

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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I'm proud to be writing to you from my Joffre Site office. After more than a year working from my home office, over the past few weeks I've occasionally visited the Joffre Site and participated in field visits with other leaders.

There's light at the end of the tunnel! While our continued response efforts to COVID and the related variants remain conservative, we have initiated a phased approach for returning employees to the workplace. Our Red Deer Executive Place employees currently working from home will return to their office workplace over the Summer. We made a thoughtful decision to not return our Joffre Site employees currently working from home until early Fall (end of September / mid-October). The delayed return will allow our Ethylene One Turnaround team to remain focused and safe with no distractions from re-introducing employees to the workplace. Another important reason for this delayed return was to minimize impacts to the community — at the start of the turnaround in mid-August our contractor headcount will have peaked at 1,000. Keeping non-“site-critical” employees working from home until the end of the turnaround will automatically decrease traffic to the site.

Our Joffre Site has remained fully operational with a continued focus on health and safety of our workforce. Our cautious approach to managing COVID in the workplace has proven successful so far and we will continue with our cautious approach while winding down and returning our employees to the workplace.

Our commitment to the community has remained steadfast. We continue with our random acts of kindness program — providing a sweet treat as a thank you to not-for-profit front-line workers for staying the course over the past 16 months.



“ We have initiated a phased approach for returning employees to the workplace and we will continue with our cautious approach to managing COVID. ”

This is our 20th environmental report to the community. Air Quality management continues to be a priority for NOVA Chemicals. Our ambient monitoring systems have shown we still have some work to do when it comes to our performance. We had some ethylene spikes in our readings in 2020 due to flare combustion issues. Flaring is a necessary activity related to our operations and is considered to be a safe, environmentally acceptable way to dispose of hydrocarbons. We continue to commit to reducing any community impacts as a result of flaring activities.

I've missed the in-person opportunities with the community and look forward to when we can resume all our community outreach activities.

Mark Hodson, Joffre Site Leader

Our approach to Sustainability and Responsible Care

At NOVA Chemicals, we strive to be a leader in innovation that enables our customers to deliver plastic products that make everyday life healthier and safer.

We are committed to bold collaboration to create shared value for our business and society. We will address global challenges by working to develop a plastics circular economy, eliminating plastics in the ocean and acting on climate change.

Through our commitment to Sustainability and Responsible Care®, every NOVA Chemicals employee is accountable for health, safety, security and environmental stewardship.

To shape a world that is better tomorrow than it is today, our Sustainability strategy includes three key focus areas:



Circular Economy



Climate Care



Care in Operations

Circular Economy



We recognize the value in post-use plastics and strive to create a world free of plastic pollution. Along with our industry associations and others, we are committed to enabling 100 percent of plastics packaging is recyclable or recoverable by 2030; and 100 percent of plastics packaging is re-used, recycled or recovered by 2040.

Our Priorities:

- Plastics Recyclability
- Plastics Collection
- Post Consumer Resin Options
- Advanced Recycling and Recovery

How we are supporting locally:

- Our new packaging made of 100% post-consumer polyethylene resins (PCR) debuted off the Joffre Site packaging line earlier this year

Circular Economy Investment Portfolio



As a responsible global citizen, NOVA Chemicals will collaborate and provide leadership to select challenges and opportunities that promote natural resource conservation and in particular ocean health.

Our Priorities:

- Alliance to End Plastic Waste
- Project STOP
- Investment in our Regional Communities
- Great Lakes Plastic Cleanup Initiative

How we are supporting locally:

- ~ \$1M invested in Central Alberta
- Employee giving/volunteering through our United Way campaigns
- COVID-19 community support
- Environmental initiatives, including Taking Care in Action team activities (see page 6) and surplus donations
- Ongoing community presence from historical investments including the NOVA Chemicals Community Nature Trail (see page 8)

Climate Care



NOVA Chemicals is committed to responsibly managing our greenhouse gas emissions and promoting and maintaining sustainability throughout our operational facilities.

Our Priorities:

- GHG Strategy
- GHG Roadmap, Decision
- Framework, Objectives, Projects

How we are supporting locally:

- E2 furnace refurbishment project resulting in reduced nitrogen oxides (NO_x) and greenhouse gas (GHG) emissions (see page 5)

Care in Operations



We are committed to promoting and maintaining sustainability in operations. We will proactively and responsibly manage the water, land, air and biodiversity impacted by our operational facilities.

Our Priorities:

- Operation Clean Sweep® (OCS) Blue
- Environment Strategy and Playbook
- Air Emissions
- Waste and Water

How we are supporting locally:

- Received 10-year operating approval renewal and renewal of Waterworks System Approval from Alberta Environment
- Red Deer Riverbank Slope Erosion Project
- Former greenhouse area reclamation
- OCS Blue
- On-Site Emergency services (includes local off-site support)
- Turnarounds (see page 8)

Monitoring our impact on water resources

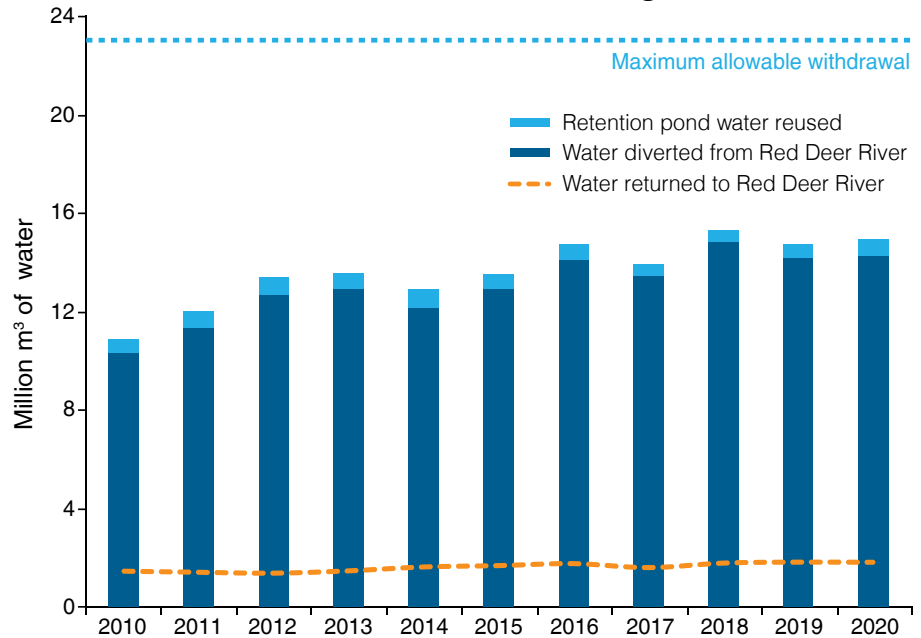
Water is critical to Joffre Site operations and our management programs focus on minimizing our impact on this valuable resource.

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 2020, we withdrew 14.3 million m³ or 63% of our allotment from the river. We also collected and used 0.66 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 been a key consideration at the Joffre Site. NOVA Chemicals continues to focus on noise mitigation and conducts continuous noise monitoring at four permanent noise monitoring stations located east, west, south and north of the Joffre site.

In 2020, analysis of historical permanent noise monitoring station data was completed. This data indicated that night-time noise levels continue to be below the historic target sound levels during normal operations. In addition, ad hoc noise monitoring was conducted during unit shutdowns and startups.

The North Rail Abatement Strategy 2020 results indicated that sound levels continue to be below the Alberta Energy Regulator Noise Directive. There were no rail curfew exceedances or complaints about the north rail yard activities received in 2020.

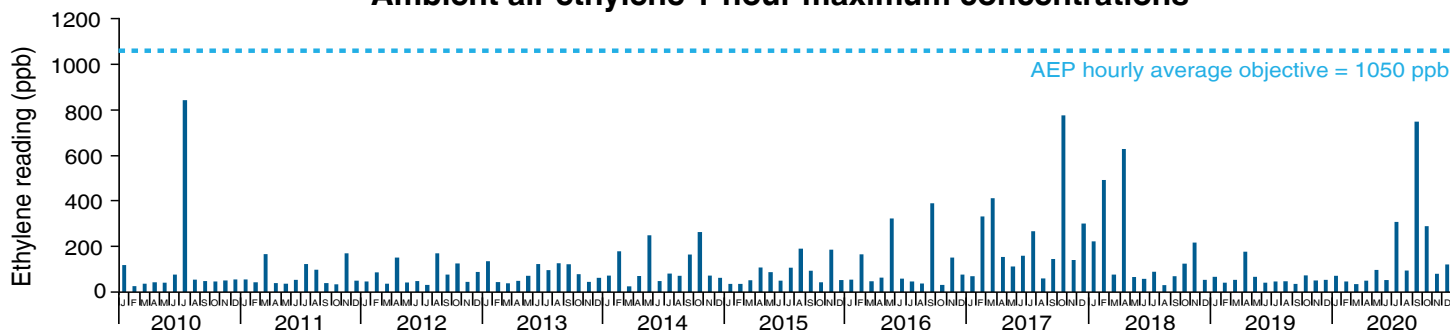


Ensuring air emissions meet Alberta Ambient Air Quality Objectives

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). NOVA Chemicals interfaces with regional groups such as the Parkland Airshed Management Zone (PAMZ) and the Red Deer Air Quality Committee.

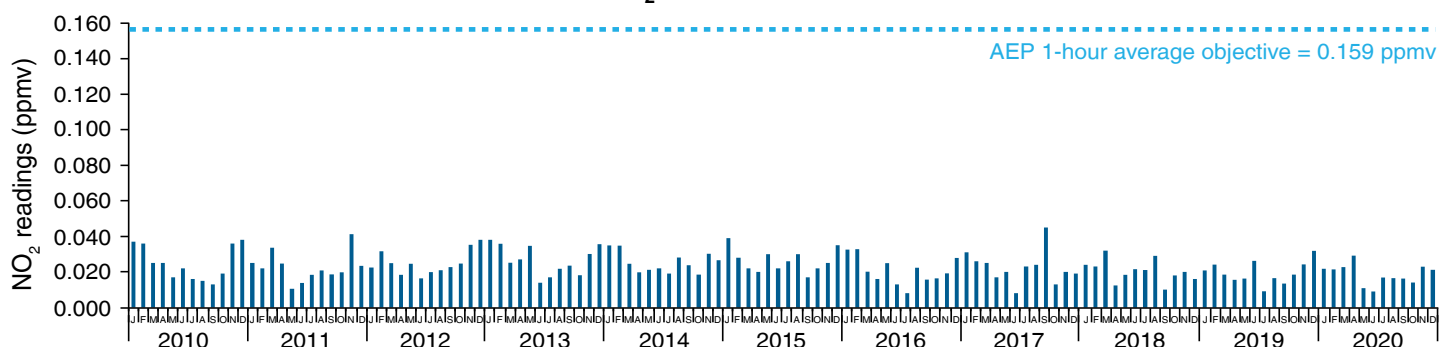
Data related to a variety of air quality parameters, as shown in the graphs below and on page 5, indicates our concentrations and readings are consistently below established objectives.

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. The spikes in 2020 were due to un-combusted ethylene being released from the E1 and PE1 (secondary) flares. Operational corrections have been made as necessary.

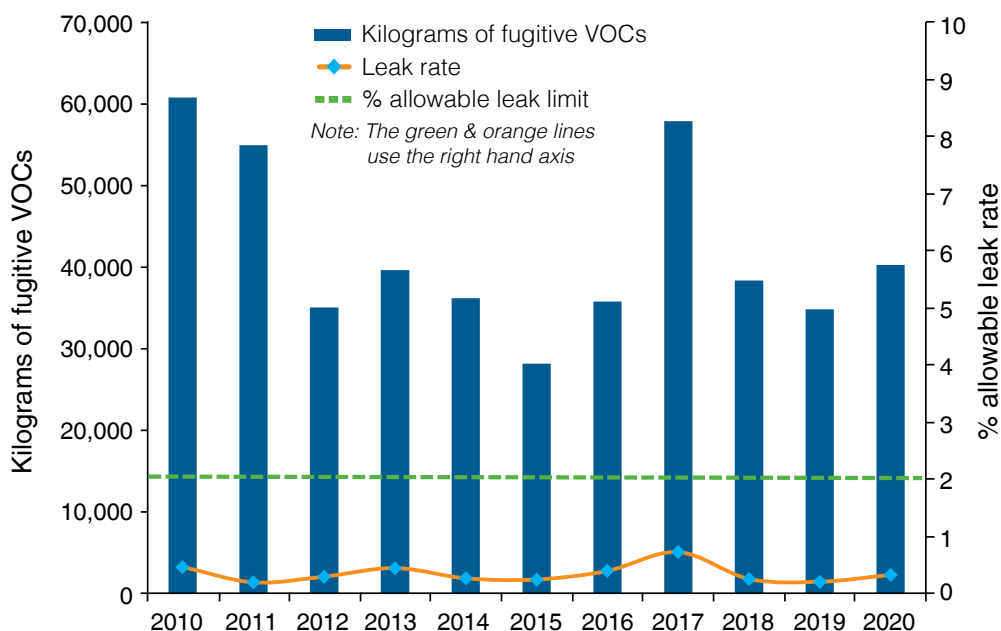
Ambient air NO₂ 1-hour maximum concentrations



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.



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. The increase in 2020 is a result of discovery of a few larger leakers and more sources tested.



Climate Care

2020 marked the beginning of the Technology Innovation and Emissions Reduction (TIER) regulation, which replaced the Alberta Carbon Competitiveness Incentive Regulation (CCIR). The TIER regulation is similar to CCIR and uses Output-Based Allocations for large industrial emitters to determine compliance costs or credits.

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 2020, NOVA Chemicals was able to achieve the overall site emission targets under the TIER GHG regulation for the combination of products.

When facilities are able to achieve the site emission target, they receive emission performance credits which can be used for future compliance. The ability to achieve the site target is contingent on continuously improving our manufacturing, energy and fuel efficiency to reduce the quantity of GHGs per tonne of product produced. We have finished eight of the nine furnaces that are part of the E2 furnace refurbishment project that allows more efficient production of ethylene at E2. There are also operational improvements achieved through transfer of intermediate products between E1 and E2 to optimize ethylene production for both plants.



Our E2 furnace refurbishment project began in 2014 and includes the refurbishment of nine of the 11 E2 furnaces.

Our commitment to waste reduction

We are committed to reducing the amount of waste that we send to landfill for disposal. In the last 5 years we have improved our diversion from landfill by approximately 50%.

Our Soil Enhancement Program continues to benefit local farmer fields with the application of our spent lime/phosphate.

In 2020, our site saw a reduction of over 11 million kgs in waste, over 2019 values, as a result of less maintenance generating waste activities. Of the waste we did generate at site, 72% was either recycled or recovered.

Rethink Recycling was expanded in August 2020 to include the entire Joffre Site, and we saw 5,510kg's of lunchroom/office waste diverted from landfills.



The lime/phosphate by-product resulting from our use of water drawn from the Red Deer River enhances soil properties of locally acidic soils. Its agricultural use keeps it out of area landfills.

2021 Taking Care in Action team activities

The COVID Pandemic continues to challenge the Joffre Site Taking Care in Action (TCIA) team. While some initiatives had to be cancelled again this year, the team has modified other activities so they can still be part of their 2021 plan.

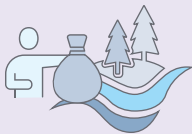


Manufacturing West
**Taking Care
In Action**

INITIATIVES CANCELLED

- **Carpooling** — The NOVA TO GO app remains deactivated to support the Company's position on carpooling until our conservative COVID measures are lifted.
- **Adopt-A-Highway Clean-ups** — While the Spring event was cancelled, we are set up for success in 2022 having renewed our contracts with Lacombe County and Alberta Department of Transportation. The outcome of the Fall clean-up is to be determined.

INITIATIVES MODIFIED



Red Deer River Clean-up

While there was no employee participation, we continued our support by sponsoring the modified community event. In lieu of a community BBQ, TCIA secured main prizes valued **OVER \$1,300**. With controlled registration and despite the rain, the event had **182 VOLUNTEERS** register and cleaned nearly every major stretch of river in the City.



Tree Planting **FIVE EMPLOYEES AND THEIR FAMILIES** signed

up to participate in a "controlled" tree planting program. The volunteers planted **800 SEEDLINGS** (Bebbiana Willows and Green Alders) in areas selected by the City enabling us to continue our support of the City's Program.



**NEARLY 15,000 SEEDLINGS
PLANTED IN 23 YEARS**

PROMOTIONAL CAMPAIGNS

The TCIA 2021 plan included promotional campaigns:



Cigarette Butt Litter Awareness Campaign —

highlighting the damage a cigarette butt can cause. Despite how small they are, the cumulative effects can be large.



Battery Recycling Program —

a literacy campaign to familiarize employees with how to recycle batteries safely at work and at home.



Take the Pledge to Stop Needless Idling — 38 EMPLOYEES and ONE CONTRACTOR took the pledge to idle their vehicle for no more than 60 seconds when parked.



Sustainable Camping — promoting safe and healthy camping. **19 EMPLOYEES** shared their fun stories; **8 KIDS** shared their fun and creative colouring.

Green Deer — aligning with the City's Green Deer Program, we encouraged employees and their families to go out and clean-up in their immediate neighbourhoods.



Rethink Recycling

Program — "Site-critical" personnel continue to take advantage of our recycling program. **4,540 KG OF WASTE** (recyclables, refundables and organics) have been diverted from the landfill as of June 21.

Take the CLIMATE CHANGE Challenge —

we promoted this public campaign internally amongst our employees by featuring easy commitments anyone can take to reduce their carbon footprint like biking instead of driving or increasing the size of laundry loads.

World Water Day — celebrating water and raising awareness of the global water crisis. In March, we promoted registration to watch a free film premiered by *The Red Deer River Watershed Alliance* "Source Waters, The Rivers That Shape Us".

FALL LINE-UP:

- Formalizing a pop/water bottle recycling program
- Face Coverings Recycling Campaign
- Recycle Beyond the Bag
- Lights Out Campaign

Sustainable Camping Campaign

"Take nothing but pictures. Leave nothing but footprints."

In the Spring, as people geared up for camping season, our TCIA team promoted sustainable camping. 19 employees and eight kids engaged in the campaign. We asked employees to share with us their sustainable camping waste habits...



"We installed solar panels on our trailer." ~ Brock Gorgichuk



"We always use reusable plates, cups and utensils." ~Karl Dobinson



"One trick I use for shorter camping trips is to bring multiple sets of reusable containers/plates/utensils, store the dirty dishes in a wash tub, and bring them home to the dishwasher when we get home!" ~David Ting



"We practice 'leave no trace'." ~Bradley Olsen



"We meal plan to minimize food waste and we collect garbage when it is safe while hiking." ~Phil Yee



"We cook main meals over the fires when possible instead of using propane." ~Quinn Rose



"We wash our reusable dishes with biodegradable soap." ~Jason Liptak



"We leave the area in the same condition or better than we found it" ~Rhonda Druar



"We respect wildlife and understand that we are in their space, not ours." ~Andrea Brack

Supporting our communities through COVID-19



L-R: NOVA Chemicals reps Mark Hodson and Cathy MacKenzie; United Way CEO Brett Speight

It was all smiles behind the face coverings as NOVA Chemicals and the United Way Central Alberta joined together in a unique donation distribution plan to help make our communities safer during this challenging time of COVID-19. NOVA Chemicals donated 375 boxes of disposable face coverings along with 2,000 (250 ml) bottles and 500 (4L) pumping jugs of hand sanitizer to the United Way for distribution to Central Alberta community agencies who require the supplies. "Alberta may be open for summer, but the pandemic threat will be with us for a while yet," said Mark Hodson, VP Manufacturing, Joffre Site, "and since community support is a high priority for our company, we are happy to join with the United Way to help make Central Albertans safer." Brett Speight, CEO of the United Way Central Alberta was immediately on board. "It's such a great idea for us to partner with our year over year biggest campaign supporter NOVA Chemicals in getting face coverings and hand sanitizer to community groups who need them."

As part of our Rethink Recycling program, the TCIA team shared recycling tips with our employees.

DID YOU KNOW?

- **Empty and clean** — Do not contaminate other recycling materials with food particles and liquids
- **When in doubt; throw it out!**
- **Don't bag recyclables** — Most recycling facilities do not have the time to untie bags, so it will be sent to landfill
- **Grease is gross** — Pizza boxes: grease portion is compostable, rest of the box is recyclable
- **Don't be a dangerous dumper** — Certain items, such as batteries and lightbulbs can be dangerous when mixed with recycling
 - **If it tangles, then it mangles** — Tanglers get stuck in equipment at the recycling facilities, thus their reluctance to accept the recyclable bags
 - Please remember that if one article isn't acceptable in the recycling bin, then **the rest of that bin or load will go to the landfill**



Easy as 1...2...3

Sustainability starts with you!

Our virtual support of 4H continues

NOVA Chemicals attended the virtual Lacombe District 4H Beef Sale in May and purchased seven steers. Subsequent to the sale, Nate Dobinson of East Lacombe Beef Club thanked NOVA Chemicals for buying his steer Rocky.

This was Nate's first year in 4H and he plans to use the money from his steer to put towards buying a heifer for next year's 4H season and if there is some money left over, he hopes to buy a new mountain bike!



Community Notice:

Joffre Site Ethylene 1 (E1) maintenance turnaround planned

Our E1 facility will be shut down from mid August to end of September/mid-October 2021 for a turnaround.

What can you expect?

- Flaring during plant shut-down and start-up
- An increase in contractors to site (approximately 1,000 contractors at peak)

How are we minimizing impact?

- West access to site temporarily opened for usage
- Staggered shifts
- No bussing due to COVID restrictions — contractor orientation reinforcing 'road etiquette expectations' while travelling through farming communities



Other planned maintenance activities:

- Polyethylene 1 (PE1) Major Outage: mid-September 2021
- Ethylene 3 (E3) Turnaround: mid-May to end June 2022
- PE1 Turnaround: end June to end July 2022

What is a turnaround?

Turnarounds offer us the opportunity to conduct maintenance and renewal of our facilities outside of our day-to-day maintenance activities.

Why do we flare?

Flaring is considered to be a safe, environmentally acceptable way to dispose of hydrocarbons — required when a plant needs to isolate for maintenance activities and during emergency events.

ATTENTION TO NEIGHBOUR IMPACTS IS ALWAYS A PRIORITY



If you have questions, call our 24-hour number **403-314-8767** or email joffresite@novachem.com

Come visit the NOVA Chemicals' Community Nature Trail

Come take a walk with nature and enjoy the serene environment on 5 kilometers of looped trails, including an Educational Pollinator Trail and naturalized pond area.

More information about the trail can be found on our website:

<https://www.novachem.com/locations/joffre-ab-canada/information-events-activities/>





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

SiteLine is published by NOVA Chemicals Corporation

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Attn. Gwen Clarke: 403-314-8619

For more information, please see these websites:

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

Connect with us!



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Our commitment to sustainability.

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