, etc).

## Successful Practices (bold/italic characters)

***The verification team considers a successful practice the entire management system and practices implemented in IMPA3:46 PM for the identification of "POCs" and "IGPs" until correction of omissions is done.***

***Globally, the application of AIMS management system supports the ISO-9001, ISO-14001, OSHAS-18001 systems as well as future conformance to ISO-50001.***

***Paul Léonard's video (Arkema Inc.) shows the company's awareness of using a safe approach while conducting Arkema's activities and the responsibility of all. It is an example of the application of the ethics of RC.***

## 1. INTRODUCTION

### 1.1 About Responsible Care verification

As a member of Chemistry Industry Association of Canada (CIAC), the highest leader of operations in Canada, annually says, to CIAC and its peers, that the operations of the company conform to expectations and commitment to Responsible Care and are guided by the ethics and principles of Responsible Care on sustainable development.

### **Responsible Care® Ethics and Principles on Sustainable Development**

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

We commit ourselves, as well as our technologies and commercial practices, to sustainable development – to social, environmental and economic improvement. The Responsible Care principles are essential to our success and oblige us to:

- Look for ways to improve people’s lives and the environment without causing any damage;
- Be responsible and attentive to the public, especially the local communities, who are entitled to understand the risks and advantages of our activities;
- Take preventive measures to protect health and the environment;
- Design products and processes that are safer, that preserve resources and offer a greater value;
- Ensure our partners by committing to healthy management and safety of our products, services and raw materials during their entire life cycle;
- Understand social responsibility expectations and meet them;
- Work with all interveners to elaborate public policy and standards to improve sustainable development, promote and respect, even surpass legislative requirements;
- Promote Responsible care and encourage others to commit to their principles.

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

1. Give to the executive contact an outside perspective for their evaluation of the company and, that the company meets expectations and commitment to Responsible Care, as well as informing on certain points that require a particular attention;
2. Identify opportunities to help the company in the study of its practices and compare performance to their peers thereby supporting continuous improvement;
3. Contribute to the credibility of Responsible Care with company personnel and interveners, as well as public interveners of the industry;
4. Identify the company’s successful practices and present them to their peers, members of CIAC;
5. Support identification of weak spots common to the other CIAC members to develop tools and information guides to improve the performance of all the members.

The verification uses a unique protocol, developed by members of the association and others, including individuals that are critics of the chemical industry. The verification team is composed of:

- Industrial experts with experience in Responsible Care;
- A representative from the public, usually someone with antecedents of public interest and experience with Responsible Care by serving on the CIAC national consulting committee; and
- One or several community representatives where the company operates its plant and installations.

Once completed, the verification report becomes available publicly on the CIAC website ([www.canadianchemistry.ca](http://www.canadianchemistry.ca)). Arkema Canada Inc. must also distribute the report to interested people within the community and interveners, as part of the dialogue process.

Additional information on Responsible Care and/or the verification process is available at their website [www.canadianchemistry.ca](http://www.canadianchemistry.ca), or by communicating with CIAC at [glaurin@canadianchemistry.ca](mailto:glaurin@canadianchemistry.ca) or calling (613)292-8663 ext. 233.

## 1.2 About Arkema Canada Inc.

- The only product made by Arkema Canada Inc. at the Becancour plant is hydrogen peroxide in different concentrations.
- Arkema Canada Inc. has a Canadian sales office in Burlington, Ontario. This service sells to Canada a multitude of products made by other Arkema sites situated either in the United States or elsewhere in the world.
- Arkema Canada Inc. is part of the Oxygenated division, one of 9 business units of Arkema SA. For more information, refer to their website at [www.arkema.com](http://www.arkema.com).
- The Burlington office rents warehouse space for certain products before distribution to customers. Most of Arkema's products are produced in the United States and delivered directly to its Canadian customers.
- The Becancour plant has approximately 51 employees. There are 7 employees in the Burlington office that are responsible for the administration and conformance to Canadian regulations and for Customer Service.
- The presidency of Arkema Canada Inc.'s is assumed by the president of Arkema Inc. (USA).
- Sales personnel of Arkema Canada Inc. are under the responsibility of management team of Arkema Inc. (USA). Their head office is situated at King of Prussia (KoP) in Pennsylvania, USA.

## 1.3 About this verification

The Responsible Care verification of Arkema Canada Inc. took place from October 2 to 5, 2018 at the Becancour plant. This CIAC verification was conducted jointly with the corporate auditors of the AIMS management system (Arkema) including ISO-9001, ISO-14001 and OSHAS-18001 management systems under the responsibility of DNV-GL registrar. Adhesion to the ISO and OSHAS management systems are optional for Arkema plants. AIMS plant management system is partially audited every year and is followed by a complete audit every 3 years. The Arkema verification team (AIMS) is responsible for the audit but the representative from DNV-GL registrar ensures that the pre-requirements are in place for conformance to ISO-9001, ISO-14001 and OSHAS-18001 standards. The CIAC personnel in the verification team worked together with the Arkema auditors and the DNV-GL representative to confirm efficiency of the management system at the Becancour plant and to ensure conformance to the 152 elements of the RC codes. The CIAC verification team also separately verified the elements of the RC codes and Accountability not covered by the AIMS auditors. The CIAC verification team held a telephone interview with the president of Arkema Inc, an interview with the person responsible for the application of the practice codes for the Canadian sales office in Burlington, ON, and with company personnel situated 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 procedures and practices in force conform to the elements of the 3 practice codes of RC. During the verification process, the team also held interviews with a large range of plant personnel and several outside interveners. The list of interviews and affiliations is found in Appendix 1.

This is the seventh complete verification of RC for Arkema Canada Inc. The first verification for the Oakville (Burlington) site was completed in 1996 and the first verification for the Becancour site occurred in 2000. The last Arkema Canada Inc. verification (Burlington/Becancour) took place in October 2015.

The verification team were composed of the following people.

<b>Name</b>	<b>Affiliation</b>	<b>Function</b>
Marcel Émond	GMEE	<i>Team leader</i>
André Denis	Retired from chemical industry.	<i>Industry's Verifier</i>
Gilberte Cassan	Becancour citizen	<i>Community Representative</i>

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

During Arkema Canada Inc.'s verification, the verification team examined documentation and practices to ensure that the company meets expectations documented in Commitment to Responsible Care (152 elements as well as 28 milestones and collective expectations). Taking into consideration all the aspects of commitment to Responsible Care, the team focused on the points identified by the company or the team on:

- Follow up on the omissions requiring a priority action (LEAP) and improvement opportunities (I.A.) identified during the October 2015 RC verification.
- Conformance to RC codes of practice for the activities under the responsibility of Arkema Inc. personnel located at their head office (KoP).
- Rigorous exam of reference documents/ concordance (reference grid) as per the 3 codes and 152 elements supporting conformance to Responsible Care for Arkema Canada Inc.
- Careful and targeted follow up of several elements of the entire management system for the Becancour plant with the Arkema auditor team and DNV-GL registrar that is; reviewing procedures, practices and results of AIMS management system and ISO/OSHAS to confirm that they are being applied and their effectiveness.
- Reviewing HSEQ manual describing, among others, the activities of the plant in matters of health protection, operational risk management and protection of the environment.
- Management of risk communication and transportation /distribution activities - (OP-12 à 16).
- Management of process safety - (OP-28 à 30).
- Plant emergency response plan (PMU) and, logistic and transportation activities (TERP) - OP-31 to OP-47.
- Follow up on conformance to Quebec regulations and plant performance in environment (water/air).
- Company approach on resource conservation/operational footprint - (OP-76 à 80).
- Communication and promotion of Responsible Care both inside and outside the company (suppliers/customers/carriers/distributors, etc.) - OP-104 à 114 and GE-115 à 124 (accountability code).



- Interview with the president of Arkema Inc.; code of ethics, principles of RC on sustainable development and social accountability - (Appendix A).

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

1. **Omissions requiring a priority action (LEAP)** documents examples where the verification team observed specific actions by the company (or an absence of action by the company) that is inconsistent with the codes, milestones and collective expectations as described in Commitment to Responsible Care. If possible, the team will communicate, based on their experience and judgement, the reason for this inconsistency and how this observation is proof of a breach in the management system and/or ethics and principles, underestimating the actions of the company. The team may also give advice on how to solve the situation.
2. **Work in progress (WIP)** documents examples where the team observed actions already started by the company to solve the breach or flaws identified during a verification, inside or outside revision of preceding activities where the company established significant improvement opportunities.
3. **Successful practices** documents examples that the team believes the company implemented that strongly supports performance excellence and should be communicated to the other members.
4. **Improvement opportunity (I.O.)** identifies examples where the team observed actions and decisions that strongly agrees with the expectations described in Commitment to Responsible Care but that the team believes the company could improve by considering additional alternatives or evaluations during the planning and decision process.

These improvement opportunities are identified by **(I.O.)** in the report and successful practices are written in **bold** script.

The observations of the verification team on how the company addresses commitment to Responsible Care are as follows:

## 2.1 Observations by the team on the Code of operations

### 2.1.1 Design and construction of plant and equipment

The situation is identical to that in 2015. Design of production processes are the responsibility of Arkema SA (France) where the centers for research (R&D) and the engineering services and experts for the production technology of hydrogen peroxide are located. Arkema SA designs engineering standards for the conception and construction of its plants. At the local level, the Becancour plant has its own engineering personnel to apply the Arkema SA standards and procedures and uses the technical support and engineering of Arkema SA when needed, for design, construction and operation of plant equipment. If necessary, they also hire specialists from a local engineering consulting office. All the work done by a consultant is supervised by plant personnel.

### 2.1.2 Operations

The management systems required to conform to the requirements of AIMS 10 elements and 62 sub-elements according to ISO/OSHAS structure are documented and each task and operational activity are supported by a

procedure and/or directive. The Becancour plant established a system of annual internal audits to ensure conformance during outside audits done by either Arkema SA personnel or DNV-GL registrar. There are also inside verifications specific to the elements of RC even though the majority of AIMS elements contribute to RC conformance.

The team examined documents on risk analysis done by a consultant to evaluate the scope of the worst-case scenario and alternate scenarios. All the scenarios were updated in 2018 and identify the impact inside the plant as well as on its periphery (circle of influence). Only one scenario has a circle of influence that could overflow to the neighboring property Olin and the management team of Olin will be informed.

All the risks to operations and the environment were identified and quantified, and the reduction measures are in place, if needed. All incidents/accidents/near-misses are reported and investigated while searching for the fundamental cause and corrective actions are implemented. These activities are managed in "IMPACT" and/or ISO Vision when necessary. Personnel receive the necessary training to safely perform their duties and must pass comprehension tests. A change to equipment and/or procedures is followed by targeted training for employees impacted. The Becancour plant does a monthly follow up of its performance criteria (KPI) as shown in their dash board and makes the corrections if needed. Twice a year, all employees are subject to specific training on health, safety and protection of the environment.

The plant management team with the support of their personnel, implemented a safe behavior program (BBS – Behavior Based Safety) to identify and eliminate physical constraints and at-risk behaviors at work. Security personnel also do planned general inspections by sector (IGP) using a reference guide to identify and eliminate at their source, unsafe conditions. Results from BBS and IGP are managed through "IMPACT" software for correction of observed issues. The plant has an industrial hygiene program to ensure the health of its employees and this program is reviewed every 5 years by the CSSS (Que.). The last update was done in 2016.

***The verification team considers a successful practice the entire management system and the practices in place to identify "BBSs" and "IGPs" in IMPACT until the issues are corrected.***

### 2.1.3 Safety and Security

The company employs specialists to ensure that all plant activities are done in a safe and secure manner. All operational processes are evaluated to identify personal and operational risks and procedures are documented and strictly applied. All critical tasks and environmental activities are evaluated using the "Starmap" software to identify the risks requiring elimination or managing in a safe manner. All the plant risk analysis (PHA) are listed and updated every five years.

All incidents and accidents must be reported and investigated to determine probable cause and according to the seriousness, are communicated to North American senior management to ensure an efficient follow up of the corrective action plans. Managers of Arkema SA and Arkema Inc. (USA) require that performance criteria (KPI) be identified and strictly managed to help in realizing the plant annual operational plan. Evaluation of at-risk behaviors of workers (BBS) represents a crucial step in eliminating issues in work habits and practices. All employees are trained to do observations and 70% of personnel voluntarily do behavioral observations. In 2017, 818 observations were performed. Arkema Canada requires that its service providers that work on site conform to the same safety standards and practices. The carriers as well as their warehouses are evaluated regularly to ensure their products are manipulated safely. The plant has a Joint Committee for health and safety (4 people) that meet 6 times a year and the highlights and issues are posted on the plant bulletin boards and are accessible in ISO-Vision. The verification team examined several files to ensure conformity in personal and operational safety of which the highlights of the Joint Committee were included.

The safety of the site is assured during the day by an agency that controls the entrances and exits. Supplier deliveries are done during the day (before 18:00) and visitor, subcontractors' and suppliers' entrances are controlled by a guard that also gives them basic safety training, when necessary, for those who are authorized to circulate in the plant. The site is fenced in and equipped with surveillance cameras placed in strategic areas and the guard and operators in the control room monitor the cameras. All employees and visitors/subcontractors enter the plant using a smartcard that monitors their movements throughout the plant. Security activities are documented.

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

The company has a management process and practice to ensure that transportation activities under their supervision are done in a safe manner. Every 2 years, an evaluation is done on the health and safety performance of their carriers by an independent firm to confirm that they operate according to the directives given by Arkema Inc. Arkema ensures the integrity of their tank trucks through quarterly preventive inspections and during annual certification. Verification of the integrity of their flexible hoses is done under pressure annually.

The company has strict procedures and practices to train and certify in health, safety, and security the drivers of their carriers that work for them and transport hydrogen peroxide from their plant to their customers, to eliminate the risks while manipulating this product. Arkema also requires that the chartered carrier drivers of their customers receive training on the safe manipulation of hydrogen peroxide.

Twice a year, the Becancour plant organizes a week of safety training on safety and/or emergency situations for the 5 operation teams. Once a year, the first respondents from the city of Becancour (5 different teams) are also invited to participate with plant personnel in emergency situations that may occur at the plant.

The verification team examined the emergency response plan (ERP) and transportation emergency plan (TERP) managed by Arkema's Burlington, Ont. office.

The plant ERP is revised annually and the contents updated. The transportation emergency plan (TERP) is the responsibility of the Burlington office and is also revised annually. The people responsible for the application of the transportation plan must sign a document confirming the changes to the procedures and update their copy of the document. The last change is dated March 9, 2018.

Arkema Inc. produced a video to promote operational safety and identify the responsibility of the company as well as its interveners in safe performing of tasks.

*Paul Léonard's video (Arkema Inc.) shows the company's awareness and responsibility of all in using a safe approach while conducting Arkema's activities. It is an example of the application of the ethics of RC. The verification team considers that production of this video and its contents is a successful practice.*

#### **2.1.4 Protection of the environment**

All operations are done in isolation under pressure and the only emissions to the atmosphere are accidental emissions, fugitive emissions and emissions in the reservoir park during loading and unloading. These emissions are minimal. The wastewater is controlled by a detention system and is analysed before being sent to the

sewer. The site must operate according to their certificate of authorization (CA) issued by the MDDELCC. Several parameters are regularly monitored to minimize releases to the air and water, and plans to reduce emissions are in place. In 2017, the plant completed modifications to its water treatment process to correct an intermittent issue with the toxicity of its wastewater and obtained their certificate of authorization (CA).

The plant implemented a procedure to measure their fugitive emissions to further improve their performance in the reduction of their emissions, however minimal they be. The source of these fugitive emissions were identified and will be measured.

### **2.1.5 Resource Conservation**

The plant is working on obtaining ISO-50001 for global management of their types of energy. This will allow Arkema to have a systematic approach in reducing its consumption of its energy sources. Plant personnel already use performance software in operations to minimize the use of raw materials and energy sources. Performance criteria are already in place and are monitored on an hourly and weekly basis. The Becancour plant maximizes the recycling of its non-conform products. In their annual operational plan, they've identified projects to decrease their energy needs or decrease their air emissions and discharges to the sewers and are followed in IMPACT. At the local level, Arkema Canada documents their activities to support sustainable development and communicates the results to Arkema SA for insertion in their corporate brochure. The plant sells their used alumina instead of disposing of it as a reject.

On a global level, Arkema SA affords its plants a budget equivalent to 1.5% of their profits (ArkEnergy) for capital expenditures for improvement to the environment or to conserve resources. The 4 improvement axes from now to 2025 are: reducing greenhouse gases by 50%, reducing volatile compounds (VOC and fugitive losses) by 33%, reducing chemical oxygen demand in the water by 40% and, reducing purchase of different sources of energy by 15%. For example, the Becancour plant has reduced its consumption of water (treatment) from 495 cubic meters in 2010 to 165 cubic meters in 2016, that is 72%.

### **2.1.6 Promoting Responsible Care by name**

The company is proactive with its service providers at the plant and their request to respect conformance to Responsible Care in matters of health, safety and protection of the environment. They verify their transportation and warehouse providers in Canada. The RC logo is installed on the walls of the administrative building (Becancour) both outdoors and indoors.

Since the beginning of 2018, the Becancour plant gives RC training to all their employees on the following subjects: commitment to RC, management systems, verification protocol and how it relates to their AIMS management system.

Since the last RC verification in 2015, several activities were put in place to improve promotion of RC, especially in their sales department in Burlington. Several documents, such as the website for the sales department in Burlington, letterheads, business cards, emergency response plan displaying the RC logo. Plant management gives elaborate RC training and the codes of practice. The verification team examined several documents and activities to ensure adequate promotion of RC according to the requirements of the code. Significant progress both in plant activities and Canadian sales were done for the promotion of RC but other improvement possibilities were identified.

I.O. – No mention of conformance to RC in process sheets for inside audits.

I.O. – In the HSEQ manual, the plant manager's job description does not include conformance to RC and its promotion.

I.O. – Highlight promotion of RC in outside documents and communications, ex : during training given to outsiders (ex. employees of MDDELCC, of SAAQ), procedures given to customers - Hydrogen peroxide spill procedure, plant website, etc).

## 2.2 Observations from the team on management code

### 2.2.1 Company expectations

The Becancour plant continually evaluates all risks related to their raw materials, to the use of chemical products for production of their products, their operations and protection of the environment. As for their customers, they have procedures and practices to ensure their customers manipulate their products safely while protecting the environment. The verification team examined several Arkema Inc. procedures regarding safe management of their customers, distributors and carriers to ensure conformance to RC elements of the code of practice.

Distributors who are members of an industry association that follows the principles of Responsible Distribution or Responsible Care are favoured over other distributors, particularly for hazardous products.

At a minimum, all distributors complete a self assessment form which is reviewed by the Technical / Regulatory Affairs Manager. For their more dangerous products, they inspect the customer's site to ensure that it conforms to their requirements before the first delivery. The contents of the self-evaluation questionnaire filled out by their customers of less dangerous products is not reverified to confirm the authenticity of the answers given by the customers and to determine if a fuller analysis is required. After reading the corporate procedure on the management of hydrogen peroxide, it is not clear in section 6 that the directives apply to all the concentrations or only for the 70% concentration, as the danger of 50 and 70% peroxides is similar and the procedures at the plant do not make this distinction.

The "Product Stewardship" manual is presently being revised (revision 8) and several comments mentioned above were included and omissions corrected but the revision process and improvements for safe management of their products remains to be finalized.

**TEC:** The hydrogen peroxide Product Stewardship manual is presently under revision. It shall include guidelines as necessary to clarify the actions to be taken by the sales force for different hydrogen peroxide concentrations before first delivery and ongoing customer verifications to confirm safe handling of hydrogen peroxide. The manual content revision should confirm compliance with Arkema procedures/guidelines and the customer's ability to handle hydrogen peroxide (i.e.: change of customer personnel, deficiencies reported by Arkema sales force, etc.).

The verification team accompanied Arkema/DNV-GL auditors during their audits of operational and environmental risks at the plant and examined pertinent documentation including the follow up of performance criteria in HSE. All service providers at the plant must follow Arkema HSE training and must be certified (Cognibox process) before being eligible for a contract.

Arkema Canada trains all its employees on the rules, management procedures and operations of the company and each employee must pass a comprehension test before assuming their duties.

Becancour operates its plant according to the criteria indicated in their certificate of authorization (CA) and respects all the standards and regulations regarding its rejects and emissions. When needed, funds for capital projects are at the disposition of the company to decrease their environmental footprint.

### **2.2.2 Expectations regarding other parties**

Arkema Canada expects that their service providers and customers opt for the same approach towards their practices of health, safety, security and protection of the environment. Their website has all the necessary documentation. They conduct HSE self-evaluations and, when necessary, evaluations of their site. Their sales and/or technical representatives visit, when needed, their customers and manage the non-conformity reports if an omission or a customer needs identification. Documentation of the activities enumerated above is maintained in ISO-Vision and IMPACT.

Carriers under contract with Arkema Inc. and transport hydrogen peroxide are regularly monitored to confirm safe driving and manipulation of the product in transit and at the customers. The tank trucks must be inspected before and after loading at the plant. This inspection is the responsibility of the driver of the contractor but Arkema's inspection form (FAB-27) for the inspection of the tank truck before and after loading does not confirm the pre-departure inspection executed by the driver.

I.O. – The inspection form for tank trucks (FAB-27) does not document verification of the pre-departure inspection done by the driver before leaving with a loaded tank truck or Isotainer. The company should ensure that the driver documents his pre-departure inspection as required by the transportation law (Law 430).

## **2.3 Observations of the team on the code of accountability**

### **2.3.1 Communities near plant in operation**

Becancour managers communicate regularly with the other industries in the Industrial Park, especially with their immediate neighbors, through the CEOP. They are also in contact with municipal authorities and certain provincial government agencies through their participation in the CMMI. The company also meets with elected municipal leaders and first responders (firefighters).

However, since 2016, the citizen consulting committee (CCC) is no longer active due to a disinterest by several of their members to meet with the companies in the Industrial Park of Becancour. There are six districts in Becancour and only three members were interested in continuing the CCC activities. The main object in having a CCC is to continue communication with the community and its representatives, to understand their rights, their aspirations and their concerns regarding the industrial activities in progress. There was only one complaint (concern) since 2015 and the company followed up with the person.

**TEC** : Becancour management has no direct communication with citizen representatives since the end of the regular meetings with the CCC. If possible, find a way, with the other industries in the Park and members of CIAC ,to reactivate community dialogue with the citizens.

### 2.3.2 Other interveners

The management team is involved in the local and regional scene, when necessary, through their managers that participate in diverse activities of the CIAC regional committees involved in health, safety, security and protection of the environment as well as RC publicity. When necessary, they participate in meetings of the CIAC with different ministries of the government of Quebec, as members of these committees.

## 3. OBSERVATIONS OF THE TEAM ON THE COMPANY'S MANAGEMENT SYSTEM

One of the requirements of Responsible Care is that the companies acquire a self-correcting management system so the system can identify and respond to gaps, to promote continuous improvement throughout the company's commercial activities, their plants, their functions and to supervise the implementation of commitment to Responsible Care.

The verification team examines Arkema Canada's management system and compared their characteristics to an identified self-correcting system in the Guide on CIAC management systems. The team observations of the management system are the following:

The heart of Arkema's AIMS system is based on the International Safety Rating System's protocol version 6, to which were added the quality requirements of ISO-9001;2015, the protection of the environment of ISO-14001;2015 and operational safety of OSHAS-18001, and will shortly add the management of energy consumption with the ISO-50001 protocol. The AIMS system is managed by Arkema SA and/or Arkema Inc. and includes requirements by ISO/OSHAS systems that are confirmed by the presence of the DNV-GL registrar. The AIMS management system is divided into 10 sections and 61 elements. Each management activity is supported by a process that ensures its efficient application (description of the activities and steps to follow). The processes used are described in the plant's HSEQ manual. The auditors have a verification guide that asks 688 possible questions to ensure conformance to these elements. The plant has a dash board to follow key activities and help meet HSEQ operational objectives.

***On a whole, the RC verification team considers the application of the AIMS management system that supports ISO-9001, ISO-14001, OSHAS-18001 and soon to be ISO-5001 a successful practice.***

The Becancour plant AIMS audit does not cover the activities under the responsibility of plant personnel. Responsible Care verification covers the elements of the 3 codes including management systems and their practices for the products sold by Arkema Canada Inc. and the sale of hydrogen peroxide by Arkema Inc. as well as logistic activities. The management systems in place for these activities that are not under the responsibility of the Becancour plant must ensure safe manipulation of Arkema's products at all times according to the "cradle will fall" principle and the requirements of the 3 codes of practice of RC.



The verification team examined the requirements in the reference sheet of RC's code of practice elements in relation to the procedures of the AIMS management system. The reference sheet has been updated since the previous verification (October 2015). Certain elements were missing. The missing elements mainly covered activities under the sole responsibility of Arkema Inc. or Arkema SA. As a matter of fact, Arkema Inc. is Becancour's only customer and Arkema SA designs and manages the process for the production of hydrogen peroxide.

During the verification, the team examined the AIMS audit schedule and identified those sections of AIMS that ensure conformance to the codes of RC. These elements entirely cover the requirements of the codes of operation and certain elements of the code of management and accountability. In a telephone conference with Arkema Canada and Arkema Inc. managers, the team met and/or discussed conformance to RC for sales, transportation, storage and distribution activities.

They also held a telephone conversation with the president of Arkema Inc. on the principles of Responsible Care, mainly sustainable development and the application of the ethics of RC. The verification team also discussed the process in place to annually certify conformance of Arkema Canada to the ethics, the guiding principles, to the three codes of practice and 152 elements of RC. Arkema Inc. also adheres to RC and is a member of the American Chemistry Council (ACC). The last RC verification (RCMS) at head office (KoP) was in 2016.

All the members of the verification team (3) accompanied the AIMS auditors (3 groups) and DNV representative on the activities that ensure conformance to the elements of the codes.

The contents of the plant's management system were improved to include the 2015 version of ISO processes.

The CIAC verification team attended the closing meeting held by the team of auditors and is satisfied with the conclusions of their audit. There were several minor non-conformities equivalent to our TEC as well as several observations and opportunities for improvement that consist of improving the management system that is in a situation of continuous improvement by implementing the best practices of the other Arkema plants worldwide. The plant managers have until September 2019 to follow up on the minor non-conformities, observations and improvement opportunities of the members of the AIMS/DNV-GL audit team. There were also several practices "worthy of mention" observed by the auditors all week long. These practices "worthy of mention" are equivalent to "successful practices" of RC. The AIMS audit report is for internal use only.

Therefore, the CIAC verification report will not use the comments of the AIMS team in this report but will include general statements to target procedures, practices and activities in effect at the plant.

### 3.1 Observations on Planning cycle

During the PLANNING cycle of the management system, the company decides its objectives and how to reach them. The company not only controls all its internal operations but also considers the expectations of outside interveners, regulations, commitment to Responsible Care and all other industrial performance benchmarks. When examining the Planning cycle of Arkema Canada Inc.'s management system, the team observed that:

The verification team along with the AIMS/DNV-GL auditors examined the PLANNING cycle. Arkema Canada Inc. possesses a management system to determine the objectives of the company, both national and worldwide. Arkema Canada must conform to the requirements of the AIMS/ISO\OSHAS systems for all the operations at their Becancour plant as well as the elements of Responsible Care for all of its sales, transportation, storage and distribution activities, and for products from the plant or other production centers



of Arkema. The performance indicators are identified and followed monthly in the ISOVISION/IMPACT database. This database is accessible to all the managers of Arkema (Canada and USA).

Plant risks were identified for process safety, equipment maintenance, health and safety of the workers and protection of the environment. A preventive maintenance plan exists for all the equipment in the plant, with a determined timetable that is documented and communicated to the people and organizations concerned. The identified risks and operational procedures are reviewed every five years. The laws and regulations were examined and the company has a management system in place to ensure conformity to these regulations. Incidents, accidents and near-misses are reported, investigated, the fundamental cause determined and corrective action plans done. This is simultaneously documented in ISO-Vision (plant) and IMPACT (corporate) and the follow up is done monthly during the Management Committee and multiple sector reviews.

Arkema Canada Inc. during their short-term planning includes the requirements and demands of Arkema SA and Arkema Inc. Their annual operational plan and objectives are identified and conceived to meet the requirements for conducting business affairs and HSE. Various input is used to prepare these objectives; the main ones are the corporate expectations, internal audits, incident and accident reviews, non-conformity reports and annual management review. An action plan and timetable are developed for each objective, and all are documented. All employees receive the necessary training to perform their duties safely.

Arkema Canada Inc. (Becancour plant) possesses an articulate emergency response plan (ERP) that includes a pandemic plan and is connected to Arkema Inc.'s emergency plan for any emergency concerning its products. At the local level, this plan is regularly verified through inside drills and sometimes includes Becancour's first responders (firefighters).

Arkema SA has a continuity plan for operations for each division and Arkema Inc. is responsible for that of hydrogen peroxide (Hydrogen Peroxide Business Continuity Plan).

All the plant's processes and organizational procedures are documented through cartography.

### 3.2 Observations of DO cycle

During the DO cycle of the management system, the company converts the decisions from the PLANNING cycle to actions and ensures the knowledge of all those concerned. It is understood that the company will implement an organizational structure, will designate responsibilities to appropriate personnel, will give adequate training and tools to those who execute the action plans and will develop standards, procedures and programs wherever necessary.

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

Arkema possesses an organizational structure that clearly describes the relation between tasks and responsibilities between Arkema SA (France), Arkema Inc. (USA) and Arkema Canada Inc. The plant manager reports to the director of Arkema Inc. (USA) "North America Oxygenates". Becancour's plant manager and the technical / regulatory affairs manager Burlington's ON sales office are responsible for conformance to RC for its Canadian activities.

The Becancour plant and the sales department located in Burlington, Ont., apply corporate procedures from the Arkema Inc. group by adapting them to their activities (sales, transportation, and storage for the Burlington site and production, transportation/logistics for the Becancour site. All production activities, sales and HSE are applied using procedures that are revised at regular intervals. All the employees have job descriptions and responsibilities and receive the required training to safely and efficiently perform their duties. Outside communication for Becancour is mainly with regional organizations and the City, when needed, as the CCC no longer exists due to a lack of interest by several citizens that are members of the CCC.

The Becancour plant annually establishes objectives for all sectors of activities and follow up every two weeks during the Management Committee. Supervisors at the operational level hold weekly meetings and each service meets monthly to follow up on activities. Employees' performance reviews are done annually and if necessary, when needed. Highlights of each service are discussed every 2 weeks during the Management Committee and are documented.

The management team and supervisors identified performance criteria (KPI) required to meet the objectives of the business plan and performance in HSE. KPI, depending on their nature, are followed daily, weekly and/or monthly and are documented and available for all employees concerned. Corrective action plans are input, when needed, to meet the required performance. The company installed a TV monitor in the plant's cafeteria and broadcasts information on Arkema's activities and also training on health, safety and protection of the environment for the benefit of their employees.

The verification team examined in detail the human resources management system. This part of the system covers certain activities on health and safety such as the orientation program for new employees, performance reviews and training. The company gives the equivalence of two weeks training per year for each employee. Management has shown that the PDCA process was well applied for performing duties.

### 3.3 Observations of VERIFY cycle

During the VERIFY cycle of the management system, actions in the DO cycle are evaluated to ensure they are done as per the action plan, that they have the desired results and favor continuous improvement. Here, the management system, in general, and its components are revised according to the employees' skills and are appointed responsibilities, inside and outside verifications are scheduled, incidents evaluated to identify causes and performance measures are scheduled and revised.

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

All incidents, accidents and near-misses (almost incidents) are reported and documented (form). These activities are investigated to find the fundamental cause and follow up of corrective action plans until completion using ISO-Vision/IMPACT. The Becancour plant also has a program to observe behaviors (BBS) to eliminate risks at their source. This exercise is done by most of the employees with supporting documentation. Safety personnel perform general inspections (IGP) of the site by sector using specific information forms. All gaps are listed, a corrective action plan is implemented and followed through until completion.

Plant managers meet weekly to review operational plans, equipment maintenance, and HES activities. All critical equipment is identified and submitted to a specific preventive and/or predictive maintenance program. The preventive/predictive maintenance program for all equipment counts 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 needed to attain the objectives and the realization of the actions plans, including HSE activities, meet expectations.

A management review is scheduled twice a year for all business activities, to follow up on reaching their objectives. and to prepare a business and operational plan for the following year. The AIMS audit includes the contents of the management reviews.

A list of inside and outside audits is established annually. Among the internal audits, there is verification of activities that encompass AIMS/ISO-9011/ISO-14011 et OSHAS-18001 management systems. Among the external audits, customers and suppliers are audited when required to conform to ISO-9001:2015 and RC codes of practice as well as conformity to the AIMS version 4.1 system by Arkema auditors and DNV-GL. There are also corporate audits (Arkema USA) every 3 years in health, safety, environment and process safety management (PSM). All these activities are documented, including corrective action plans to correct gaps and to realize identified improvement possibilities.

The verification team examined the cross-reference document to confirm conformance to the 152 elements of Responsible Care.

### 3.4 Observations by ACT cycle

During the ACT cycle of the management system, the company transforms the results of the VERIFY cycle into rectifying actions for continuous improvement. This includes revisiting the PLANNING cycle to see if there are changes need to be made to the objectives, action plans, policies and processes to reach the company's objectives. Revision to the ACT cycle must take into consideration that the verification and revision of the gaps are supported; verify if the company's performance is communicated inside and outside; verify that the employees and contractors' performances are honored or corrected, etc.

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

The follow up system used for all management activities of the Becancour plant are ISO-Vision (French) for the plant and IMPACT (English) for Arkema Inc./SA. The two software programs are structured to receive all the information from reports, investigations and follow up on events, follow ups and progress of action plans including management audits and Responsible Care verification. A responsible person is designated for each event.

The members of management (Management Committee) are responsible for following up on the work to be done and identified in ISO-Vision.

The CIAC verification team jointly examined with Arkema's corporate auditors and DNV-GL registrar, several event reports (NCR) to better evaluate the efficiency of the reports, investigations and corrective action plans for all incidents and accidents. The reports showed conformance to procedures and practices.

## 4. OBSERVATIONS OF THE TEAM ON THE ETHICS AND PRINCIPLES OF RESPONSIBLE CARE REGARDING SUSTAINABLE DEVELOPMENT

All CIAC member companies formally commit to the ethic "do the right thing and be seen to do the right thing". The ethic, with its principles on sustainable development, guide the decisional process and practices of the company. During the verification, the team looked at how the ethic is adopted and understood in the company and if the company is managed according to these principles.

The verification team carefully observed the decisional process and actions, and compared Arkema Canada Inc.'s characteristics to those of a company guided by the ethics and principles of Responsible Care on sustainable development as shown in Commitment to Responsible Care (Appendix E). They also found that local management has limited influence regarding product management, customer service and activities under the responsibility of head office (transportation/distribution/storage). However, verification of these activities is included in the RCMS process for RC verification of the ACC.

The team observations on the practice of the ethics and principles of Responsible Care on sustainable development are the following:

- Arkema Canada Inc.'s ethical approach respects and surpasses the letter of the law for the activities under their control.
- They do not want to cause any damage while improving the life of the people and protecting the environment. The plant's operational risks are identified and control measures in place. Drills of their emergency response plan are done once a year internally and some drills include outside collaboration (firefighters/police, etc.).
- They inform the public and first responders of the risks, dangers and how to act in an emergency.
- They take the necessary preventive measures to protect health and the environment. They conceive and implement plans to reduce air and water emissions, and identify ways to save energy.
- They manage KPI's proactively and follow up activities on their dashboard for continuous improvement. They have improvement and immobilization plans to conserve resources.
- They require their service providers (plant/transportation/distribution/storage) to conform to activities of Responsible Care, especially in HSE.

Responsible Care ethics and principles for sustainable development are part of Arkema Canada's management system and the way they conduct operations. There exists a complete and structured program for health, safety and protection of the environment and, work continuously to decrease their environmental footprint. They take the necessary measures to improve themselves. Arkema SA separately publishes their plan and activities that support the efforts on sustainable development worldwide. Refer to annual sustainable performance report "Innovative" 2017. Resource conservation mentioned in item 2.1.5 is part of their efforts in sustainable development.

The interview with the president of Arkema Inc. confirmed total commitment of the company towards RC ethics and guiding principles especially in HSE in Canada as well as in the United States.

The management team of the plant and office personnel in Burlington have made a special effort, since 2015, to improve the knowledge and promotion of RC both inside the plant as with outside interveners.

The internal communication program focuses on health, safety, security and protection of the environment with their employees and outside communication with multiple interveners is well structured. However, they must continue to put into context RC and HSE activities (refer to article 2.1.6 of this report).

## 5. CONCLUSION OF THE VERIFICATION TEAM

Following verification of the entire company and observations set forth 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 of the company and that a self-correcting management system is in place to ensure continuous improvement. The verification ends with the publication of this report and does not require any follow up by the verification team.

*Marcel Émond*

CIAC verification team leader

November XX, 2018

## COMPANY'S REPLY TO THE VERIFICATION TEAM 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 their peers at the next meeting, and with our interveners, including community representatives near our installations.

We will consider the improvement opportunities identified by the verification team and will assist CIAC in sharing our successful practices with the other members of the association. Development and execution of the action plans to correct the gaps requiring priority actions will be in order. Our progress in executing these plans will be discussed during the preparation of our annual re-commitment to Responsible Care and we will communicate with the verification team for our next verification.

Josée Lafrenière  
HESQ Manager  
Arkema Canada inc.  
2018-11-14

## APPENDIX 1

### LIST OF INTERVIEWS

#### A: Company Personnel

Name	Position	Location
Philippe Viprey	Plant Manager	Bécancour
Michel Hamelin	Human Resources/Administration Manager	Bécancour

Marc Descoteaux	Engineering & Maintenance Manager	Bécancour
Jocelyn Vermette	Production Manager	Bécancour
Luc Lacroix	Purchasing & Maintenance Coordinator	Bécancour
Pierre Pépin	Corporate Controller	Bécancour
Josée Lafrenière	HSE and Quality Manager	Bécancour
Luc Lecompte	Environment & Laboratory Coordinator	Bécancour
Sylvain Charest	Distribution & Logistics Coordinator	Bécancour
M. Janvier	Health & Safety Coordinator	Bécancour
Mathieu Rousseau	Health & Safety Joint Committee	Bécancour
Nancy Marenger	Logistics Technician	Bécancour
Ross Anderson	Technical Mgr & Product Steward.	Arkema Inc.
Victor Evangelist	Logistics & S.C. Manager	Arkema Inc. (USA)
Andrew Callahan	Fullfilment Specialist	Arkema Inc.
Rich Rowe	President & CEO Arkema Inc.	Arkema Inc. (USA)
Robert Roth	Technical & Regulatory Affairs Mgr	Arkema Canada Inc. (Burlington)
Dean Adams	Director of Sales	Arkema Canada Inc.

## B: Outside interveners

Name	Compagny / Organism	Position	Location
Kevin Pecqueur	Arkema SA	Auditor - Responsible HSE PMMA	Paris
Bernard Lamy	Arkema SA	DSEG Lead Auditor Responsible Environment	Paris
Régine DeMesanstourne	Arkema SA	DSEG Auditor Responsible Transportation Safety	Paris
Jean-Luc Trouvat	DNV-GL	Auditor	Paris

Xavier Buespflot	DNV -GL	Auditor	Paris
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## C: Glossary

- RC – Responsible Care
- AIMS -Arkema International Management System
- DNV- GL - registrar firm for ISO and OSHA management systems
- CCC – Citizens Consulting Committee
- CIAC – Chemistry Industry Association of Canada
- ACC - American Chemistry Council
- HESQ -Health, Environment, Safety, and Quality
- ISO-9001 – Quality management
- ISO-14001 – Environment management
- OSHAS – health and operational safety management
- ISO-50001 – Energy management
- BBS – Behavior Based Safety
- IGP – General Planned Inspections
- ERP – Emergency Response Plan
- TERP - Transportation Emergency Response Plan
- PHA - Process Hazard Analysis