

SiteLine

Joffre Site Community News

Published for the Central Alberta community by NOVA Chemicals

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Special Edition: Annual Environment Review

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“ We are all looking forward to when things get back to the ‘new normal’. I look forward to reconnecting with you once physical distancing protocols shift. ”

Once again I am writing to you from my home office. NOVA Chemicals' long-standing commitment to the principles of Responsible Care® remains central to everything we do. Through this COVID-19 crisis, we are proud to be taking care of our employees, contractors and communities, donating product for critical front-line needs and enabling our customers to meet the need for essential products. This edition of *SiteLine* features some of our response efforts, ongoing sustainability initiatives and updates on our Joffre Site 2019 environmental performance.

Our Joffre manufacturing site is fully operational and we remain focused on the health and safety of our workforce while maintaining business continuity. The nature of our business means we have to contemplate various crisis scenarios and plan for them — we have been able to leverage that planning and experience in this situation. Our leadership and employees have shown incredible adaptability to changes in their work environment and looking out for one another. In keeping with governmental directives for essential workers and our company's foundational principles and core values, we have implemented company guidelines including:

- Keeping our “site-critical” workers safe with enhanced protocols
- “Non-site critical” staff are working from home
- Site visitors are restricted to those essential to support continued safe and reliable operations
- Business travel is not permitted
- Increased safety, hygiene and physical distancing measures are in place to ensure ongoing workers' safety and well-being, some of which include:
 - Daily temperature screening at the gate

- A hierarchy of safety controls when specific tasks mean physical distancing cannot be maintained
- Staggered breaks and restricted common areas, with dedicated seating in common spaces
- Enhanced cleaning protocols

We recognize the tremendous need of those left vulnerable by the pandemic and it is in our nature to reach out and support those in need. Early on we made a \$17,000 donation to the Central Alberta COVID-19 Community Response and Recovery Fund and we committed to match employee contributions (in addition to the Government's matching program through May 31). These funds are helping to support the critical social needs and helping seniors, those living in shelters, individuals self-isolating and mental health services. I am inspired by the community spirit here and the heart-warming stories of support financially, through much-needed inspiration and random acts of kindness.

We are all looking forward to when things get back to the ‘new normal’. While we are not able to meet in person through this situation we remain committed to keeping you updated about our status and to staying connected with you through publications like this. Please reach out if you have questions, concerns or suggestions. I look forward to reconnecting with you once physical distancing protocols shift. I understand the Haynes Community Hall project is progressing well and we are excited to host a future open house in this new facility.

In closing, stay safe. Stay healthy.

Mark Hodson, Joffre Site Leader

Our approach to Sustainability and Responsible Care

Along with this 19th annual report on the Joffre Site's environmental performance, we are pleased to provide an update on NOVA Chemicals' 2019 sustainability progress against our strategy in four key areas.

At the Joffre Site we remain focused on meeting all regulatory requirements and ensuring emissions are below all regulatory compliance limits. We strive for continuous improvement in our performance. Due to challenges experienced during COVID-19, Alberta Environment and Parks temporarily suspended reporting requirements in approvals under the *Environmental Protection and Enhancement Act*. At this time, our environmental team is able to fulfill our regulatory obligations while meeting the objectives to minimize risk to our people. Activities will be monitored against evolving company guidelines and government protocols. All regulatory compliance limits are being met and reports completed for submission. Our dedicated employee-led Taking Care In Action Team continue to demonstrate that small things really do add up and make a difference.

At NOVA Chemicals, we believe businesses like ours can be a positive catalyst for change. As a global citizen, we partner with others to amplify our positive impact. In our first year as a founding member of the **Alliance to End Plastic Waste™** we saw exciting new projects begin as the organization and their strategy took shape. Our investment as a strategic partner in **Project STOP** is also making a tangible impact, with three municipalities in Indonesia developing waste management systems. Through the first project, 2,900 tonnes of waste were collected in 2019. This is waste that would have otherwise ended up in the environment or the ocean. Through global collaboration, we can replicate this success in other areas and solve the challenge of plastic waste together.

We are advancing the **plastics circular economy**. Plastics make our everyday lives safer and healthier and should not end up as waste. We are drawing on our expertise to design plastic resins and products with a circular economy in mind. Our efforts are geared towards expanding a market for recycled plastics, furthering recyclable packaging designs and helping customers choose more sustainable options. In 2019, we announced the development of seven innovative new polyethylene resins that will help our customers and their customers meet their sustainability targets and drive demand for recycled content. We also continue to advocate for science-based dialogue and policy decisions that encourage responsible use, collection and recycling of plastic.

We are progressing our approach to **climate care**. We are committed to reducing climate change impacts through a framework that balances environmental and business needs.

In 2019, we developed a strategic greenhouse gas (GHG) management framework that includes a decision-making tool to guide our emissions mitigation activities and incorporates carbon pricing into our capital planning.

We continue to embed **sustainability in our operations**. In 2019, we became the first Canadian resin company to pledge our support to Operation Clean Sweep® Blue, an international product stewardship program aimed at preventing accidental loss of pellets into the environment.

Meeting our commitments to Sustainability and Responsible Care go hand-in-hand with continuing to communicate and engage with you our community. Let us know if you have questions about our performance.

Key Areas of NOVA Chemicals' Sustainability Strategy

Our vision for sustainability is captured in our 2019 sustainability strategy that guides how we collaborate and innovate on a variety of sustainability initiatives. Our strategy has four key areas:

Plastics Circular Economy: We recognize the value in post-use plastics and work to extend the lifecycle of plastics to help reach established plastics industry goals for 2030 and 2040 to reuse, recycle or recover 100 percent of plastic packaging. Working together with a wide variety of stakeholders, we strive to create a world free of plastic pollution.

Sustainability Citizenship: As a responsible global citizen, NOVA Chemicals participates in and provides leadership to select challenges and opportunities that promote natural resource conservation and in particular ocean health, including the Alliance to End Plastic Waste which now includes 50 companies across the value chain with an investment of US \$1.5 billion.

Climate Care: NOVA Chemicals is committed to responsibly managing our greenhouse gas emissions.

Sustainability in Operations: We are committed to promoting sustainable practices in our operations, and to proactively and responsibly managing our operational impacts on air, water, land and biodiversity.

NOVA Chemicals' 2019 Sustainability Report

Our sustainability report is our way of demonstrating transparency and accountability to our stakeholders. Our 2019 report describes our progress in the four key areas of our sustainability strategy (see above).

We invite you to review this year's report at www.novachemicals.com



Monitoring our impact on water resources

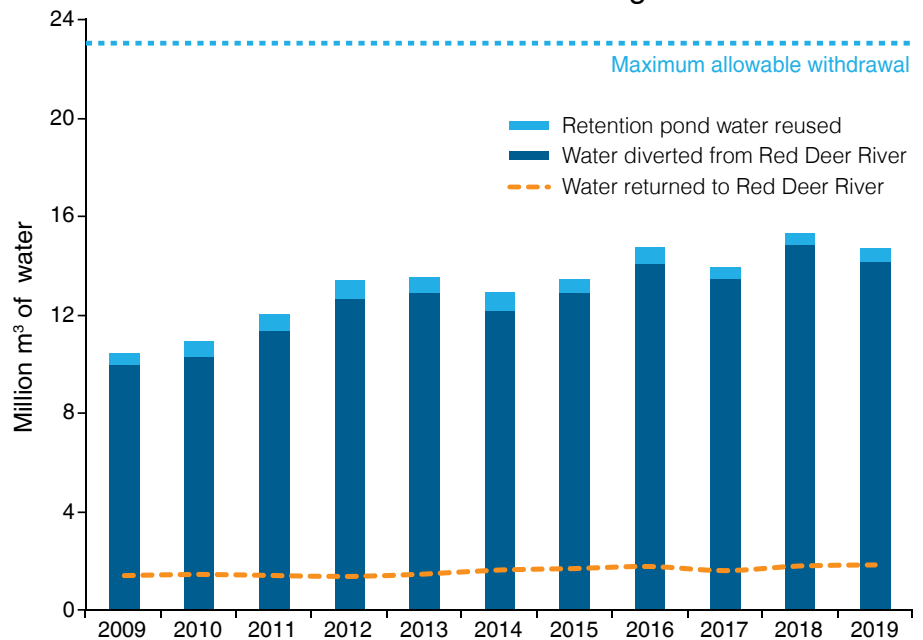
Water is critical to Joffre Site operations and our management programs focus on minimizing our impact on this valuable resource.

The Red Deer River has an annual flow of roughly two billion cubic metres (m³). NOVA Chemicals has water licences for approximately 23 million m³ per year, which is just over 1% of the annual flow in the river.

In 2019, we withdrew 14.2 million m³ or 62% of our allotment from the river. We also collected and used 0.54 million m³ from surface runoff.

The majority of water used in our manufacturing facilities is returned to the environment through evaporation in cooling tower plumes. The amount of water vapour released back to the ecosystem is about 80% of our intake. Water returned to the river goes through extensive testing to meet regulatory requirements and strict environmental standards before discharge.

Joffre Site water usage



This graph shows our water use at the Joffre Site. Generally, the greater the production rate, the greater our water use. Water use also fluctuates with other site activities such as turnarounds and weather conditions.



Noise management update

Monitoring, modelling and mitigation are key components of our ongoing noise management strategy

Noise management is important to the community and has long been a key consideration at the Joffre Site. We have been conducting community noise surveys since 1998 to measure our performance during normal operations. Our ongoing focus is to mitigate operational noise impact including rail operations on the community and to reduce the number and impact of site event-based noise situations.

Data from our 2019 community noise monitoring indicate that all residence locations monitored were below target (based on a historical Alberta Energy Regulator Directive) sound levels for the night-time multi-day isolated target.

The North Rail Noise Abatement Strategy 2019 performance results indicate that sound levels remain below the Alberta Energy Regulator Noise Directive. No complaints were received regarding rail activities in the north yards and we met our curfew target.

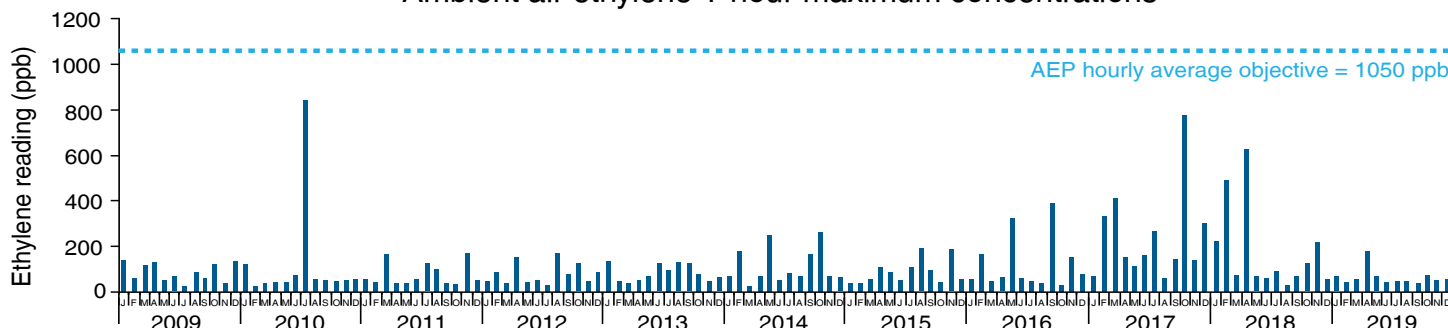


Ensuring air emissions meet Alberta Ambient Air Quality Objectives

Air quality management is a priority for NOVA Chemicals. Through the Joffre Site Air Emissions Management Program we strive to reduce emissions, monitor impacts and continuously review our performance. We remain focused on ensuring air emissions are below all regulatory compliance limits and air quality objectives set by Alberta Environment and Parks (AEP).

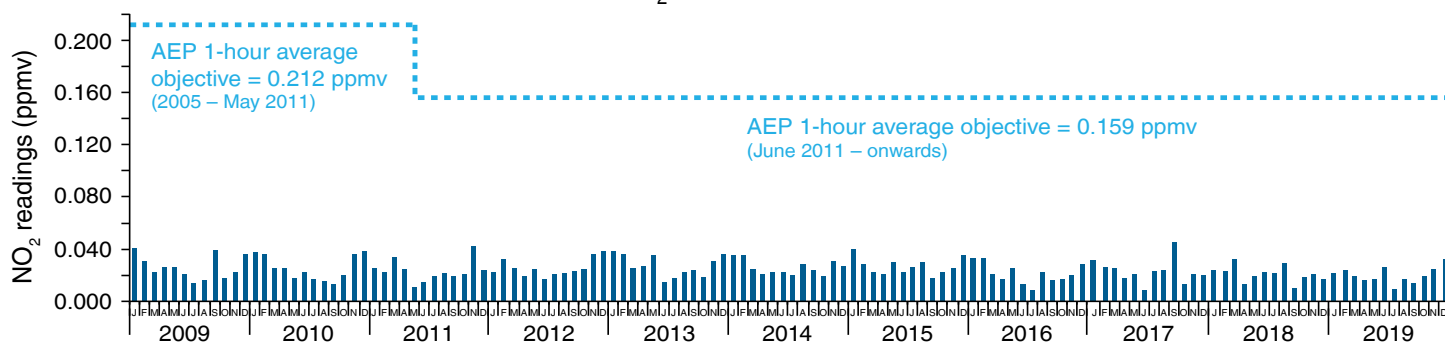
Data related to a variety of air quality parameters, as shown in the graphs below and on page 5, indicates our concentrations and readings are consistently below established objectives.

Ambient air ethylene 1-hour maximum concentrations



Ambient ethylene (1-hour maximum) concentrations are well below the AEP Hourly Average Objective of 1,050 parts per billion (ppb). The spike in 2010 was the result of a leak in an INEOS LAO facility exchanger, which was promptly repaired with no adverse environmental impacts indicated through ongoing atmospheric monitoring. The upwards trend seen in 2017 and early 2018 has been corrected through our Leak Detection and Repair (LDAR) program.

Ambient air NO₂ 1-hour maximum concentrations

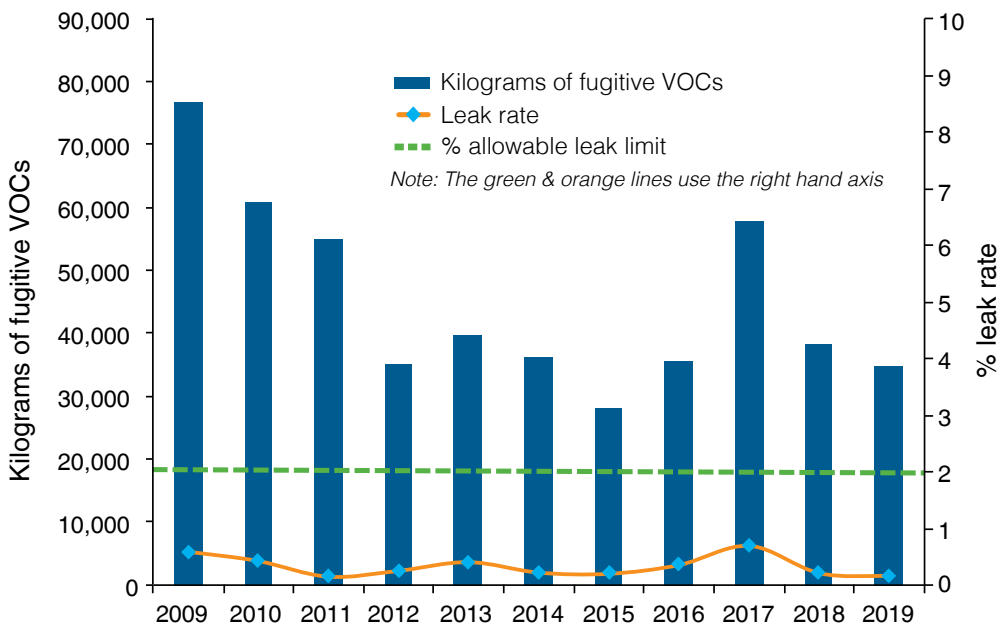


Concentrations of oxides of nitrogen (NO_x), specifically NO₂, are consistently below regulatory limits. We have a committee focusing on a site NO_x strategy, and our 2020 Environment Plan also has goals for NO_x emissions reductions. The Ethylene 2 (E2) Furnace Refurbishment Project has reduced emissions as a result of furnace design improvements including new burners.

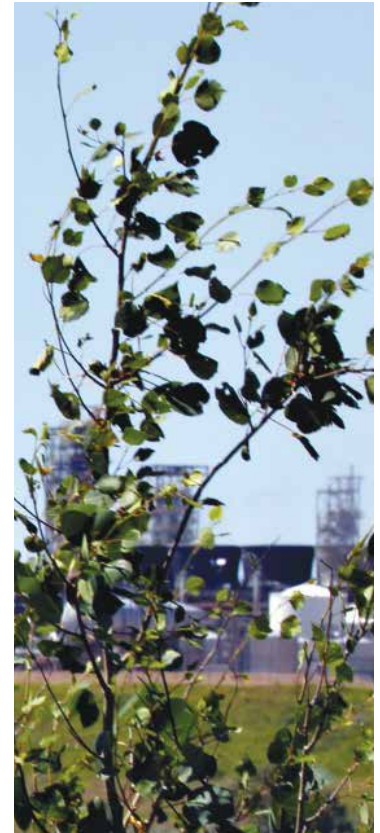
Our NO_x Emissions Reduction Steering Team determines strategies for Joffre Site NO_x emissions reductions activities. The team includes site leaders, technical experts and Responsible Care environmental specialists. Some of the focus areas include tracking NO_x emissions performance, reviewing impacts and opportunities of site projects, and interfacing with regional groups such as the Parkland Airshed Management Zone (PAMZ) and the Red Deer Air Quality Advisory Committee.



Petrochemical facility fugitive VOCs



Volatile organic compounds (VOCs) emissions are hydrocarbons that can affect air quality. Our site's comprehensive LDAR program is fully implemented according to the Canadian Council of Ministers of the Environment Code of Practice. While the Code states that leaks over 10,000 ppm must be repaired, we schedule prompt maintenance for any leak over 1,000 ppm.



GHG compliance

2019 marked the final year of the Alberta Carbon Competitiveness Incentive Regulation (CCIR) as this regulation was replaced by the Technology Innovation and Emissions Reduction (TIER) regulation beginning January 1, 2020. The CCIR used Output-Based Allocations for large industrial emitters to determine compliance costs or credits. Two new negligible emission sources including on-site transportation for delivery and personal vehicles and gas chromatograph analyzer vents were quantified for Joffre.

Five products manufactured at the Joffre Site have emission benchmark targets: high value chemicals (includes ethylene and co-products), polyethylene, hydrogen, electricity, and industrial heat. The Joffre Site is able to exceed the 'best in class' emission targets for some products and still has opportunity to improve on other products. In 2019, NOVA Chemicals was not able to achieve the emission targets under the CCIR GHG regulation for all products.

When facilities are not able to achieve the emission targets, GHG offset credits, as well as technology funds that contribute to research and development opportunities, are available options that are used to meet the compliance requirements. The offsets purchased for our Joffre Site support the building of organic carbon in soil through low and zero-tillage practices and assist the agricultural community in advancing sustainable practices. For 2019 compliance, the maximum percent (40) of offset credits was used to meet the obligations for the site.

We are committed to continuously improving our manufacturing, energy and fuel efficiency to reduce the quantity of GHGs per tonne of product produced. The K601 project was completed, which improved the efficiency of the refrigeration compressor, reducing our use of steam from the plant boilers in E2 and Cogeneration plant.

Our commitment to waste reduction

We are committed to reducing the amount of waste that we send to landfill for disposal.

Our Soil Enhancement Program continues with the beneficial application of spent lime/phosphate co-product on local fields.

In 2019, 65% of our site generated waste was either recycled or recovered. This included paper recycling through our office shredding program, asset recovery (donation of items like furniture, electronics) and waste polyethylene.

We also launched Rethink Recycling in 2019, which includes bins for refundables, recyclables, compost and garbage.



We have donated hundreds of surplus items to Habitat for Humanity® ReStore.



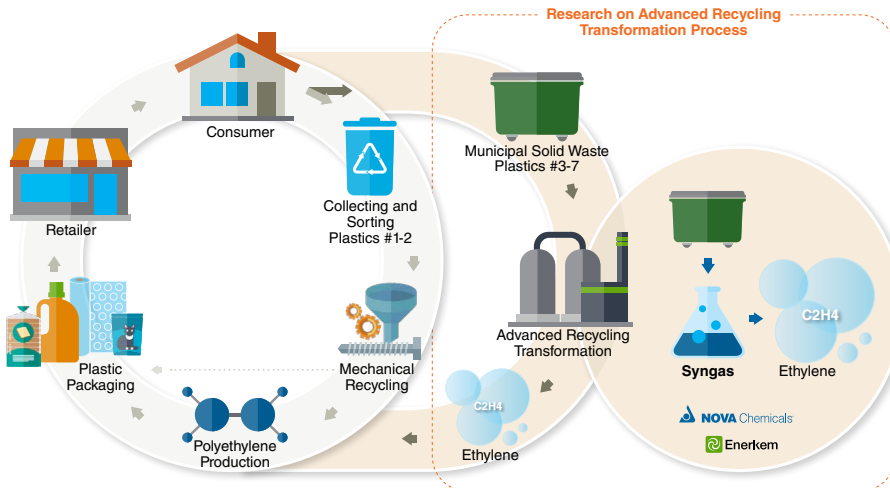
Our Rethink Recycling program diverts recyclables and organics from the landfill, as part of the awareness-raising initiative.

Seeking new way to achieve zero plastic waste

NOVA Chemicals has joined forces with Enerkem Inc. ("Enerkem"), a world-leading waste to renewable fuels and chemicals producer, to research advanced recycling technology with the goal of transforming hard-to-recycle municipal waste, including items such as plastics, household waste, and construction materials, into ethylene at full commercial scale.

Ethylene, produced from waste, would advance a plastics circular economy and help meet consumer brand goals for recycled content in packaging.

Advanced recycling technologies are a necessary component of moving to zero plastic waste by creating valuable new feedstocks from post-use plastics that cannot be easily mechanically recycled.



"We are excited to work with Enerkem to create innovative, sustainable solutions for a plastics circular economy," said Todd Karran, President and CEO, NOVA Chemicals.

"Our R&D teams will collaborate to develop game changing technology to push the boundaries for recycling waste to create new feedstocks and bring value to the environment, economy and society."

2019 Taking Care in Action team activities

The Joffre Site Taking Care In Action (TCIA) team has been busy organizing many community events with positive environmental impacts. The infographic below gives an overview of our team's 2019 activities.



Manufacturing West
Taking Care In Action



Roadway Clean-Ups — Spring & Fall

35 KM OF DITCHES CLEANED on HWY #11, #815, Freedom Rd & Twp 39-0

SUPPORTED 13 YOUTH / NON-PROFIT GROUPS
Raised \$1,000 each

Thank you for providing the opportunity for the team to relationship build while giving back to the community. Your generous contribution will be used to cover tournament entry fees, allowing the girls to grow their skills in a competitive and fun environment. ~ Red Deer Ringette U14AA Rush



Red Deer River Clean-Up

19 EMPLOYEES & FAMILIES joined **70+** community volunteers to pick up **45 BAGS** of garbage

SPONSOR OF PRIZES AND FREE BBQ FOR ALL PARTICIPANTS

22 years of participation

Thank you so much for your continuing support of our Spring and Fall river clean-ups. Your presence and contributions make the events. ~ Tanya Wells, KWNC



Tree Planting

>1,100 SEEDLINGS planted by **~20 EMPLOYEES/FAMILIES**

Supports Red Deer Urban Forestry Project

>14,000 SEEDLINGS PLANTED IN 22 YEARS

Great Canadian ShoreLine Clean-Up
VOLUNTEERS & SPONSORED BBQ

Contributed to Canada-wide initiative:

2,783 CLEANUPS • 3,786 KM
143,733 KG OF LITTER



Carpool Initiative

Turnaround contractor participation: (not including bused workers)

44% for E2 **56% for PE2**

NOVA TO GO LAUNCHED IN Q3

Ride-A-Thon Challenge completed in Q4

In one month...

26 CARPOOLERS • 710 TRIPS
9,635 KM
\$3,200 SAVED
2.2 TONS CO₂ SAVED



As a carpooler, I enjoy the good company and I save gas money.

~ Employee Hanisha Sachdeva

Rethink Recycling

JOFFRE PILOT LAUNCHED IN Q3
EXPANDED TO EXECUTIVE PLACE IN Q4



~300 building residents have made a huge difference

~2,463 KG diverted from landfill in just over **FOUR MONTHS...**
the equivalent of **18 FRIDGES**



Encouraging the recycling of single-use plastics

Recently the Joffre Site initiated an employee engagement opportunity by launching a “beyond the bag” where employees will have the opportunity to bring their single-use plastics (grocery bags, film) to participating grocery stores in Red Deer and Lacombe.



These stores collect the single-use items for Trex Company Inc. (also known as Trex®). Trex is a major American manufacturer who takes the single-use plastics and recycles them into wood alternative decking, railings and other outdoor items for sale at larger big-box stores.

Did you know!

Participating stores accepting single-use plastics include:

- Co-Op — Red Deer and Lacombe locations
- Safeway — Red Deer
- Sobeys — Red Deer (both locations)



Delivering much needed support to front-line workers

NOVA Chemicals put smiles on the faces of many front-line workers at not-for-profit agencies during #GivingTuesday in April and #Conscious Kindness Day in May.

Our “Random Acts of Kindness” campaign, included delivering treats from Babycakes Cupcakery (to support local businesses) and a thank you message to staff at The Mustard Seed, United Way, Safe Harbour, Turning Point, Canadian Mental Health Association and Red Deer Hospice. Consideration was given to ensure safe delivery and retrieval.

“It is support like this that helps us shine even brighter during this challenging time,” says Safe Harbour Society Executive Director Kath Hoffman.

Our efforts were gratefully recognized by:

- Receiving the Good Business of the Month award from Volunteer Central: www.volunteercentral.ca/corporate-programs/good-business-month/
- Having a feature story published on the The City of Red Deer We Are Red Deer website: www.wearereddeer.ca/stories/nova-chemicals-delivers-delicious-surprises.html

Visit our Community Nature Trail

Enjoy a serene walk with nature along the five kilometres of looped trail at the NOVA Chemicals Community Nature Trail, located on TWP 39-0 just North of the Joffre Site.

For more information, visit www.novachem.com/locations/joffre-ab-canada/information-events-activities/

Please pay attention to the seasonal hazards during your visit.

NOVA Chemicals
Community Nature Trail
COVID-19 NOTICE

If you're feeling the need to decompress, consider a quiet stroll with nature at our Trail.

Kindly practice social distancing (about six feet or 2 metres) as you encounter others enjoying the Trail.

Stay safe. Stay healthy.

CAUTION
WILD FIRE
DANGER IS HIGH

During high wild fire season, please use extra caution:

- No smoking**
The use of tobacco, cannabis and vapour devices is prohibited
- No BBQ**
The use of portable BBQ and camping stoves are prohibited
- No motor vehicles**
Foot traffic only permitted

4H clubs get creative during pandemic

The traditional 4H Beef Council ‘sale and dinner’ was cancelled due to the COVID-19 pandemic, but that didn’t stop the club from continuing on with their activities. They got creative and initiated an on-line auction to replace the traditional sale. Bob MacTaggart represented NOVA Chemicals at the virtual auction enabling our participation and financial support to the 4H youth by purchasing three steers: the Reserve Champion from Matthew Hulleman from Central Lacombe 4H Beef Club as well as purchases from Carolos Manriquez of Central Lacombe 4H Beef Club and Kale Chessor of East Lacombe 4H Beef Club.



Practicing social distancing in the field, Mathew Hulleman presented the buyer banner to Bob MacTaggart.

Our employees show their local love in a GLOBAL CRISIS

Lending a hand up to support the United Way Community Response Fund

Joffre Site employees have been showing their local love by making personal donations to the *United Way Central Alberta Community Response Fund*. Together, we have donated nearly \$60,000 representing NOVA Chemicals initial investment in the fund, our employees donations and the company's matching dollars. (This does not include the Government of Alberta matching dollars).



Parkland Trek thinking outside the box during COVID-19

Parkland Trek, as their annual fundraiser, managed the NOVA Chemicals' sponsored BBQ at the Red Deer River Cleanup. The clean-up was one of many public activities cancelled due to COVID-19 so the youth group got creative and offered to sew homemade cloth masks for The Mustard Seed. Those in the group who can't sew created and delivered inspirational art and messages to the front-line workers of not-for-profit agencies.



Hadley Dobinson, one of many Parkland Trek youth making masks for The Mustard Seed.

CANADA'S CHEMISTRY AND PLASTICS SECTORS: SUPPORTING CANADIANS IN A CRISIS

In a crisis, lives are disrupted and we all must come together to overcome the disruption and rebuild once it is over. During these unprecedented times, the **chemistry and plastics sectors are among the essential industries needed to support Canadians**, while ensuring people get the products, food, and services they need to keep everyday life moving until the crisis is overcome.



HEALTH & MEDICINE

From natural disasters to pandemics, in emergency situations we rely on doctors, nurses, and first responders to ensure the health and safety of Canadians. What you may not realize is, at any hospital or other medical facility, chemicals and plastics are necessary to treat and protect patients (and themselves).

- Chemicals and products to ensure safe, sanitary conditions like disinfectant and hand sanitizer
- Plastic masks, gloves, medical equipment, and shielding help keep medical professionals and frontline workers safe



www.canadianchemistry.ca

FOOD & NUTRITION

To live a long, healthy life fresh and nutritious food is important. Plastics provide a range of benefits that allow Canadians to consistently consume high-quality, fresh fruit, vegetables, and proteins. From the grocery store to the restaurant, plastics are essential:

- Reduce waste by protecting foods from contamination and damage
- Extend the life span of perishable foods. Vegetables can now last weeks instead of just a few days
- Sanitary plastic packaging promotes safety among food industry workers and consumers



HOME & COMMUNITY

Taking a sip from a water fountain, cleaning the house, going out of town on a business trip—we may not realize it, but it takes a lot to keep everyday life running smoothly. The chemistry and plastics sectors help support Canadians each day by:

- Producing disinfectants and cleaning products
- Making essential chemicals for safe, clean drinking water
- Manufacturing chemicals used in transportation, ie. de-icing fluid
- Providing light weight plastics for everything from cell phone chargers and laptop cases to coffee makers and first aid kits



THE FUTURE

As the pandemic has shown, Canada's chemistry and plastics companies are part of the essential web of natural resources industries across the country. Why?

- We're among Canada's largest employers and exporters, and a leading source of wealth generation and government revenues.
- Our products and solutions are key to Canada's transition to a low-carbon future.
- We have well-established history of innovation to solve society's most pressing needs by developing new processes and solutions.
- We support the transition to a circular economy that prioritizes the extension of product life cycles while extracting maximum value from resources in and after use.
- More than 95 per cent of manufactured products rely on chemistry and plastics. From wind turbines and solar panels, to vehicles, building materials, and packaging that allows us to feed the world, plastics and chemistry are vital to our economy.



CHEMISTRY INDUSTRY ASSOCIATION OF CANADA

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For more information, please see these websites:

- www.novachemicals.com | www.novachemicals.com/Joffre
- Chemistry Industry Association of Canada: www.canadianchemistry.ca
- American Chemistry Council: www.americanchemistry.com

Connect with us!



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Responsible Care®
Our commitment to sustainability.

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