

DELIVERING ON OUR COMMITMENTS

2022 | CIAC SUSTAINABILITY REPORT



**CHEMISTRY INDUSTRY
ASSOCIATION OF CANADA**



Responsible Care®
Our commitment to sustainability.



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INTRODUCTION

ABOUT RESPONSIBLE CARE®

Environmental sustainability is a top priority for the chemistry and plastics sector. By embracing the ethic and principles of Responsible Care, the sector continues to lead the way and ensure companies implement responsible and sustainable practices.

For close to four decades, Canada's chemistry industry has led the way in ensuring safe, responsible, and sustainable chemical manufacturing through its United Nations (UN)-recognized environmental, social and governance (ESG) initiative, Responsible Care. Founded in Canada in 1985, Responsible Care is now practiced in 73 countries and by 96 of the 100 largest chemical producers in the world.

Responsible Care companies strive to the ethic to "do the right thing and be seen to do the right thing." Our dedicated members are constantly innovating and working toward safer and greener products and processes, and work to continuously improve their environmental, health, and safety performance.

Responsible Care covers all aspects of a company's business, employees, nearby communities, and the environment, over the entire life cycle of its products. Through TRANSCAER®, CIAC members engage with communities along transportation corridors,

emergency responders, governments, and other stakeholders, embracing transparent and educational practices to ensure they better understand the realities of dangerous goods travelling through their community and are prepared should there be an incident.

Eliminating plastic pollution caused by plastic resin loss during production or transportation is a critical issue for the environment and the world's waterways. Spilled plastic resin can make its way into local rivers, lakes, and oceans affecting waterway ecosystems and wildlife. Through Operation Clean Sweep™ (OCS) our industry is playing a critical role in being part of the solution to this global issue.

OCS is an international environmental stewardship program designed to help plastic resin handling operators implement modern resin containment practices. The CIAC Plastics Division leads the adoption of the OCS program in Canada.

In 2022, CIAC members were focused on improving their ESG performance and continued to be dedicated to the ethic and principles of Responsible Care.

2022 OUTCOMES

Ontario recognition

In December 2022, the Ontario Ministry of Labour, Immigration, Training and Skills Development Chief Prevention Office accredited CIAC's Responsible Care and Operation Clean Sweep programs as an Occupation Health and Safety Management System (OHSMS) within its Supporting Ontario's Safe Employers (SOSE) program. SOSE is a voluntary program run by the Chief Prevention Officer (CPO) that promotes health and safety in the workplace and helps reduce injuries and illness. Organizations that are recognized by the CPO may also be eligible for financial incentives from the Workplace Safety and Insurance Board (WSIB).

Federal recognition of Responsible Care and Operation Clean Sweep

On February 3, 2022, CIAC's Responsible Care and Operation Clean Sweep programs were federally recognized through the federal government's proposed Code of Practice for the Environmentally Sound Management of Chemical Substances in the Chemicals, Plastics and Rubber Sectors. This Code is meant to identify and promote best practices in the management and handling of chemical substances and to be a supporting risk management instrument under Canada's Chemicals Management Plan. It allows reporting on implementation of certain best practices through Responsible Care and/or OCS verification. [Explore the Code's Evaluation Checklist here.](#)

National Emissions Reduction Masterplan (NERM) progress (2005 vs. 2021¹)

CIAC members are focused on reducing greenhouse gas emissions to 2005 levels, driven by the Paris Agreement. Year after year, members continue to make significant progress in lowering emissions and their overall environmental impact. Compared to 2005, CIAC members have:



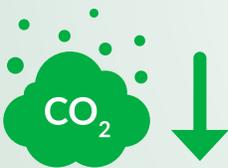
Reduced carbon dioxide equivalent (CO₂e) emission intensity **by 31%**



Reduced criteria air contaminant (CAC) emission intensity **by 34%**



Reduced total particulate matter (TPM) emission intensity **by 41%**



Reduced overall emissions to water **by 40%**



Reduced volatile organic compounds (VOC) emission intensity **by 13%**



Reduced sulfur dioxide (SO₂) emission intensity **by 92%**

In 2012, CIAC launched the NERM supplemental survey of waste and water metrics.

Since 2012, CIAC members have...



Reduced net water consumption **by 12%**



Reduced total hazardous waste for disposal **by 42%**



Reduced total non-hazardous waste for disposal **by 89%**

¹CIAC collects member performance data on a yearly basis once data from the previous year is available. CIAC collected 2021 performance data in 2022 and will collect 2022 performance data throughout 2023. As a result, the data presented in this report will primarily identify progress up until 2021.

VERIFICATIONS AND CERTIFICATIONS

Recognizing our members' commitment to Responsible Care
Verifications completed in 2022:





AWARDS AND EVENTS

New Responsible Care Awards

In 2022, CIAC launched seven new Responsible Care awards to recognize companies and people that exemplify leadership and outstanding performance based on the implementation and execution of Responsible Care in the past year.

This new awards program includes four code-based awards to recognize a company (or companies) that have exemplified each code, as well as the codes as a whole.

Operations Award

For contributions in transportation, occupational health and safety, process safety, and/or resource conservation.

Stewardship Award

For contributions in product stewardship, value chain stewardship, and/or research and development.

Accountability Award

For contributions in community engagement and/or equity, diversity and inclusion.

Company of the Year Award

For organizations that have exemplified each code, as well as the codes as a whole.

The program also includes three awards that align with the Responsible Care ethic and principles.

The Jean Bélanger Award

To honour individuals who reflect Responsible Care in all aspects of their life.

The Women in Chemistry Award

To recognize women who are seen as leaders in the field of chemistry.

The Excellence in Partnership Award

To honour implementation partners who has provided significant value to Responsible Care.

Since the launch of the program, CIAC Members, CIAC Plastics Division Members, and other stakeholders have nominated themselves and others for one or more of these new awards. A special ceremony has been scheduled for October 2023 to announce the winners.

CIAC Sponsors the Ottawa Riverkeeper Gala

After several years' hiatus due to the pandemic, the Ottawa Riverkeeper Gala returned for an in-person event on June 1, 2022, where the three main local rivers meet: the Ottawa River, the Rideau River and the Gatineau River. More than 400 attended the annual event that raises funds to ensure the health of the Ottawa River watershed. In years past, CIAC staff have also participated in the Ottawa Riverkeeper annual clean up, part of CIAC's commitment to the Responsible Care codes and ethic.



Left to right: Laura Reinsborough, Ottawa Riverkeeper CEO, Kris Kuplais, CIAC Director of Finance and Corporate Services, his wife, Ilze Berzina, and 2022 honorary Riverkeeper Daniel Alfredsson, former captain of the Ottawa Senators.



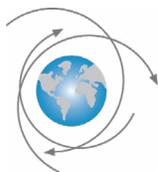
SHARE AWARDS

CIAC was pleased to announce the winners of the 2021 safety awards sponsored by CIAC's Safety Health Analysis Recognition and Exchange (SHARE) Network. The winners were announced at the annual in-person SHARE meeting in Sarnia, Ontario on October 25, 2022.

EXCELLENCE IN SAFETY



IMPROVEMENT IN SAFETY



WEBINARS



CLICK TO WATCH



2022 Outlook: Views from Canada's chemistry and plastics sectors

The Canadian chemistry and plastics sectors saw a strong recovery from the COVID-19 pandemic in 2021, showing just how resilient and important to daily life these sectors are, with 2022 set to mark a full recovery for the industry to pre-pandemic levels. In this webinar from January 27, David Cherniak, Business and Economics Policy Leader at CIAC, reviewed the 2022 outlook for Canada's chemistry and plastics sectors and answered important questions related to competitiveness and sustainability.



CLICK TO WATCH



Cyber Security: Understanding industrial control systems

On February 22, CIAC partnered with Public Safety Canada to host a webinar focused on industrial control systems (ICS) and cybersecurity. The webinar was divided into four modules that covered an introductory overview of ICS, a comparison between information technology and operational technology, a walkthrough of ICS in the water sector, and case studies of ICS cyber events. The goal of the webinar was to help those who work with ICS understand the impacts and issues faced by these systems in a growing threat landscape.



CLICK TO WATCH



Three-step plan to put Canada at the front of the chemistry sector's race to net-zero

This April 6 webinar featured Christine Nahas, CIAC Policy Analyst, who provided an overview of climate change and emission reductions as they relate to the Canadian chemistry industry and the Government of Canada's commitments to net zero. Also leading the webinar was Canvass AI, a CIAC associate member and software provider that makes Artificial Intelligence (AI) accessible to industrial engineers. Canvass AI highlighted how AI can play a crucial role in reducing greenhouse gas emissions in the chemistry industry. They outlined a three-step plan for chemistry companies to deploy AI across their operations and use resulting insights to accelerate sustainability efforts in achieving net-zero emissions.

WEBINARS

An introduction to the RCMS/RC14001 audit process

Together with the American Chemistry Council, CIAC hosted a webinar June 2 for companies interested in the Responsible Care Management System (RCMS) or becoming a CIAC Responsible Care member. The American Chemistry Council's Dan Rocznik, Senior Director of Responsible Care and Greg Rhodes, Senior Consultant, provided an overview of the RCMS and RC14001 Responsible Care audit process. (Video not available).

AN INTRODUCTION OF THE RCMS/RC14001 AUDIT PROCESS

Interested in learning more about the Responsible Care® Management System (RCMS) or becoming a CIAC Responsible Care member? Join CIAC and our ACC colleagues, Dan Rocznik, Senior Director of Responsible Care and Greg Rhodes, Senior Consultant, on June 2 for an overview of the RCMS and RC14001 Responsible Care audit process. This free webinar will provide information on preparation, the technical specification, and an overview of the unique Canadian requirements necessary for successful certification.

REGISTER HERE >

Dan Rocznik
Senior Director of Responsible Care

Greg Rhodes
Senior Consultant

CHEMISTRY INDUSTRY ASSOCIATION OF CANADA June 2, 2022 • 2–4pm ET

CIAC, Fertilizer Canada host successful Sustainable Hydrogen and Ammonia Forum

Sustainable hydrogen and ammonia have the potential to help Canada meet its net-zero climate goals, but a global transition to hydrogen and ammonia as a sustainable energy source or fuel will take collaboration between government and industry, new or expanded infrastructure and technology advancements. Over the month of September, CIAC and Fertilizer Canada hosted a successful virtual multi-session series of webinars on Sustainable Hydrogen and Ammonia. More than 150 people tuned in to hear a variety of experts from industry and government discuss the opportunities and challenges associated with sustainable hydrogen and ammonia production, transportation, export, and consumption.

Sustainable Hydrogen & Ammonia Forum

REGISTRATION OPEN

CHEMISTRY INDUSTRY ASSOCIATION OF CANADA

FERTILIZER CANADA
FERTILISANTS CANADA

September 7, 14, 21
11 am - 1 pm EST

September 28
11 am - 12:30 pm EST

SPONSORED BY: NextHydrogen WSP GOLDER

CLICK TO WEBSITE

Engaging communities through effective social media strategies

CIAC hosted a webinar November 29 that focused on engaging communities through effective social media strategies and was led by Public and Government Affairs Manager at Imperial Oil, Kristina Zimmer. Through her expertise, Ms. Zimmer has effectively led the significant growth of Imperial Sarnia's social media channel, making it one of the most engaging grassroots community pages in the region. In this presentation, Kristina outlined the strategies used to build and maintain this successful online community.

CHEMISTRY INDUSTRY ASSOCIATION OF CANADA

Webinar:
Engaging communities through effective social media strategies

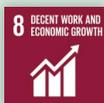
With Public and Government Affairs Manager at Imperial Oil, Kristina Zimmer, on November 29, 2022, at 2 pm ET.

Kristina Zimmer

CLICK TO WATCH

Advancing equity, diversity and inclusion

It is increasingly a societal expectation that companies in Canada be responsive to concerns related to equity, diversity, and inclusion, ensuring greater access to opportunities for individuals of all backgrounds and orientations. In line with UN SDG 8 (Decent Work and Economic Growth) and UN SDG 10 (Reduced Inequalities), CIAC and its members are working to advance the following targets:



8.5 – By 2030, achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.



10.2 – By 2030, empower and promote the social, economic, and political inclusion of all, irrespective of age, sex, disability, race, ethnicity, origin, religion or economic or other status.

10.3 – Ensure equal opportunity and reduce inequalities of outcome, including by eliminating discriminatory laws, policies and practices and promoting appropriate legislation, policies, and action in this regard.

10.4 – Adopt policies, especially fiscal, wage and social protection policies, and progressively achieve greater equality.

CIAC introduces first Responsible Care® Codes for equity, diversity and inclusion

After extensive consultation with members and stakeholders, CIAC announced the addition of new, auditable commitments in equity, diversity, and inclusion (ED&I) to the Responsible Care Codes for 2023. The new codes, which were informed by input from key stakeholders and expert organizations in the field of diversity and inclusion, are aligned with the UN SDGs of decent work and economic growth, and reduced inequalities. CIAC is the first national association to explicitly include ED&I codes into Responsible Care.

The decision to add these new commitments to the Responsible Care Codes was made by the CIAC Board of Directors in response to the global demonstrations in 2020 that drew attention to issues related to inequality. The CIAC working group, made up of several members, worked with the Canadian Center for Diversity and Inclusion (CCDI) to develop the new codes and ensure that the

language used, and the approach taken were appropriate for embedding ED&I into Responsible Care.

“These new commitments in the area of diversity and inclusion complement the commitments to Indigenous engagement and reconciliation that were added to Responsible Care in 2019. This demonstrates the continued relevance and responsiveness of Responsible Care,” said Bob Masterson, CIAC President and CEO.

The new commitments compel CIAC member companies to strive to create an environment and culture that recognizes the value of equity, diversity, and inclusion, provide resources and engagement opportunities for employees and contractors, identify and engage with underrepresented groups, and periodically solicit feedback and evaluate performance in areas related to ED&I.



One of Canada's most diverse employers

In 2022, BASF Canada was honoured to receive, for the first-time, recognition by MediaCorp as one of Canada's Best Diversity Employers. This follows the also first-time recognition as one of Canada's Best Employers For Diversity by Forbes in 2022. The company has also proudly released their BASF Canada three-year Diversity, Equity and Inclusion strategy. The strategy is guided by BASF's corporate values and focuses on empowering employees and leaders through a variety of impactful actions and programs. Externally, the company is committed to positively impacting the communities in which it operated to support and enable opportunities for Canadians, including underrepresented groups.



Powering diverse, connected minds to create a sustainable and inclusive workplace with an engaged and empowered workforce

[CLICK TO WEBSITE](#)



Orange Shirt Day

In September 2022, as part of their Diversity, Equity and Inclusion initiative, GATX Moose Jaw had a presentation on the significance of Orange Shirt Day. Employees and their children at the Moose Jaw, Montreal, and Red Deer Service Centers were all given orange shirts. The shirt was designed by a local artist, Larissa Kitchemonia.



Taking steps toward reconciliation in Canada

In 2022, Methanex took small but meaningful steps towards Indigenous reconciliation, including leadership education, corporate acknowledgment of Canada's National Day of Truth and Reconciliation, and implementation of land acknowledgments for company-wide events in Canada.

For example, members of their Medicine Hat team joined Indigenous leaders, including a member of their Community Advisory Panel, for a unique experience to learn about colonialism's history and the ongoing impacts on Indigenous Peoples in Canada. Indigenous leaders led a special Blanket Exercise for Methanex Medicine Hat in the Ómahksípiitaa (Big Eagle) room at Medicine Hat College. It was a moving and powerful way to gain a deeper understanding of the past and present, and to support reconciliation and inclusivity in their workplace.



Supporting equity in education at local schools

Dow Canada has partnered with Noelle's Gift to Children to support equity in local schools. The organization was established to provide assistance to marginalized students who are victims of circumstances beyond their control. Through this project, Noelle's Gift to Children is building closets in Lambton County and Chatham-Kent schools and filling them with essential items like food, clothing, toiletries, sanitary products, and other necessities that can be accessed discreetly by students in need. Dow volunteers will also be helping to assemble, deliver, and stock the closets.





Engaging communities to minimize adverse health and environmental impacts

Through Responsible Care[®], CIAC members commit to fostering ongoing community awareness and dialogue, receiving and responding to public feedback, and providing information about the risks and benefits of their operations with Canadians — particularly those living in communities where members do business. Through these Responsible Care commitments, CIAC and its members are making progress on UN SDG 12 (Responsible Consumption and Production) and the following targets:



12.4 - By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil to minimize their adverse impacts on human health and the environment.

12.6 - Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

12.8 - By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.

CIAC's National Advisory Panel

Responsible Care is guided by input from CIAC's National Advisory Panel — a group of academics, environmental leaders, and community members who provide an external, critical perspective on all matters related to the Canadian chemistry industry. The panel meets three times a year, allowing for continuous dialogue between CIAC, its members, and these key thought leaders and opinion

shapers. Through the panel's advice and input, CIAC can better understand Canadians' expectations of the chemistry industry. The panel also performs an important challenge function: alerting CIAC to emerging issues, encouraging it to focus its efforts in particular areas, or to rethink its policy and advocacy positions.

Virtual World Café

On April 13, CIAC hosted its first Virtual World Café (VWC) event. A VWC is a collaborative conversation that facilitates open and respectful discussion. The structure allows participants to offer multiple points of view, allowing for engaging conversations and building on the ideas of the collective.

This event was an opportunity to initiate a discussion about how CIAC can help its members improve their community engagements. CIAC sought out participation from individuals familiar with the industrial risks in their communities, those with experience participating in Community Advisory Panels or committees (past or present), individuals who promote public safety within their communities, others accountable for corporate community engagement, and members of CIAC’s National Advisory Panel. Over 20 community advocates from different industries across Canada came together to learn, share, and collaborate on public



engagement approaches while sharing their unique experiences and perspectives.

Through this conversation, CIAC successfully identified best practices and areas for improvement to work towards the creation of tools, guides, and other member resources.



A GLENCORE Company

Sulphuric acid leak mock exercise

On April 28, Sudbury Integrated Nickel Operations, a Glencore Company (Sudbury INO) in Falconbridge, Ontario in cooperation with NorFalco, conducted a full-scale tank trailer sulphuric acid leak mock exercise. The mock exercise triggered multiple layers of responders. Starting from the NorFalco ERAP, it included members from the Sudbury INO ER HAZMAT team, EMS, Transport Canada, police, fire department and City of Greater Sudbury emergency management staff.

The exercise was premised on a sulphuric acid leak occurring from a road carrier tank trailer. The simulated leak started from the Sudbury INO site and made it all



the way to the public roads in the town of Falconbridge and Garson, Ontario arena where emergency response personnel attended to the situation. This event was a great learning opportunity, not only for the internal and external response networks, but for the public as well. Several local media outlets, including CBC Sudbury, were on site and performed interviews.



Habitat for Humanity

In May, DuPont sponsored two build days with Habitat for Humanity (HFH) Kingston Limestone Region. Thirty enthusiastic DuPont volunteers from the Kingston Technology Centre, Mississauga Head Office, and various home offices gathered to support the build of four townhomes for four very deserving families.

The two teams made significant progress with the installation of drywall in the townhouse units. In addition to a financial donation, DuPont Canada and the DuPont Performance Building Solutions business generously donated product-in-kind so that families had access to safe and affordable housing.



Supporting STEM education across Canada

NOVA Chemicals announced in November that it renewed its commitment to Let's Talk Science for three years, with a \$600,000 donation to support science, technology, engineering and math (STEM) education for children and youth across Canada. Being part of an industry that relies heavily on a range of scientists, engineers, and technicians, NOVA is committed to increasing science literacy in the next generation, regardless of gender, geography, culture, language, abilities, or financial status.

NOVA's contribution will be felt across Canada with the intent to build confidence and develop problem solving, creativity, and innovative thinking skills in children and youth, and encourage youth to pursue STEM education and career paths, including in the chemical manufacturing sector.

Reducing emissions of harmful chemicals

As part of our commitment to Response Care[®], CIAC and its members provide awareness and public communication of all emissions to the environment, and implement programs to reduce emissions that pose health and environmental risks. This commitment has led to progress towards the following targets under UN SDG 3 (Good Health and Well-Being), UN SDG 6 (Clean Water and Sanitation), UN SDG 12 (Responsible Consumption and Production), and UN SDG 13 (Climate Action):



3.9 - By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water, and soil pollution and contamination.



6.3 - By 2030, improve water quality by reducing pollution, eliminating dumping, and minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.



12.4 - By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.



13.2 - Integrate climate change measures into national policies, strategies, and planning.

Through Responsible Care and their commitment to sustainability and continuous improvement, CIAC members continue to invest in pollution prevention, energy efficiency, and resource conservation. CIAC tracks our members' reductions of key pollutants through the National Emissions Reduction Masterplan (NERM). Since 1992, CIAC has and continues to collect data through

its NERM survey on chemical emissions by members including air, water, land, underground injection, and the offsite transfers of those substances in waste or recoverable materials. As shown in **Figure 1**, in 2021, 196 substances were reported out of more than 900 substances on the NERM substance list, and only 25 substances had emissions over 100 tonnes.

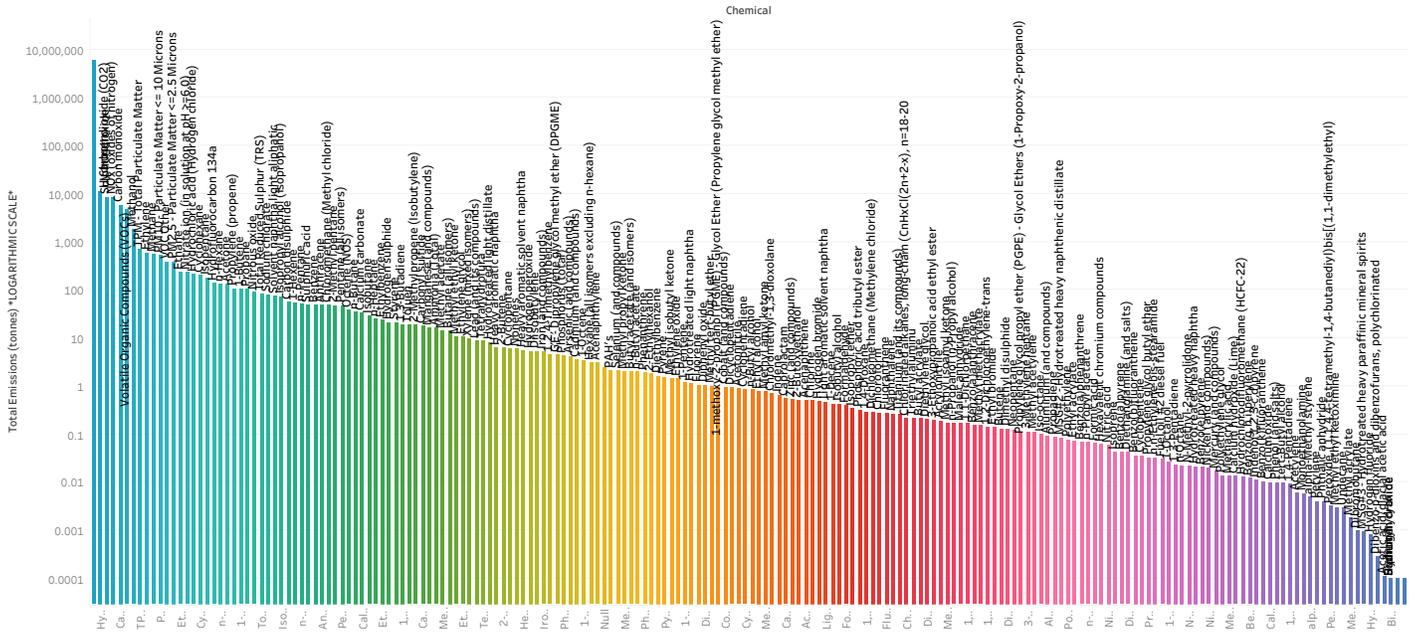


Figure 1. Total NERM emissions in 2021 by chemical (note: logarithmic scale, in tonnes).

Figure 2 shows that the top ten chemicals emitted by CIAC member companies in 2021 were: carbon dioxide (CO₂), hydrogen, sulphur dioxide, oxides of nitrogen, carbon monoxide, volatile organic compounds (VOCs), methanol, total particulate matter, ethylene, and methane. Since NERM’s inception, CO₂ has been consistently ranked

the highest emitted substance. It is important to note that despite the abundance of greenhouse gases and criteria air contaminants on this list, there are emissions that present an opportunity for innovation and climate change solutions, such as hydrogen.

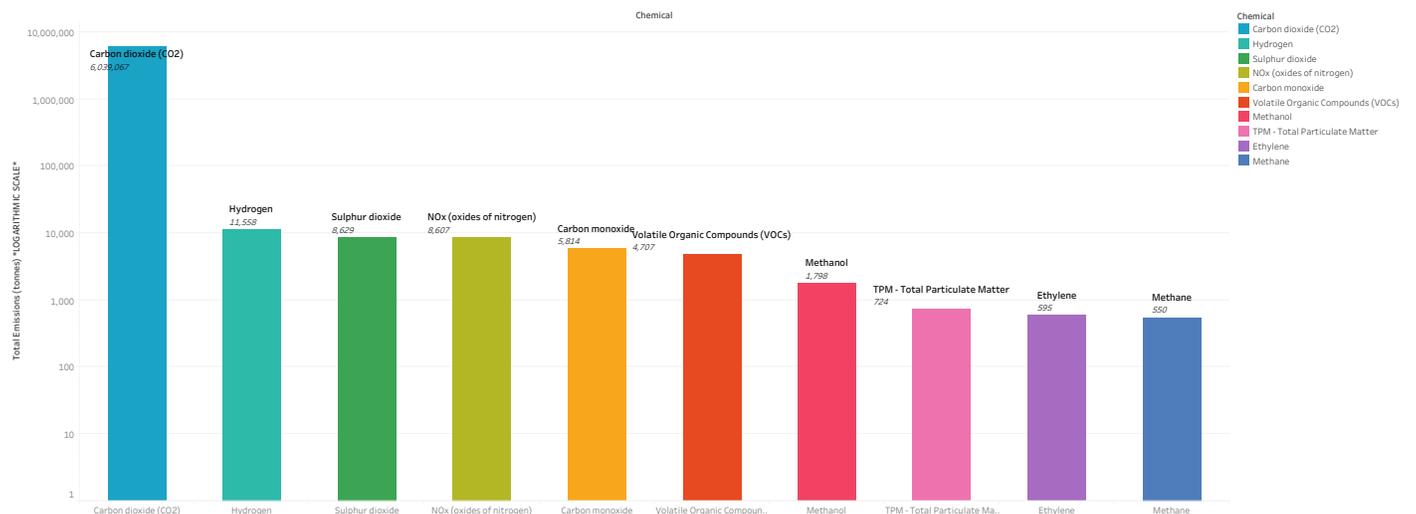
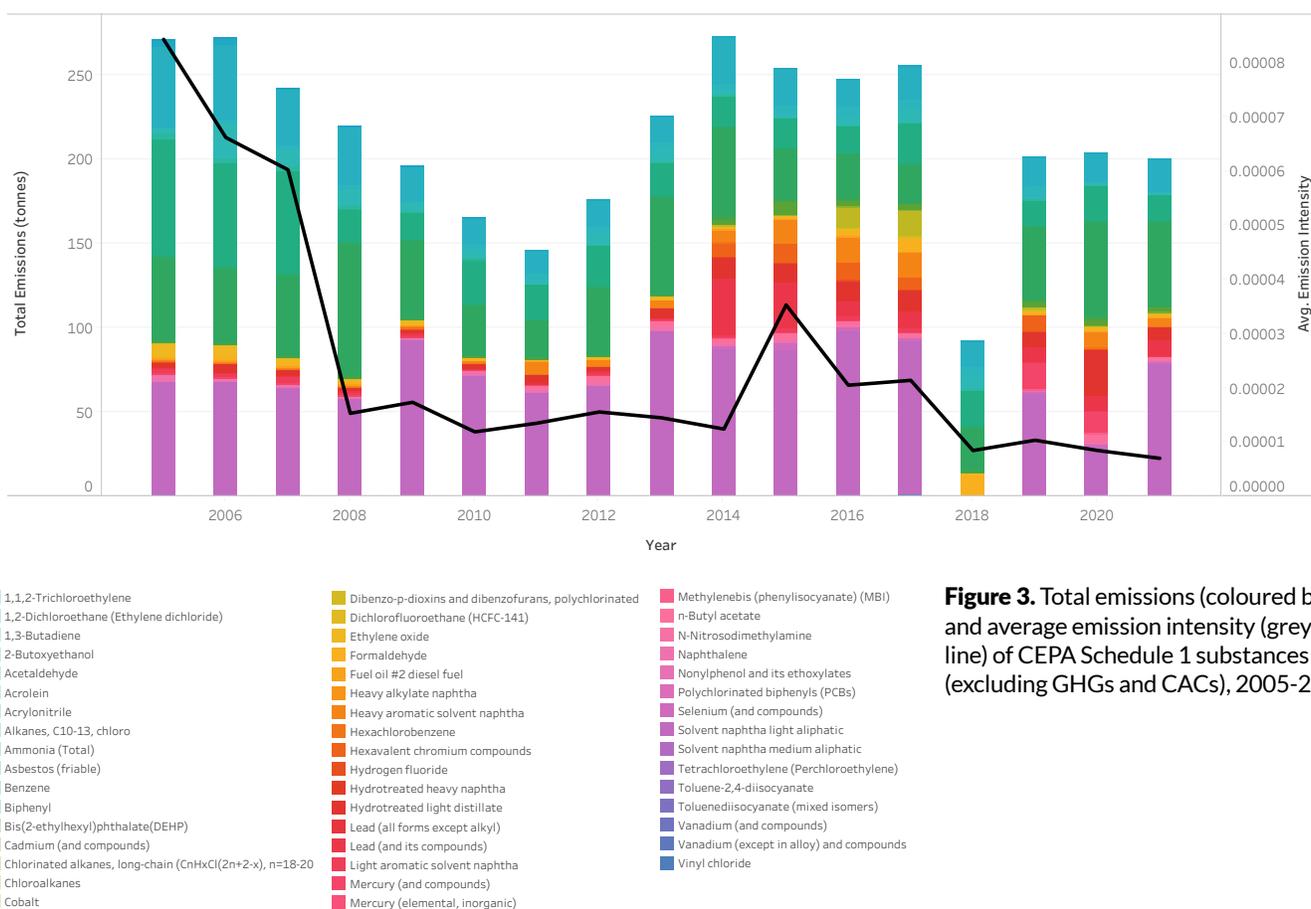


Figure 2. Top 10 NERM emissions in 2021 (note: logarithmic scale, in tonnes).

Supporting chemicals management

The safe manufacturing of chemistry is at the centre of all the products that ensure our modern way of life. Canadians need to be confident that their health, safety, and environment are protected at all times. CIAC and our members are proud to support Canada as a global leader in the risk-based approach to chemicals management.

Since 2005, CIAC members have reduced their emissions of Canadian Environment Protection Act (CEPA) Schedule 1 substances (excluding greenhouse gases and criteria air contaminants, which are analyzed separately) by 26 per cent on an absolute basis and 91 per cent based on emission intensity, as shown in **Figure 3**.



Modernization of the Canadian Environmental Protection Act, 1999

In February, the federal government introduced Bill S-5, *Strengthening Environmental Protection for a Healthier Canada Act*. This Bill follows, and is very similar to, Bill C-28, which died on the order paper when the 2021 federal election was called. The proposed amendments in this Bill represent the first major reform to the *Canadian Environmental Protection Act, 1999* (CEPA) since it was updated more than 20 years ago. Given CIAC’s drive towards continuous improvement through Responsible Care, we welcomed the tabling of this Bill and found the associated amendments to CEPA to be well-balanced and pragmatic, while preserving the risk-based approach at

the heart of the Act. Among the more important proposals is a legislative recognition of the “Right to a Healthy Environment” in the preamble of the Act, in keeping with Responsible Care.

CIAC was also pleased to appear before both the [Senate Standing Committee on Energy, the Environment, and Natural Resources in May](#) and the [House of Commons Standing Committee on Environment and Sustainable Development in November](#) to present our views on the Bill as it sets the stage for the next wave of chemicals management in Canada.

The following figures explore trends for key groups of chemicals requiring risk management:

Benzene, toluene, ethylbenzene, and xylenes (BTEX)

Often, a group of VOCs, collectively known as BTEX, comprising benzene, toluene, ethylbenzene, and xylenes (mixed isomers – ortho, meta, para) are measured and analyzed as they are straightforward to monitor together and provide a well-rounded picture of aromatic VOCs

that are present in most urban areas. Since 2005, CIAC members have reduced their emissions of BTEX by 29 per cent on an absolute basis and 33 per cent based on emission intensity.

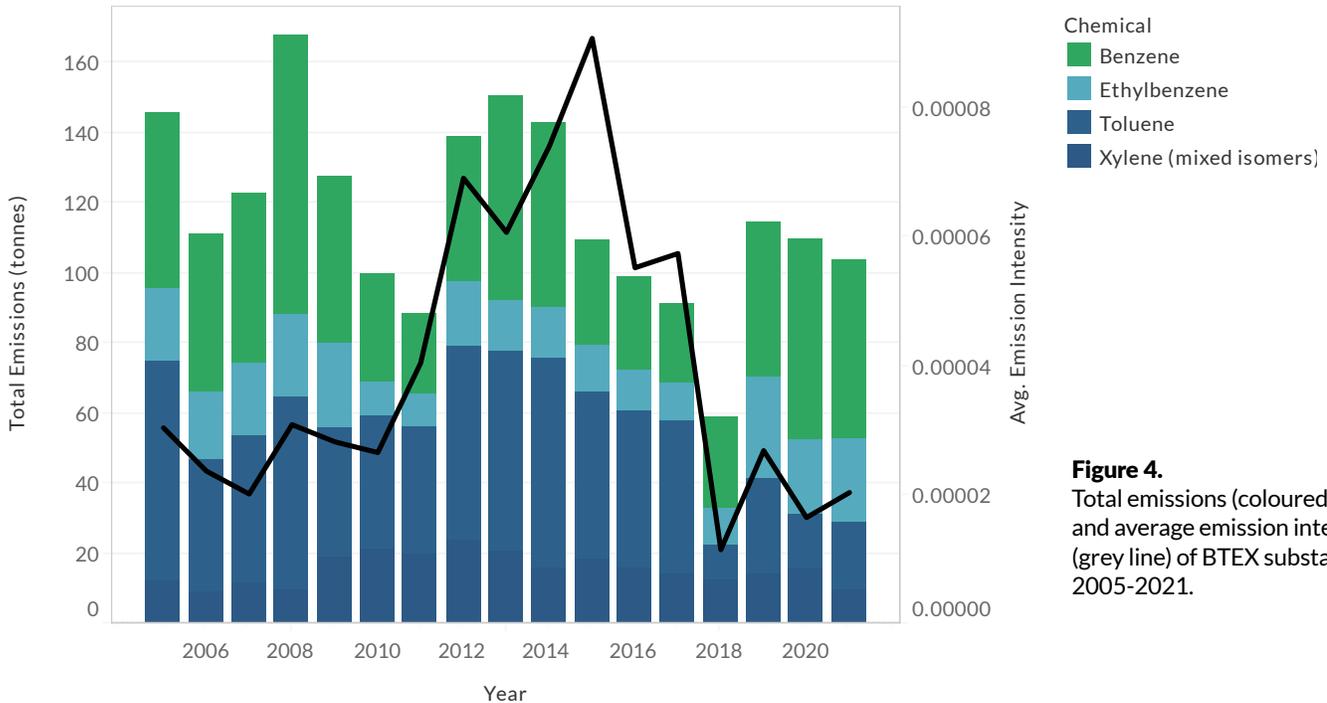


Figure 4. Total emissions (coloured bars) and average emission intensity (grey line) of BTEX substances, 2005-2021.

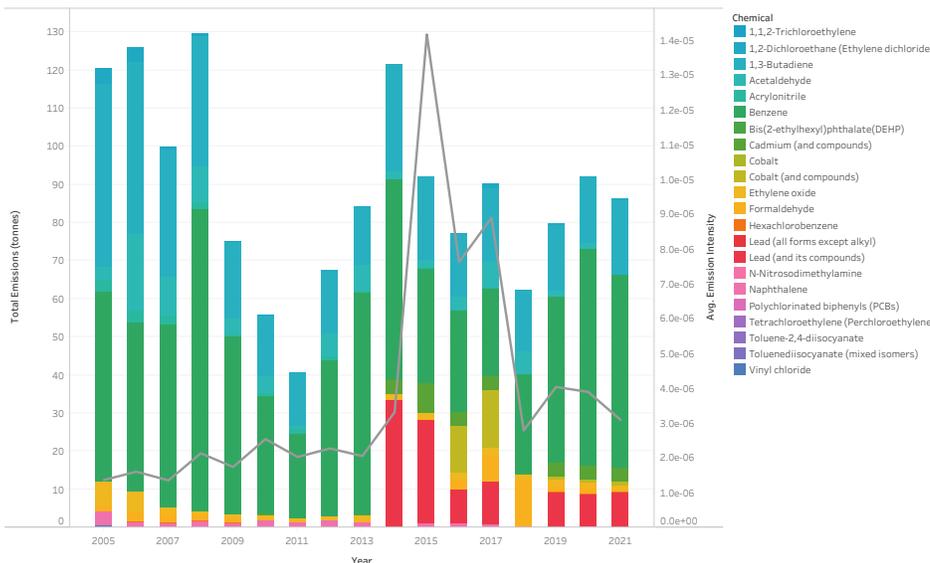
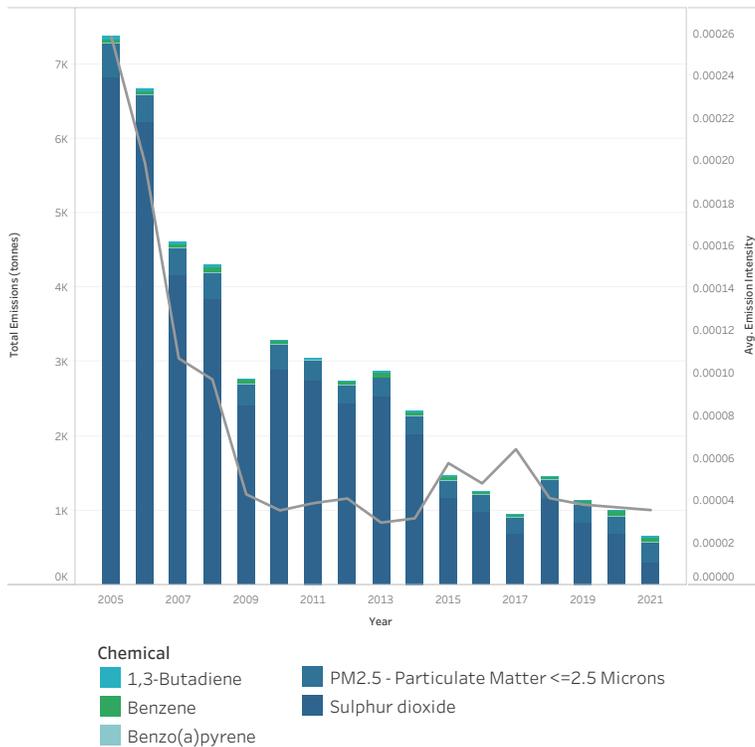


Figure 5. Total emissions (coloured bars) and average emission intensity (grey line) of IARC class 1 and 2 substances, 2005-2021.

Carcinogens listed on CEPA Schedule 1

The International Agency for Research on Cancer (IARC) classifies substances as Group 1 (carcinogenic to humans), Group 2A (probably carcinogenic to humans), Group 2B (possibly carcinogenic to humans), and Group 3 (not classifiable as to its carcinogenicity to humans). Since 2005, CIAC members have reduced their emissions of IARC Group 1, 2A, and 2B substances by 33 per cent on an absolute basis.



Air stressors included in the Sarnia Area Environmental Health Project

The Sarnia Area Environmental Health Project (SAEHP) aims to address concerns of Sarnia area communities about air pollution and other environmental stressors from local industries in the area. The Air Exposure Review is a scientific assessment that describes community exposures and associated risks to human health from chemicals in the outdoor air in the Sarnia area. Since 2005, CIAC members have reduced their emissions of SAEHP substances by 91 per cent on an absolute basis and 96 per cent based on emission intensity.

Figure 6. Total emissions (coloured bars) and average emission intensity (grey line) of SAEHP Air Exposure Review substances, 2005-2021.

Criteria air contaminants

The Air Quality Management System (AQMS) is a comprehensive and collaborative approach by federal, provincial, and territorial governments to reduce the emissions and ambient concentrations of various pollutants of concern (i.e., criteria air contaminants or CACs), providing a framework for collaborative action across Canada to further protect human health and the environment from harmful air pollutants through continuous improvement of air quality. This program was built on a foundation of collaboration, accountability, and transparency.

Industry, non-governmental and Indigenous organizations, including CIAC, worked with governments to develop the AQMS, and CIAC, along with other stakeholders, continues to monitor implementation of the AQMS and participate in its ongoing development and improvement. As seen in the figure below, since 2005, CIAC members have seen a 31 per cent decrease in total CAC emissions and 34 per cent decrease in CAC emission intensity.

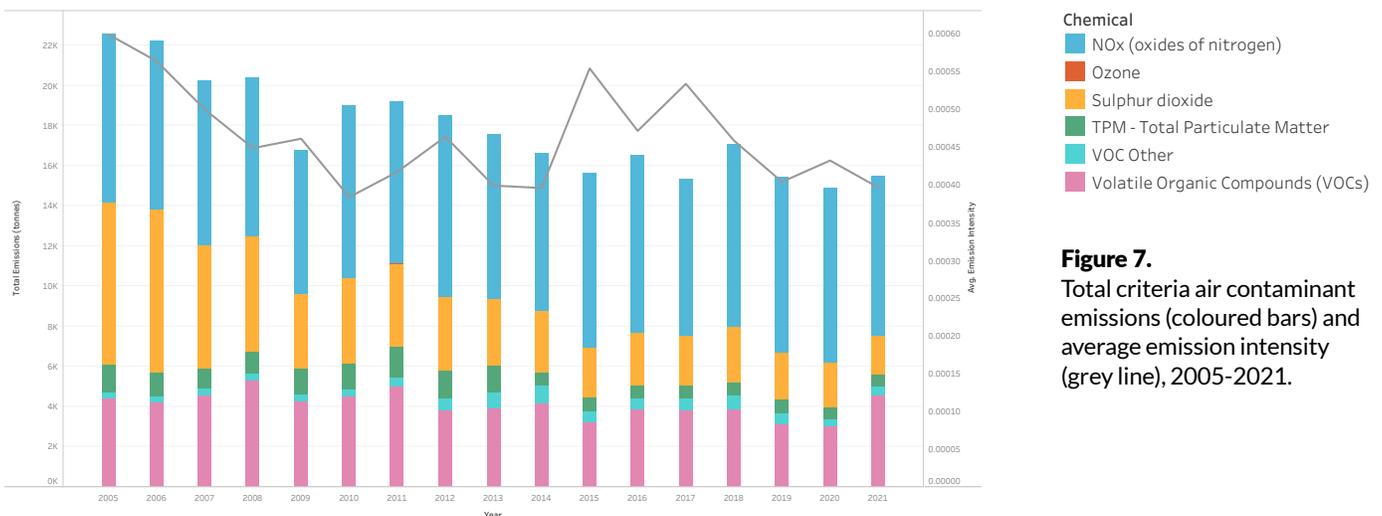


Figure 7. Total criteria air contaminant emissions (coloured bars) and average emission intensity (grey line), 2005-2021.

Canadian Ambient Air Quality Standards (CAAQS) are developed as a key element of the AQMS to drive improvement of air quality across Canada. CAAQS have been developed for nitrogen dioxide (NO₂), sulphur dioxide (SO₂), fine particulate matter (PM2.5) and ozone (O₃).

The figure below illustrates member emissions of SO₂, PM2.5, and NO_x geographically according to federal

airshed (no O₃ emissions reported in 2021). Based on this figure, it seems that most releases are of NO_x in Prairie and East Central airsheds and SO₂ in the East Central. However, it should be noted though that major maintenance and re-investment activities in the Prairie region, including the installation of low-NO_x burners, will lead to reductions in NO_x emissions in the future.

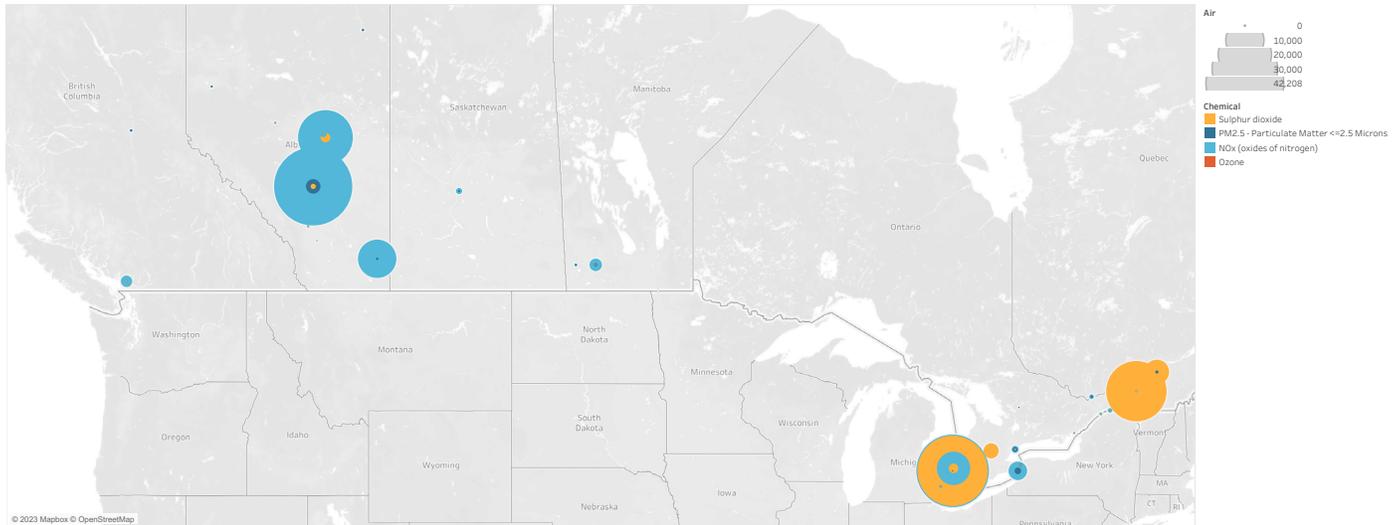


Figure 8. Geographic representation of PM2.5, SO₂, and NO_x air emissions in 2021 by airshed.

BASF
We create chemistry
Employee Clean Commute Program

In 2022, to further engage employees to support BASF’s emissions reduction targets, BASF Canada launched the Employee Clean Commuting Program. The program provides an incentive for all staff to use “clean commuting” alternatives, including cycling, walking, owning an electric or hybrid vehicle, taking transit, or carpooling with other employees. For employees who work remotely, an online driving course is also offered, which includes information to help reduce fuel. This program supports BASF’s global 2050 net zero goals by reducing overall employee CO₂ footprint and increases employee engagement on climate related topics. Employees are rewarded for their green commute choices through BASF’s internal Recognizing You program.

Shell Solar farm

Shell Canada’s Scotford site has embraced the Alberta’s Energy Transition with the completion of a 5MW solar farm. The solar farm will displace three per cent of the

electricity consumption at the Scotford Chemicals plant, reducing greenhouse gas emissions and site electricity supply costs. The energy generated will be brought back to the facility to offset grid power demand and reduce the plant’s Scope 2 emissions by 5 kilotonnes of carbon dioxide equivalent per year.

Imperial Sulfur dioxide emissions reduction

Recently, a significant focus for Imperial has been the development of a sulfur dioxide (SO₂) emission reduction plan for the Sarnia and Nanticoke facilities in Ontario. This is expected to reduce SO₂ emissions by approximately 90 per cent at Sarnia and 50 per cent at Nanticoke by the end of 2028. To meet these goals, Imperial’s plans include installing emissions abatement equipment, using SO₂ reducing additives in the production process, and implementing reliability improvements to drive reductions. Achieving these results will be challenging and will require ongoing engagement with stakeholders, with a priority focus on timely and meaningful engagement with neighbouring Indigenous communities.

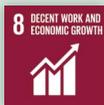
Investing in innovative climate change solutions

Our members' investments in low-carbon technology are essential for achieving governmental and societal goals for a stronger economy, net zero emissions by 2050 and a circular economy. Through these solutions, CIAC is supporting progress towards the following targets under UN SDG 7 (Affordable and Clean Energy), UN SDG 8 (Decent Work and Economic Growth), UN SDG 9 (Industry Innovation and Infrastructure) and UN SDG 13 (Climate Action):



7.2 – By 2030, increase substantially the share of renewable energy in the global energy mix.

7.3 – By 2030, double the global rate of improvement in energy efficiency



8.2 – Achieve higher levels of economic productivity through diversification, technological upgrading, and innovation, including through a focus on high-value added and labour-intensive sectors.

8.4 – Improve progressively, through 2030, global resource efficiency in consumption and production and endeavour to decouple economic growth from environmental degradation, in accordance with the 10-Year Framework of Programmes on Sustainable Consumption and Production, with developed countries taking the lead.



9.4 – By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.

9.5 – Enhance scientific research, upgrade the technological capabilities of industrial sectors in all countries, in particular developing countries, including, by 2030, encouraging innovation and substantially increasing the number of research and development workers per 1 million people and public and private research and development spending.



13.2 – Integrate climate change measures into national policies, strategies, and planning.

Chemistry and plastics will play an essential role in Canada's economic future. Our products are the nexus of all solutions to energy efficiency, net-zero emissions, and a circular economy. The chemistry sector has reduced its carbon dioxide equivalent emission intensity by 31 per cent since 2005 because of significant investment and will continue to invest in all these areas in years to come. Canada's chemistry industry is delivering made-in-Canada low

carbon chemistry products. Thanks to our low emissions electricity grid, our electro-chemistry sector is already close to achieving net-zero production. Chemistry and plastics play a crucial role in the supply chain for almost all manufacturing in Canada. Decarbonizing this supply chain will require significant investments in new and upgraded facilities including research and development which will ultimately lead to a net-zero industrial transformation.

Canada's chemistry sector is proposing tens of billions in investment that will help Canada's economy reach its climate change and emissions reduction goals. Planning is only the first step — governments and industry must continue to work together to ensure these ideas become a reality. CIAC is working with governments to develop a competitive regulatory and policy landscape that will enable clean chemistry investment for years to come.

CIAC is supportive of the government's efforts to support Carbon Capture Utilization and Storage (CCUS), hydrogen production and utilization and clean technology manufacturing. We continue to advocate for an extension of the Accelerated Capital Cost Program with no phase-out to 2030 with consideration to making it permanent to ensure that Canada's manufacturing sector is able to make critical investments that strengthen domestic supply chains.



Battery energy storage solution

Imperial is preparing to commission an exciting project with a strong sustainability benefit at the Sarnia site. Through a benefit sharing agreement with global energy producer Enel-X, a behind-the-meter battery energy storage solution (BESS) has been installed at the Sarnia site. This 20 MW battery is the largest of its kind in North America. The sustainability of Ontario's electrical grid is an important part of the energy transition. On peak energy use days, Imperial can charge the battery at night when the Ontario electrical grid is primarily operating on renewables (nuclear, hydro and wind), then use that stored energy during the day. This reduces the burden on the province's grid, especially during extreme weather.



Climate neutral

In 2022, LANXESS announced a goal to achieve climate neutrality across its entire value chain by 2050. This is a follow-up to the company's goal to become climate neutral by 2040. To achieve its goals, LANXESS has launched the Net Zero Value Chain Program. This strategy toward climate neutrality along the entire value chain is based on three pillars:

- sustainable raw materials;
- green logistics; and
- climate-neutral products.

Through the Net Zero Value Chain Program, LANXESS is continuing to drive forward the transformation of their product portfolio toward climate neutrality. In this way, the company is also supporting their customers, who are increasingly looking for sustainable solutions.



Moving to 100 per cent renewable energy

MEGlobal Canada ULC (MEGlobal), an EQUATE company, entered into a 10-year agreement with Capital Power Corporation to purchase a significant share of renewable energy (126 megawatts) from Capital Power's Whittle Wind facility. The renewable energy is expected to meet the power needs at MEGlobal's Canadian manufacturing facilities.

"Purchasing energy from renewable resources such as wind makes good sense for our company and the environment," said Naser Aldousari, CEO of EQUATE. *"This agreement exemplifies [MEGlobal's] dedication to delivering responsible product growth that meets the needs of the present without compromising the ability of future generations to meet their needs."*

[CLICK TO WEBSITE](#)



Path2Zero

After five months of outreach, on August 24, Dow Canada held a public information session on its proposed Fort Saskatchewan Path2Zero expansion project. The goals of the consultation were to distribute project information to potentially affected stakeholders and other members of the public to satisfy the public consultation component of the permit application, and address community issues, concerns and questions.

The Fort Saskatchewan Path2Zero expansion project will create the world's first net-zero carbon emissions integrated ethylene cracker and derivatives site with respect to scope 1 and 2 carbon dioxide emissions.

[CLICK TO WEBSITE](#)



Advancing product stewardship and sustainable practices

Product stewardship is a pillar of Responsible Care[®]. All CIAC member companies commit to taking responsibility for a product throughout its entire life cycle by reducing any environmental, health, or safety risks associated with it. Through this commitment, CIAC members are making progress on the following targets under UN SDG 12 (Responsible Consumption and Production):



12.4 - By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.

12.5 - By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

12.6 - Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

Through Responsible Care, CIAC members instill a culture of stewardship in their organizations. Parties involved throughout the entire chemistry industry value chain share information to ensure the safe management of products throughout their life cycles. This requires regular and sustained dialogue and working relationships between member companies and their stakeholders, suppliers, customers, and any other relevant parties.

A culture of stewardship encourages all parties, regardless of their place along the value chain, to have active systems and processes in place that ensure the safe, environmentally sound, and socially responsible management of products. By taking the necessary steps to ensure that stewardship is exercised along the entire value chain, there is a much greater chance that the chemistry industry as a whole will meet the public's increasing demand for safe, environmentally friendly, and sustainable chemistry products.



A path to positive change

DuPont reformulated Styrofoam™ Brand XPS (extruded polystyrene) to reduce global warming potential (GWP) and advance DuPont's 2030 Sustainability Goals.

To enhance their efforts to develop low-embodied carbon products, DuPont continuously evaluates the sustainability profiles of their innovation projects and apply LCA methodology to guide project decisions. DuPont's Styrofoam™ Brand insulation products have played a critical role in improving energy efficiency in buildings for over 50 years. Styrofoam™ Brand XPS Insulation products are approximately 98 per cent gas and two per cent solid by volume, with the gas formula

traditionally including hydrofluorocarbons (HFCs). Some HFCs have high GWPs and can contribute to climate change. DuPont innovation has enabled a viable, low-GWP solution to reduce the embodied carbon of Styrofoam™ Brand XPS Foam Insulation products while still delivering the same thermal performance, moisture resistance, durability, and ease of use expected by customers.

Converting to the low GWP Styrofoam™ Brand XPS Insulation results in a substantial 94 per cent reduction in carbon footprint for this product line. In support of this innovation, DuPont launched the beyondblue.dupont.com website, which highlights their GWP phase-down program and shares product transparency documentation for these products.



Handling methanol safely

Appropriate safety precautions must be taken when using, handling, or working around methanol to keep people and the environment safe. Through its product stewardship program, product safety practices, and participation in industry associations across regions, Methanex provides information on managing the risks of methanol and promotes its proper use and safe handling.

In 2022, Methanex hosted 30 safety webinars and seminars that reached more than 900 people from 193 organizations. The attendees included supply-chain partners, customers, terminals, surveyors, distributors, carriers, and emergency services, as well as local and regional authorities in all the regions where the company has sales activities. The company believes that educating all stakeholders on safe handling practices is crucial in ensuring the safety of people and the environment.





HDPE resins to advance a plastics circular economy

In June, NOVA Chemicals introduced a new resin technology for machine direction oriented (MDO) and biaxially oriented (BO) processes to help its customers and brand owners meet their sustainability goals. NOVA Chemicals' innovative technology marks a major advancement in the pursuit of the plastics circular economy as it enables recyclable all-polyethylene (PE) packaging.

Oriented film structures allow easy-to-recycle all-PE packaging to replace traditionally non-recyclable mixed material packaging. In addition, orientation of PE films allows for property improvements otherwise not attainable in blown or cast films such as enhanced stiffness, toughness, and optical properties. Oriented films are ideal for use in food packaging, heavy duty shipping sacks, e-commerce and other demanding applications. Being able to produce HDPE-based oriented films is a significant step towards industry's goal of 100 per cent recyclable packaging.

Increasing natural resource efficiency

CIAC members play a crucial role in providing the necessary chemicals for ensuring safe and clean water supplies. Furthermore, they are dedicated to resource conservation efforts, including the efficient use of energy, raw materials, water, and other utilities and supplies, as outlined in the Responsible Care® Operations Code. These commitments have led to progress towards the following targets under UN SDG 6 (Clean Water and Sanitation), UN SDG 9 (Industry, Innovation and Infrastructure), and UN SDG 12 (Responsible Consumption and Production):



6.3 – By 2030, improve water quality by reducing pollution, eliminating dumping, and minimizing the release of hazardous chemicals and materials, halving the proportion of untreated wastewater and substantially increasing recycling and safe reuse globally.
6.4 – By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.



9.4 – By 2030, upgrade infrastructure and retrofit industries to make them sustainable, with increased resource-use efficiency and greater adoption of clean and environmentally sound technologies and industrial processes, with all countries taking action in accordance with their respective capabilities.



12.2 – By 2030, achieve the sustainable management and efficient use of natural resources.
12.5 – By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.
12.6 – Encourage companies, especially large and transnational companies, to adopt sustainable practices and to integrate sustainability information into their reporting cycle.

As part of Responsible Care, members are committed to being responsible stewards of water resources by managing their business to conserve and minimize water use, preventing incidents that would be detrimental to water quality or quantity, and controlling effluent streams to protect water bodies, groundwater, and habitat. The Responsible Care Codes also govern members' actions in relation to the generation, handling, and disposal of hazardous wastes, through all the life cycle stages of research and development, manufacture, transportation, distribution, and the end use and disposal of chemicals and chemical products.

Improving water quality

Through the NERM survey, CIAC tracks members' releases of NERM substances to water. As seen in **Figure 9**, since 2005, CIAC members have reduced total emissions to water by 40 per cent. In 2021 specifically, water emissions represented only 0.0077 per cent of the total 2021 emissions to all media (i.e., air, land, and water).

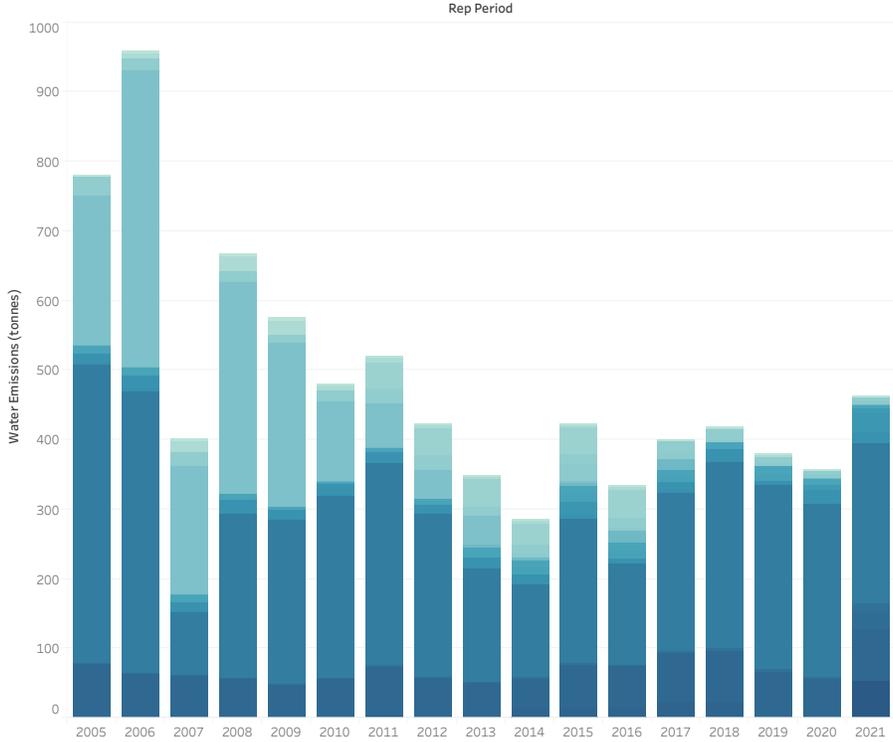


Figure 9. Total emissions to water, 2005-2021. Note: each shade represents a different substance.

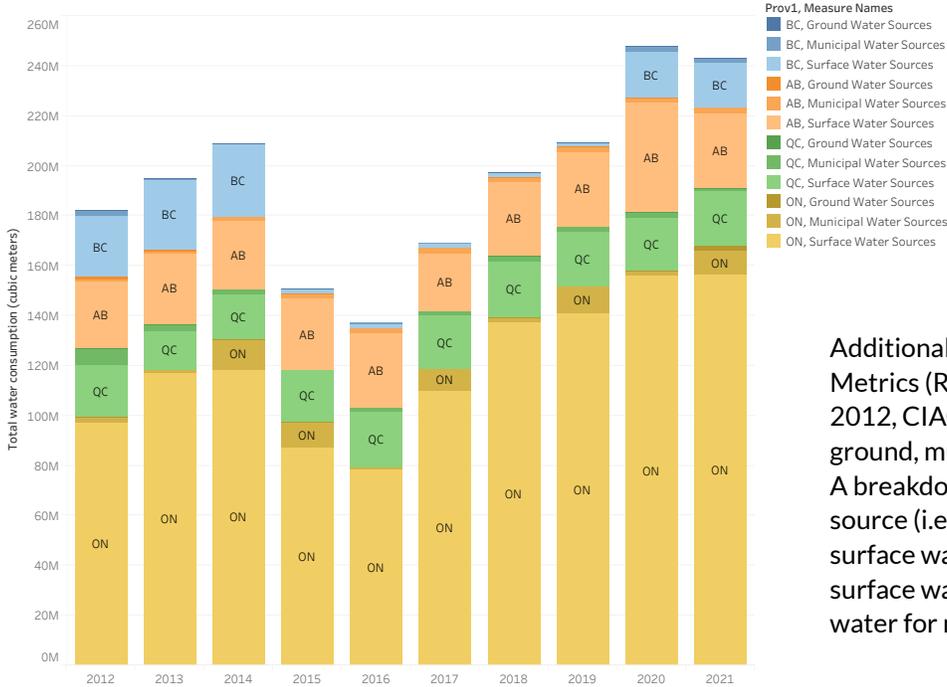


Figure 10. Total water intake by province and source.

Additionally, through the Resource Conservation Metrics (RCM) survey, which was launched in 2012, CIAC tracks members’ water intake from ground, municipal, and surface water sources. A breakdown of water intake by province and source (i.e., ground water, municipal water, and surface water) can be seen in **Figure 10**, with surface water being the most common source of water for members over the years.

The map in **Figure 11** shows where surface water is being taken by our members in 2021. Evidently, the majority of water intake is from surface water sources in the Great Lakes region, St. Lawrence River, and in Alberta, aligned with members' facility locations.

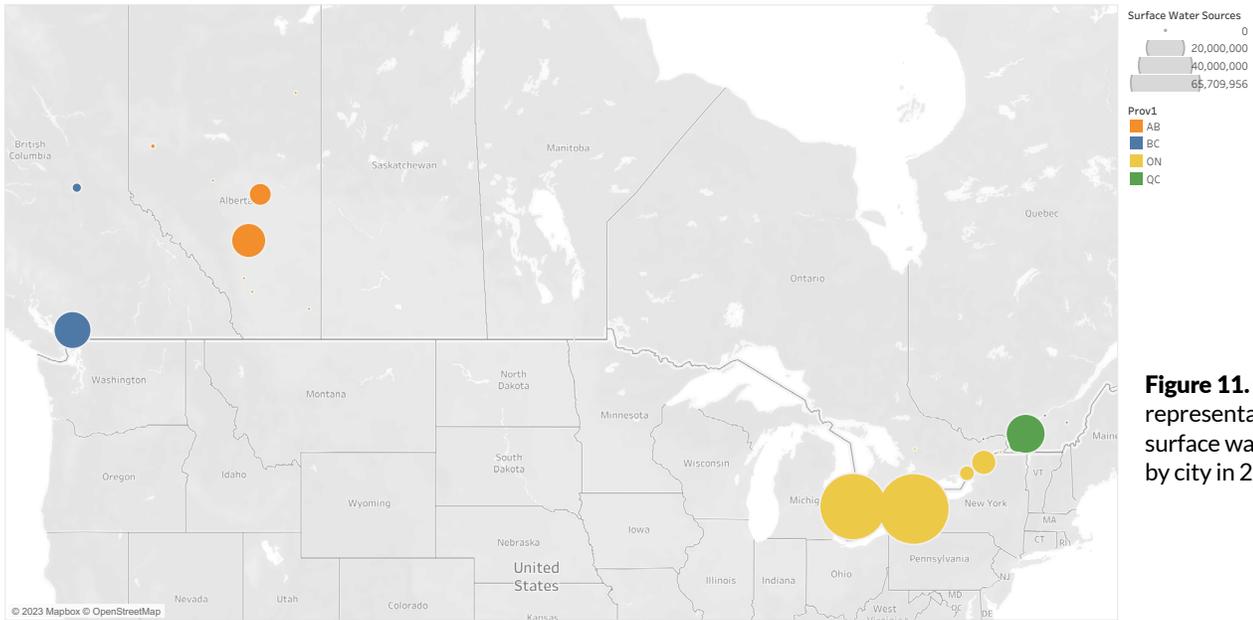


Figure 11. Geographic representation of surface water intensity by city in 2021.

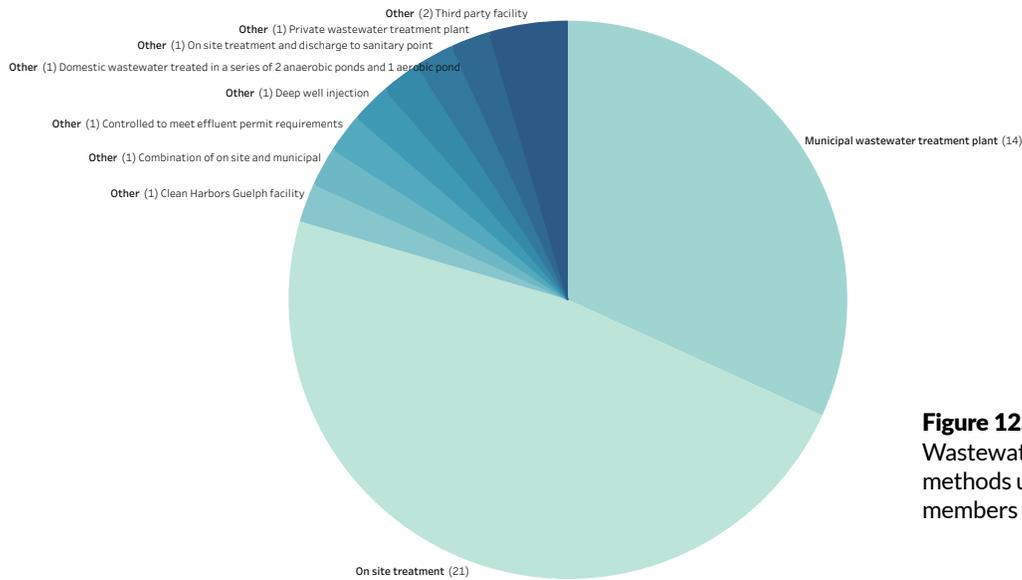


Figure 12. a) Wastewater treatment methods used by CIAC members in 2021.

Based on analysis by Environment and Climate Change Canada, the greatest threats² to water availability in Canada are in portions of southern Ontario, southern Alberta, southern Saskatchewan, southwestern Manitoba, and the Okanagan Valley in British Columbia. Considering this information, it is critical to ensure that CIAC members in areas like the Great Lakes keep resource conservation top of mind.

CIAC members are doing just that – through various methods of wastewater treatment, many CIAC members are returning water cleaner than when they found it. Both **Figure 12a** and **12b** show the treatment methods used for wastewater, while Figure 12b also illustrates volume of effluent released by members in 2021, providing a picture of the water that is returned to its source following extraction and use.

²A high threat to water availability means that more than 40 per cent of the water in rivers was withdrawn for human use.

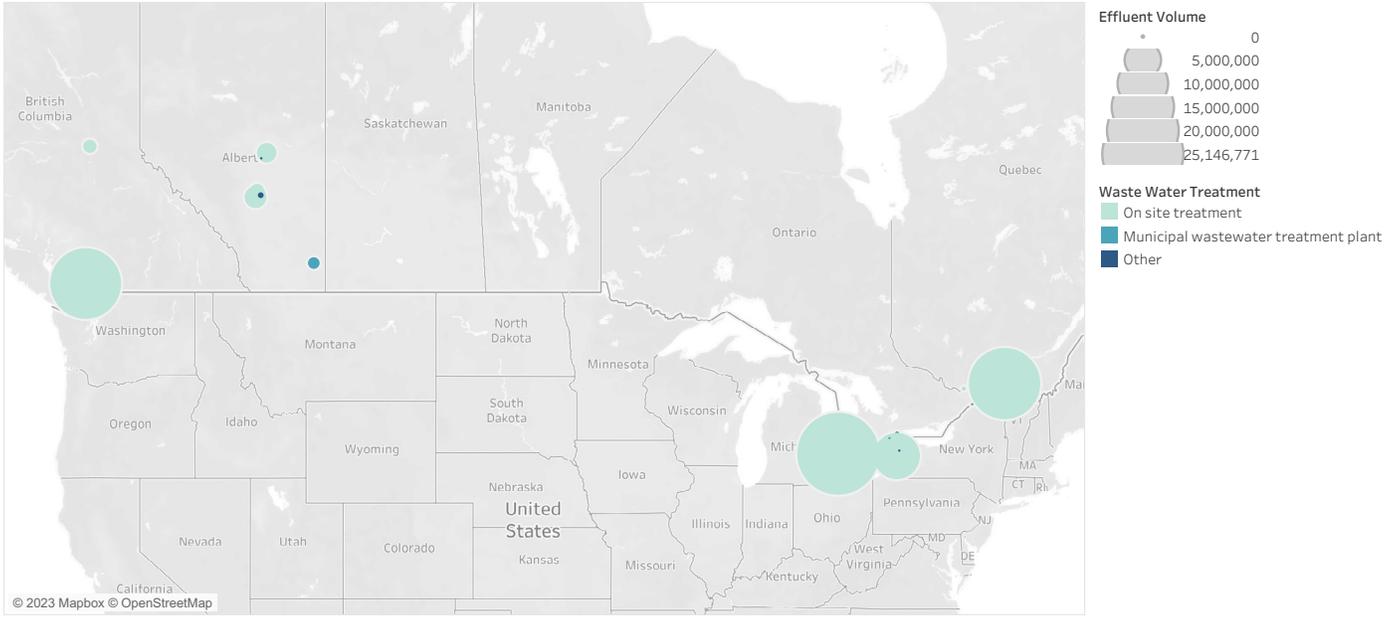


Figure 12. b) Geographic representation of effluent intensity (size of bubble) and treatment methods (colour) by city in 2021.

Hazardous waste management

When CIAC began reporting waste metrics through the RCM survey in 2012, members produced about 20,000 tonnes of routine hazardous waste for disposal. As seen in **Figure 13**, CIAC members have seen a 31 per cent increase in routine hazardous waste for disposal, however there are a number of factors to take into account when looking at these trends. Increases in waste may be linked to positive outcomes and/or outside factors, including the identification of alternate uses for waste streams, improved equipment reliability requiring less cleaning, soil and asbestos remediation, and COVID-19 disruptions, to name a few.



Figure 13. Total routine hazardous waste and routine non-hazardous waste, 2012-2021.

Measure Names
 Total Routine Non-Hazardous Waste
 Total Routine Hazardous Waste

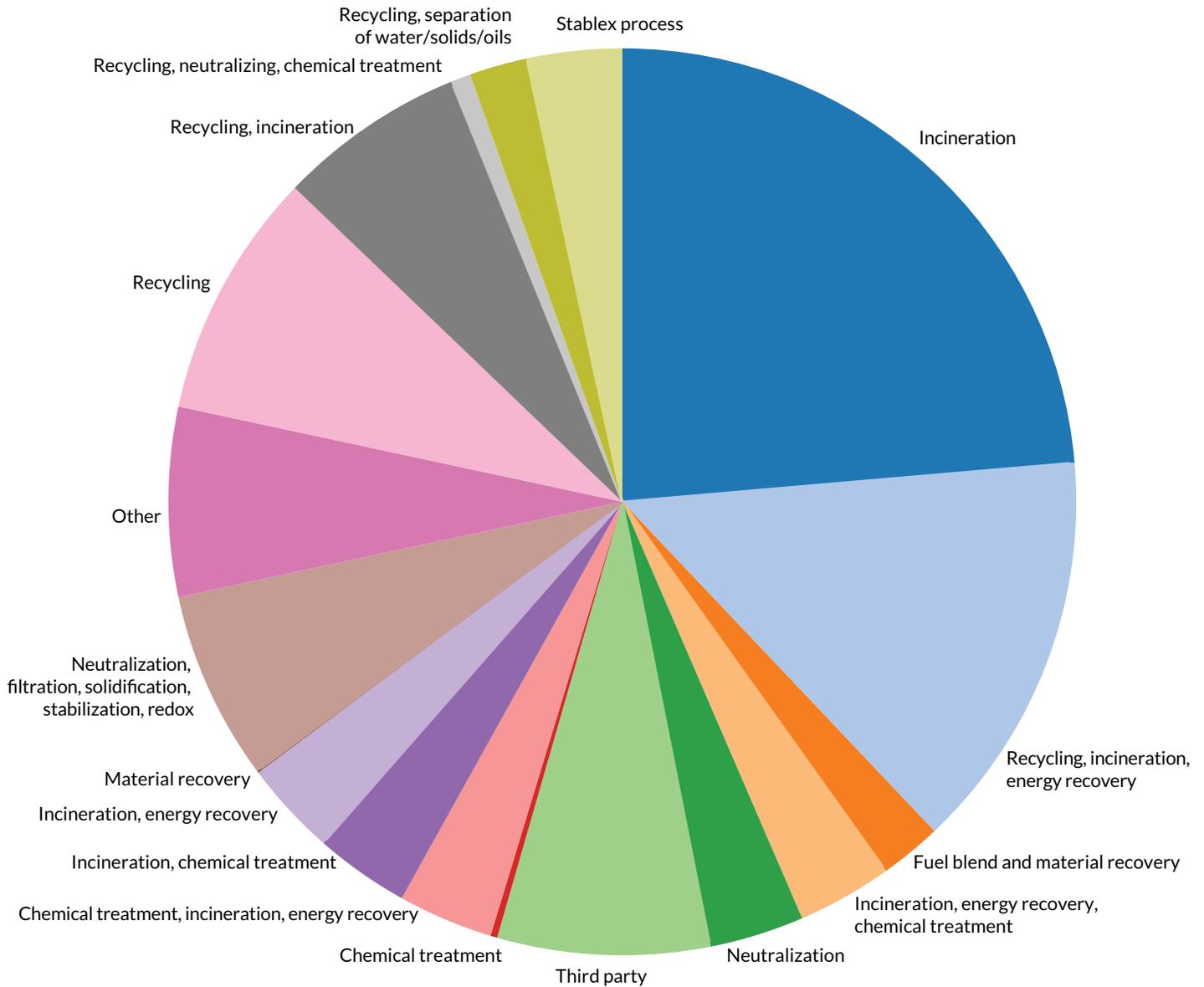


Figure 14.
Hazardous waste treatment methods, 2021.

Our members have also established ambitious programs to limit waste disposal to landfills – **Figure 14** shows the hazardous waste treatment methods used by CIAC members in 2021, while **Figure 15** focuses specifically on recycling rates (total material recycled / total waste generated) by facility in 2021.

[CLICK TO CHART](#) 

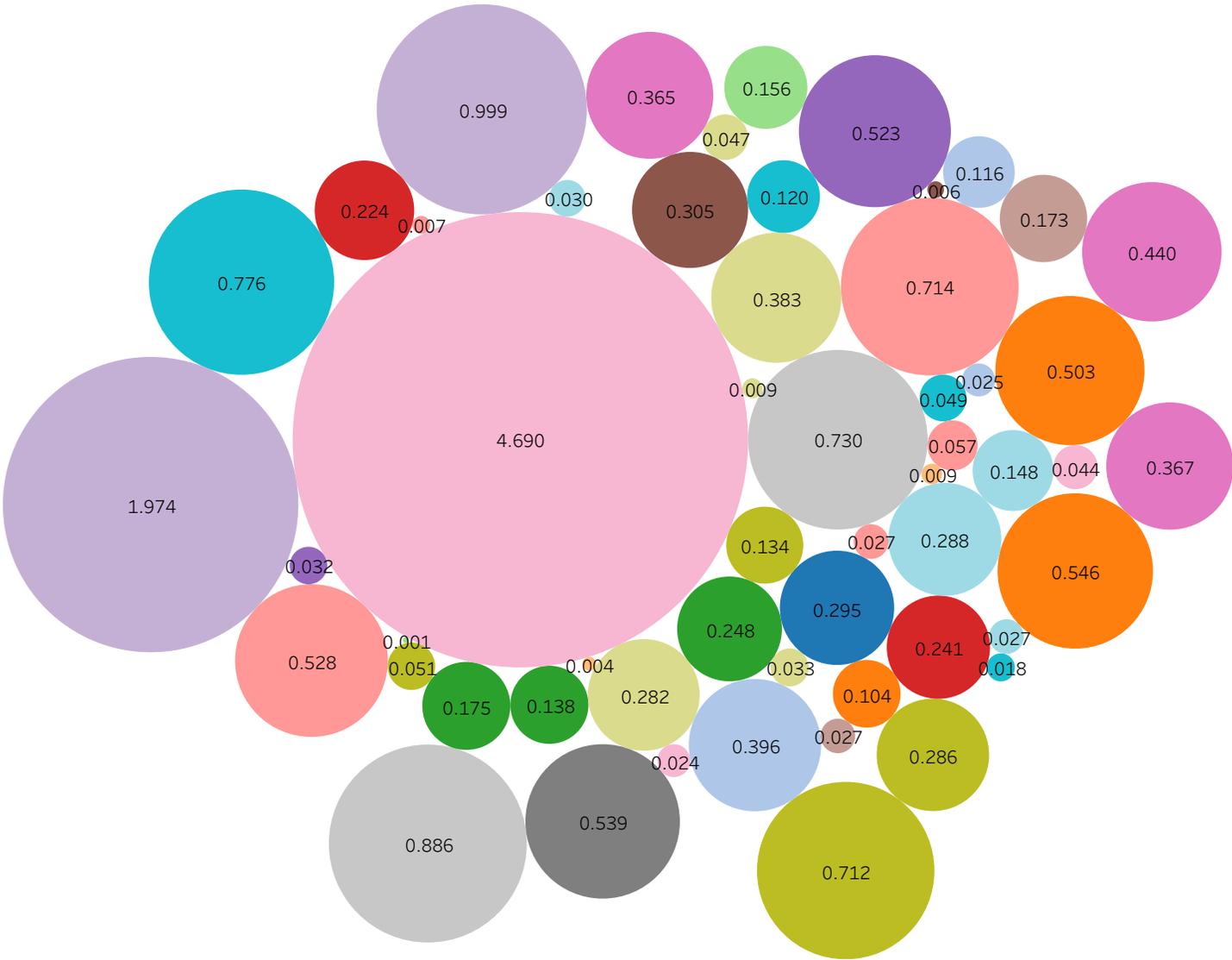


Figure 15. Recycling rate (total material recycled / total waste generated) by facility, 2021. Each bubble represents a different facility. The numbers and size of bubble correspond to recycling rate.



Steam turbine generator

CCC Sulphur Products commissioned a steam turbine generator in April 2021. The steam turbine generator is rated for 960kW and it can generate enough electricity to power the whole plant independently. This has significantly reduced the plant's water consumption by capturing exhaust steam and condensing it for plant reuse which also reduces the volume of water discharged from the plant.



Ground water capture

In ERCO's Saskatoon facility, effluent, process, storm, and ground water are captured and returned to the plant for internal use. In addition, by recycling its usage, it has reduced its water consumption by 22,000 cubic meters in 2021.



Red Deer River Clean Up

Thirteen volunteers from GATX's Red Deer Diversity Equity and Inclusion team volunteered and supported the annual Red Deer River Clean Up event that promotes the importance of protection, preservation, and sustainability of water ways. The team spent the better part of their day gathering and removing



refuse from the Red Deer River shoreline and surrounding area. GATX plans to make this an annual event. In addition, the company donated monetary gifts and other materials including latex gloves, high visibility vests, and hand sanitizers to the Society.



Facility water reduction

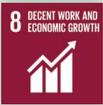
In 2022, United Initiator's Prince George, British Columbia site received a silver medal and a certificate from EcoVadis. Significant wastewater reduction on site (by water saving initiatives including Once Through Cooling Water reduction) was achieved in the previous year.

Promoting safe and secure working environments

Through CIAC’s Safety, Health, Analysis, Recognition, and Exchange (SHARE) Network and Process Safety Network, members share information and experience related to environment, health, and safety issues, driving continuous improvement in workplace safety. These networks allow CIAC members to make progress on the following targets under UN SDG 3 (Good Health and Well-Being) and UN SDG 8 (Decent Work and Economic Growth):



3.9 – By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.



8.8 – Protect labour rights and promote safe and secure working environments for all workers, including migrant workers, in particular women migrants, and those in precarious employment.

Protecting worker health and safety

Safety is a top priority at every Responsible Care company. For nearly 40 years, CIAC members have been creating workplaces that are as healthy and safe as possible through initiatives such as the SHARE Network. Through this network, CIAC member company health and safety professionals work together to measure, track, and continuously improve performance, with the goal of achieving zero workplace injuries and illnesses.

Each year, CIAC collects Safety and Health Incident Metrics (SHIM) data. This data measures, tracks, and communicates health and safety trends to help member companies expand their efforts and extend their safety programs, further protecting the safety of everyone involved in the business of chemistry. Trends in the Total Recordable Incident Rate (TRIR) and Day Away from Work Incident Rate (DAWIR) for CIAC member employees and contractors between 2017-2021 are shown in **Figure 16** and **Figure 17** below.

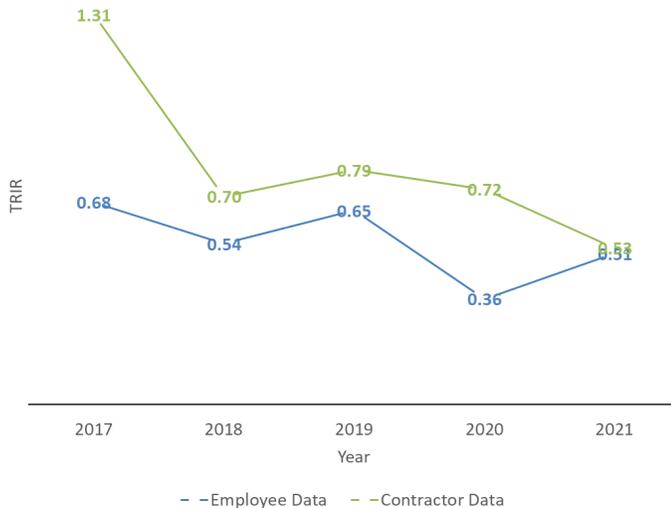


Figure 16. TRIR Employees vs. Contractors (2017-2021).

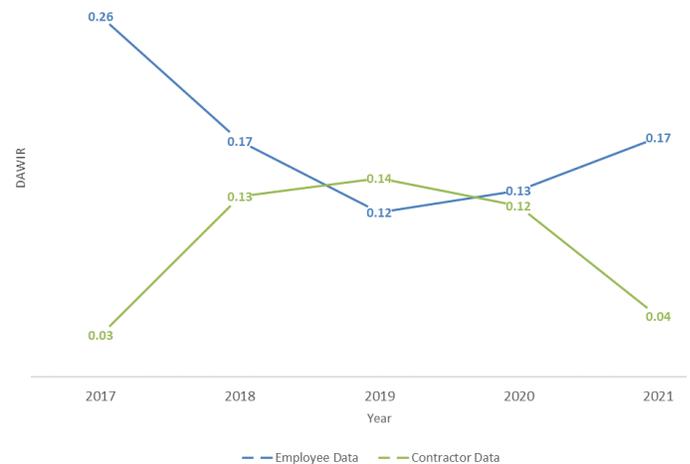


Figure 17. DAWIR Employees vs. Contractors (2017-2021).

Promoting process safety

To protect their workers, the public, and the environment, all CIAC member companies must have comprehensive process-safety management systems in place and adhere to standards established by the Canadian Society for Chemical Engineering. Any gaps between a company's management system and the standards must be assessed, and action plans developed and implemented to raise the company's process safety to an acceptable level. A comprehensive examination of a company's process-safety management system is a fundamental component of the Responsible Care verification or audit process.

CIAC collects Process-Related Incident Measures (PRIM) data through an annual survey which has adopted the Center for Chemical Process Safety (CCPS) PRIM metrics. These metrics allow companies to track their own performance against industry process safety incident trends and identify opportunities for improvement.

Figure 18 below shows some key insights from the annual PRIM survey. While the classification system for process safety events changed in 2016, **Figure 18** does show that the number of Higher Learning Value (HLV- i.e., an event occurred but was of very low consequence or no actual event was recorded) events have increased over the last few years and overtaken both Tier 1 (loss of primary containment with the greatest consequence) and Tier 2 (loss of primary containment with lesser consequence) events.

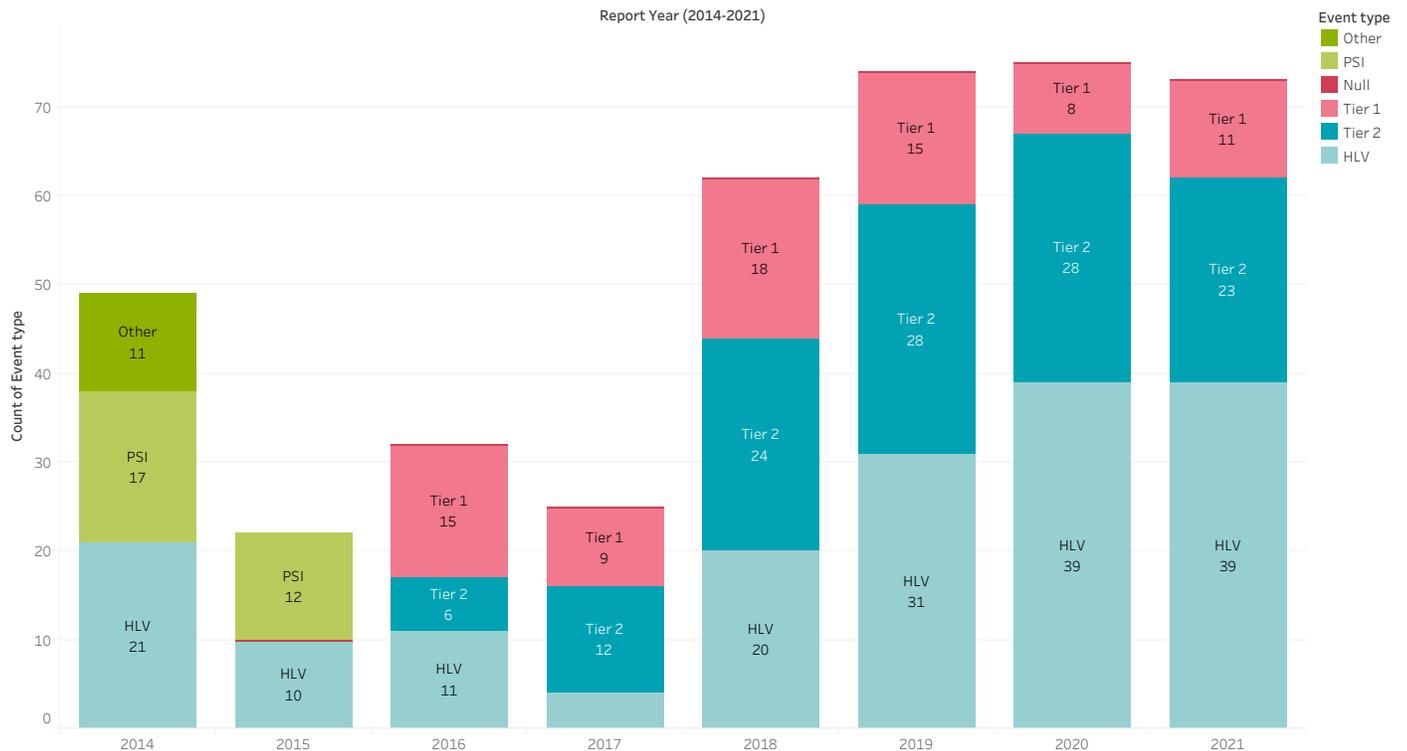


Figure 18. Process safety events, by type (2014-2021).



Goal Zero Initiative with Youth Wellness Hubs Ontario

In 2022, the Shell Manufacturing Centre (SMC) highlighted the importance of safety by introducing a “Goal Zero” initiative for their Turnaround event (a scheduled event in which a refinery’s units are shut down, upgraded, and restarted) – setting aside a set amount of money for each incident-free day completed during the Turnaround.

The charity of choice for the 2022 Goal Zero initiative was Youth Wellness Hubs Ontario of Sarnia-Lambton, a new mental health and addictions centre for youth aged 11 to 25 and their families who are seeking low-barrier access to education, assessments, counselling, and treatment. Many core services (e.g., crisis counseling, housing, case management, and psychiatry) will be co-located in the new downtown Sarnia centre which is scheduled to open in 2023. This removes barriers to care, transforms the way service providers conduct their daily work, and improves care through a coordinated approach.

“This particular initiative is near and dear to my heart,” said Jason Woodward, Turnaround Event Manager. “My own family struggled to access services during the COVID-19 pandemic. SMC’s donation should support over 100 individual treatment cases.”



Psychological health and safety in the workplace

In 2022, BASF Canada completed a gap analysis of their Environmental, Health and Safety Management system against the CSA Z1003-Psychological Health and Safety in the Workplace Standard. Following the gap analysis, updates that have been made so far include an update to BASF Canada's EHS Policy to include their commitment to employee psychological health and safety, development of a Psychological Health and Safety Committee (PHSC) that has 22 passionate and dedicated members across their Canadian organization, updates to their job postings and hiring practices to include psychological health and safety hazard recognition as a job responsibility for all roles and updates to their crisis management plan to include psychological support following different incidents.

Over the year, the PHSC has hosted eight different employee engagement webinars to discuss psychological safety awareness, coping mechanisms, and ending the stigma with their employees. Additionally, their Canadian Leadership Team was provided with Psychologically Safe Training During Challenging Times training, and 50 per cent of their people leaders in the organization participated in "How Managers Should Respond" training.



Dean Pearson, Facility General Manager, Cabot Canada Sarnia accepting the Safety, Health and Environmental award.

CABOT

Safety, health and environmental leadership award

Cabot Canada Ltd. has been recognized for its outstanding performance in safety, health, and environmental leadership. The company was recently nominated for the award through their regional Chamber of Commerce and was selected as the winner.

The award recognizes Cabot Canada's commitment to safety and environmental performance, which is evidenced by the company's more than four years without a recordable injury and over 10 years without an environmental spill or release. "I was extremely proud to accept the award on behalf of the employees at Sarnia, just as I am proud of the effort our employees put in every single day in continuing our Drive to Zero," said Dean Pearson, Facility General Manager of Cabot Canada Sarnia.

The company's success in safety and environmental performance is due to the teamwork, communication, and effort put in by all employees and contractors to identify hazards and ensure that all workers can do their jobs safely.

NOVA Chemicals®

Training the next generation on critical safety and risk management

NOVA has had a 20-year partnership with the University of Alberta (U of A) to create programs for process safety and risk management. This partnership helps to support the industry's commitment to sustainability and Responsible Care. NOVA employees, including Fred Henselwood, Sorin Dan, and Janeth Liendo, have worked with the U of A to create programs

and guest lecture at process safety conferences and classes. Fred was recently awarded for his contributions to the U of A's David and Joan Lynch School of Engineering Safety and Risk Management. NOVA's commitment to Responsible Care remains strong, with a focus on Goal ZERO and ensuring safe and sustainable chemistry industry operations.

Supporting sustainable and resilient transportation infrastructure

Chemicals are transported daily through our communities, by rail, road, or pipeline. To ensure the safe and secure transportation of these chemicals, CIAC and its members prioritize accountability and responsiveness to the public, particularly with the communities they operate in. These efforts align with Responsible Care® and have contributed to progress towards the following UN SDG 3 (Good Health and Well-Being) and UN SDG 9 (Industry, Innovation and Infrastructure) targets:



3.6 – By 2020, halve the number of global deaths and injuries from road traffic accidents.

3.9 – By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.



9.1 – Develop quality, reliable, sustainable, and resilient infrastructure, including regional and trans-border infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.

Measuring our progress toward UN SDG 3 and 9

In 2022, CIAC launched the new Transportation Incident Measurement System (TIMS) reporting requirement for CIAC members and will be receiving the first set of data early in 2023.

Fundamental to Responsible Care is a commitment to transparency and continuous improvement. TIMS is intended to track and measure members' progress toward achieving a reduction in incidents over time. This will also ensure CIAC is able to meet its reporting commitments to the International Council of Chemical Associations (ICCA), better link to the UN SDGs, and help tell our story credibly to key stakeholders.

Transportation Community Awareness and Emergency Response (TRANSCAER®)

Through TRANSCAER®, a voluntary initiative led by CIAC and the Railway Association of Canada (RAC), CIAC members work closely with communities along transportation routes to ensure residents, municipal officials, and first responders are aware of hazards associated with their products. They also help ensure communities are aware and prepared for a potential transportation incident involving dangerous goods.

TRANSCAER outreach

In 2022, the TRANSCAER team supported and participated in 34 outreach events conducted by RAC and CIAC members. The events had participation from nearly

SUPPORTING SUSTAINABLE AND RESILIENT TRANSPORTATION INFRASTRUCTURE



1,300 attendees across Canada including 500 first responders. The sessions were delivered in various formats, including presentations on dangerous goods safety and simulations of real-life incidents supported by props.

Railway equipment utilized at these events included:

- CN 911 safety training tank car;
- pressure and general service tank cars;
- locomotives;
- CN, dangerous goods valve trailer; and
- midland and chlorine capping kits.

In addition to in-person events, CIAC and the RAC Dangerous Goods team hosted four virtual TRANSCAER sessions, which were a great success. There was an

average of 30 participants at each event representing various government agencies, industry, and municipalities. The virtual events gave participants an overview of the TRANSCAER initiative, railway tank car components, and the resources that are available in the event of a transportation incident involving dangerous goods.

VR headsets

The TRANSCAER team was pleased to introduce our new virtual reality (VR) headsets at conferences and events in 2022. The headsets were demonstrated at the BC Fire Training Officers Conference and Trade show in Salmon Arm, British Columbia, the Colloque sur la sécurité civile in Quebec City, and at the Prairie Regional TRANSCAER Committee spring meeting. The goal was to help participants gain an understanding of railway

equipment and safety when hands-on tools are not available. Participants shared positive feedback and the TRANSCAER team will continue to use these innovative tools to expand its reach to more stakeholders.

TRANSCAER Safety Train

Since the retirement of the previous CCPX 911 tank car in 2018, TRANSCAER members and partners have been working to evolve the initiative and replace the Safety Train.

In 2022, the team made meaningful progress towards planning for the fit-up of the new Safety Train, producing final designs and detailed cost estimates. The team also worked to secure donations of funds and material to

support the construction phase of the project. CIAC was pleased to receive nearly \$90,000 in donated funds from members and industry partners in 2022. Construction will begin in spring 2023 and the team is eager to launch the new Safety Train in the coming months.

Once the retrofit is complete, the new Safety Train will embark on a cross-country tour, making stops in communities where dangerous goods travel, to raise awareness about rail safety and emergency response for transportation incidents involving dangerous goods. By travelling to communities, TRANSCAER will continue to establish partnerships between manufacturers, distributors, carriers, emergency responders, government agencies, and residents.

TRANSCAER SAFETY TRAIN DONORS



TRANSCAER Awards 2022

Award recipients are recognized for their demonstrated exceptional dedication to the program in one of three award categories: distinguished service, national achievement, and regional achievement.

Congratulations to the 2022 TRANSCAER Award Winners for their hard work and commitment to transportation safety:

Andy Ash	Retired, Director of Dangerous Goods, Railway Association of Canada
Tyler Yates	EHS Manager, GATX
Randy Mak	Retired, Dow Chemical, Hydrocarbon Products Technician
Curtis Myson	Dangerous Goods Specialist, Railway Association of Canada
Steven Santelli	Senior Dangerous Goods Officer, CN
Jon Gardiner	Hazardous Materials & Emergency Response Officer, CPKC
Tom Bozyk	Hazardous Materials Technician, BNSF
Dan Moore	Retired, Chemical Specialist/HazMat Responder
Doug Kittle	Retired BC Region TRANSCAER Coordinator

Transportation Emergency Assistance Program (TEAP III)

TEAP III is another CIAC-led program that aims to maintain a national emergency response network capable of safely and efficiently mitigating the impacts of a chemical transportation incident anywhere in the country. TEAP III provides a forum for CIAC members, transportation companies, and emergency response service providers to share information and successful practices, and to encourage continuous improvement around chemical transportation emergency preparedness and response.

Through TEAP III, CIAC and its partner organizations have established two standards:

1. CIAC's Transportation Emergency Response Standard (CIAC TER Standard) is the minimum criteria that CIAC member companies must meet for road and rail emergency preparedness and response.
2. The TEAP III Transportation Emergency Response Service Provider (TERSP) Standard outlines the criteria used by TEAP's assessment teams to evaluate a service provider's ability to safely mitigate the impacts of a chemical transportation incident.

In 2022, there were 17 registered TEAP III Transportation Emergency Response Service Providers across Canada. This ensures that there is a strong network of transportation emergency response service providers available to respond from anywhere in Canada. The TEAP III assessment process encourages the sharing of information, best practices, and opportunities for continuous improvement.

It is this commitment to continuous improvement and collaboration that has allowed the program to grow and remain relevant for the long term. The program remains strong and TEAP III is always looking to work with other organizations, to continue to evolve over time.

CIAC congratulates several members for their 2021 CN Safe Handling Award

[CLICK TO WEBSITE](#)

CIAC congratulates our members who have been presented with the 2021 CN Safe Handling Award. Launched in 1992, this award is presented to customers who load freight cars with dangerous goods and meet strict standards for the safe handling and shipment of regulated products. The winners must meet established criteria, according to the total number of shipments of dangerous goods for all facilities.



CHEMTRADE



INEOS
STYROLUTION

INEOS

MEGlobal

LANXESS
Energizing Chemistry

NOVA Chemicals



CP Safe Shipper Awards

[CLICK TO WEBSITE](#)

In October of 2022, many CIAC members were recognized for their commitment to shipping safety by CP Railway in its annual Safe Shipper Awards. CIAC members recognized in the awards included:

MEGlobal



Imperial

methanex
the power of agility



CHEMTRADE

Operation Clean Sweep™

The establishment of the CIAC Plastics Division in 2020 led to an opportunity for companies in Canada to demonstrate their leadership in all aspects of the plastics value chain, including sustainability. To affirm the commitment to sustainability, CIAC adopted Operation Clean Sweep (OCS) and became its sole licensor in Canada.



Operation Clean Sweep (OCS) is an international prevention-focused program for environmental stewardship designed to help plastic resin manufacturing and handling operations implement good housekeeping and resin containment practices. Responsible management of plastic resin is critical to ensure plastics can continue playing a role in our modern, sustainable way of life while never entering the natural environment.

CIAC has made participating in OCS a condition of membership to ensure responsible management of plastic resin throughout their businesses. In line with the high level of accountability associated with Responsible Care, CIAC has taken steps to ensure a significant level of rigour behind OCS. This includes requiring members to:

- submit quarterly site assessments;
- report all spills over 0.5 kg of uncaptured resin; and
- participate in a third-party audit once every three years.

Through fulfillment of OCS program requirements, member companies are not only able to apply practices that mitigate the risk of pellets entering the environment, but they are also able to demonstrate their leadership in sustainability and stewardship in the Canadian context.

Key highlights

OCS was first introduced to members for initial site assessments in September 2021. Although the program is still in an implementation phase, there has been significant adoption amongst members leading to impressive benefits to companies' sustainability performances.

After 12 months of implementation, CIAC members have seen a positive reduction in both site issues (evaluated in quarterly site assessments) and overall spills (evaluated based on spill reports sent to CIAC). The data presented here covers the period from September 2021 to September 2022 and represents four quarterly assessment periods.

After one year of implementing the OCS program, on average, members of the CIAC Plastics Division have reported a 29 per cent improvement on issues related to plastic spills at their facilities. These include preventative tools and traps being installed at the correct locations, cleaning up visible resin around the facilities, and ensuring equipment is functional and ready should a spill occur. Furthermore, during the same one-year period, members also observed a 28 per cent reduction in total spills from the first to the fourth quarter. While the



OCS program is still in an implementation phase, these results demonstrate the value of quarterly reporting and the potential benefits of responsible plastic resin management.

OCS in 2022

- 29%** Improvement in site issues
- 28%** Reduction in spills
- 33%** Of new members driven by OCS

The increased recognition and rigour of the OCS program has attracted several new members to the CIAC Plastics Division. This interest has led to the formation of a new category of membership called "OCS Transportation Partners," which includes companies operating in the transportation and distribution side of the plastics value chain. This marks a significant milestone for the OCS program as transportation partners offer knowledge-sharing opportunities for all program participants. In 2023, CIAC will be adapting the OCS program to provide unique reporting guidelines to meet the specific needs of the transportation sector.

Communication and advocacy have also been a top priority for CIAC in the implementation of the OCS program over the last year. Renewed material, such as the OCS brochure, has been made available for companies interested in the program. CIAC has also participated in panels and presented at conferences to highlight the value of OCS to industry stakeholders. Additionally, [Environment and Climate Change Canada](#) has recognized OCS on their website as a resource to reduce plastic spills and releases in the environment. Furthermore, CIAC is working with provinces across Canada to promote the recognition and value of participation in the program.

Future outlook

As the [OCS program](#) continues to grow in Canada, CIAC plans to work closely with its members to further minimize spill risks. To enhance the program's rigour and credibility, CIAC intends to introduce third-party audits in 2024 to ensure that companies maintain the highest level of practices.

OCS offers a unique opportunity for companies to achieve their environmental stewardship objectives by keeping plastics in the economy and out of the environment.

OUR MEMBERS

As at December 31, 2022

3M Canada Company
Arkema Canada Inc.
ARLANXEO Canada Inc.
BASF Canada Inc.
Cabot Canada Ltd.
CCC Sulphur Products
Chemours Canada Company
Chemtrade Logistics
Diamond Petrochemicals Canada Corporation
Dow Chemical Canada ULC
DuPont Canada
ERCO Worldwide LP
Evonik Canada Inc.
Evonik Oil Additives Canada Inc.
Imperial Oil Chemicals
INEOS Canada Partnership
INEOS Styrolution Canada Ltd.
Inter Pipeline Ltd.
Jungbunzlauer Canada Inc.
KRONOS Canada, Inc.
LANXESS Canada Co./Cie
Linde Services Canada Inc.
MEGlobal Canada ULC
Methanex Corporation
National Silicates
Nauticol Energy Ltd.
NorFalco Sales, GLENCORE Canada Corporation
NOVA Chemicals Corporation
Porocel of Canada, Ltd.
Procter & Gamble Inc.
PCAS Canada
Shell Chemicals Canada

Solvay Canada Inc.
Stepan Canada Sales Inc.
United Initiators Canada Ltd.
WR Grace Canada Corp.

Responsible Care® Partners

Canadian National
Canadian Pacific Railway
GATX Rail Canada
Northwest Tank Lines Inc.
PROCOR Limited
Trimac Transportation Ltd.

Associate Members

Busch Vacuum Technics Inc.
ERM Consultants Canada Ltd. (ERM)
Hexagon PPM
Northern Alberta Institute of Technology (NAIT)
Wood Group

Plastics Division Members

3M Canada Company
Absolute Haitian Corp.
Ampacet Canada
Applied Plastics Technology Inc.
Balcan Plastics
Bamberger Polymers Corp.
BASF Canada Inc.
Bekum America Corp.
BMP Recycling
Canuck Compounders
CCC Plastics

OUR MEMBERS

CKF Inc.
Clean Farms
Colortech Inc.
Dart Canada Inc.
Dominion Colour Corp.
Dow Chemical Canada ULC
Drader Manufacturing
Duchesne et Fils Itée
Dupont
Dyne-A-Pak
Eco-captation
Eligant Poly Product
Emballage St. Jean Itée
Erema North America Inc.
Farnell Packaging Ltd.
Genpak LP
GreenMantra Recycling Technologies Ltd.
Husky Injection Molding Systems
Hymopack Ltd.
Imperial Oil
INEOS Styrolution Canada Ltd.
Inter Pipeline
IPL Inc.
Keurig Dr. Pepper Canada
Kongsilde Industries Inc.
Layfield Group Ltd.
Macro Engineering & Technology Inc.
Malpack Ltd.
Mauser Packaging Solutions
Merlin Plastics
Revital Polymers
Van Waste Co.
Micro Interface Design
Modix Plastique Inc.
Nexeo Plastics
Nissei
Norwich Plastics
NOVA Chemicals Corp.
Oasis Alignment Services
Owens-Corning Canada LP
Procter & Gamble
Pack All Manufacturing Inc.
Pactiv Canada
Peel Plastics Products Ltd.
Petro Plastics
Plasti-Fab
Poly Expert Inc.
Polykar Foam Plastics Inc.
Polystar Packaging
Polystyvert Inc.
Polytainers Inc.
Polytarp Products
Pyrowave
Revital Polymers
Shell Polymers
Styro Go Canada
Tempo Plastics Ltd.
Transcontinental Inc.
Wentworth Plastics North America
Winpak Ltd.
Wittmann Battenfeld Canada Inc.





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