

Neighbourhood News

SPRING 13

A NEWSLETTER FOR OUR NEIGHBOURS



Crude Oil 101



No matter where you look, crude oil is in the news a lot lately. Most people know it comes out of the ground and that there is a lot of it in Alberta. But how much do you know about how it's formed, how it gets to the Burnaby Refinery, and how we process it? Here's a quick overview.

What is Crude Oil?

Petroleum right out of the ground is called crude oil. It was formed millions of years ago from the remains of tiny aquatic plants and animals that lived in ancient seas. As these organisms died, they sank to the seabed where they were buried with sand and mud. This organic-rich layer eventually turned into sedimentary rock. This process repeated itself, with one layer covering another, over and over again. Over millions of years, the seas withdrew.

In some cases, the deposits that formed sedimentary rock didn't contain enough oxygen to completely decompose the

organic material. Bacteria broke down the trapped and preserved residue into substances rich in hydrogen and carbon. Increased pressure and heat from the weight of the layers above then caused a partial distillation of the organic remnants, transforming them into crude oil and natural gas.

Is all Crude Oil the Same?

Although various types of hydrocarbons—molecules made of hydrogen and carbon

atoms—form the basis of all petroleum, they differ in their configurations. Some hydrocarbons combine easily with other materials, and some resist such bonding. The number of carbon atoms determines the oil's relative "weight" or density. Gases generally have one to four carbon atoms, while heavy oils and waxes may have 50, and asphalts, hundreds. Hydrocarbons also differ in their boiling temperatures.

CONTINUED ON NEXT PAGE

Manager's Message

STEVE PARKER
GENERAL MANAGER



It is a pleasure for me to introduce myself to the community as the new general manager at the Burnaby Refinery. I took over duties in mid-April, in the midst of a plant shutdown. These can be complex times for refineries and, as a result, much of my initial work was focused on bringing us back to production. We accomplished some very important maintenance during that shutdown and I was able to observe how well the Chevron and contracting teams work together. My first impressions of the Burnaby Refinery are that we have a very positive work culture which allows us to be successful.

This is the fifth Chevron family site where I have been general manager and I am pleased to be able to draw upon my broad experience in senior positions with different refineries for my work here. In any operation, you can't measure success simply based on profit. It's all about the people and I see our group as a very capable and integrated team. One of the core values across Chevron's global network is a belief in a culture of caring. This value drives everything we do and underpins our efforts to be incident and injury-free.

CONTINUED ON NEXT PAGE

THIS DOCUMENT CONTAINS IMPORTANT INFORMATION.
PLEASE HAVE SOMEONE TRANSLATE IT FOR YOU.

這份文件包含重要資料，請找人為您翻譯。

이 문서에는 중요한 정보가 담겨있습니다.
다른 사람에게 번역을 부탁드립니다.

此文件包含重要信息，希望請人為您翻譯。

ਇਸ ਦਸਤਾਵੇਜ਼ ਵਿਚ ਮਹੱਤਵਪੂਰਨ ਜਾਣਕਾਰੀ ਹੈ। ਕਿਰਪਾ
ਕਰਕੇ ਕਿਸੇ ਨੂੰ ਕਹੋ ਕਿ ਉਹ ਤੁਹਾਡੇ ਲਈ ਤਰਜਮਾ ਕਰ ਦੇਵੇ।

CRUDE OIL BY RAIL CAR

"There are many categories and sub-categories of crude oil," said the refinery's Operations Coordinator Rob Pinchuk. "Conventional crude oil comes out of the ground as a liquid whereas synthetic crude oil is a form of semi-refined crude derived from the oils sands that gets partially refined before being shipped to refineries. Another important characteristic of crude relates to the 'sweet' or 'sour' categories, in reference to its sulphur content."

The Burnaby Refinery processes both conventional, light sweet and synthetic crudes.

How Does Crude Oil Get to the Refinery?

Traditionally crude oil has been shipped to the Burnaby Refinery from Edmonton via the Kinder Morgan pipeline with up to 55,000 barrels (9 million litres) being processed daily. It takes about ten days for the crude to make the trip to Burnaby moving through the pipeline at the speed of a brisk walk.

Recently, the refinery also began taking shipments of crude oil by rail to augment the amount needed to keep it operating at capacity. Much of the oil shipped to the refinery by train is coming from southern Saskatchewan. This crude is generally light, sweet crude.

"We source different kinds of crude depending on the season," added Rob. "It is all broken apart into diesel, gas and jet fuel. We don't buy heavy crudes because we don't have the ability to process them efficiently and the products that we do make are all lighter. Specialized equipment would be needed to refine the heavier crude and it requires more complicated and intensive processing steps."

What is Bitumen?

"Bitumen is crude oil that is a solid at room temperature," said Rob. "You have to mine it -

dig it out and heat it up before you can process it, or inject steam into it to heat it up so it can then flow out of the ground. Alberta's oil reserves over the past 10 years have focused a lot on bitumen. It's a much more intensive process to remove it from the ground and it also requires extensive processing. We don't process bitumen at the Burnaby Refinery but we do, however, process synthetic crude which is derived from bitumen."

How is Crude Oil Processed at the Burnaby Refinery?

Once on site, the crude oil is distilled into different parts in the refinery's crude unit. Oil is piped through hot furnaces with the resulting liquids and vapours directed into distillation towers. Inside the towers, the liquids and vapours separate into components or fractions according to weight and boiling point.

The lightest fractions, including gasoline, vaporize and rise to the top of the tower, where they condense back to liquids. Medium weight liquids, including kerosene and diesel oil distillates, stay in the middle. Heavier liquids, called gas oils, separate lower down, while the heaviest fractions with the highest boiling points settle at the bottom. These tar-like fractions, called residuum, are literally the "bottom of the barrel."

The fractions are then transferred to the next station or unit within the refinery. Some components require relatively little additional processing to become asphalt base or jet fuel. However, most molecules that are destined to become high-value products like gasoline require much more processing in other sections of the refinery.

and gas assets should be used for the benefit of Canadians. The Burnaby Refinery is a positive contributor to that effort and BC is fortunate to have a quality refining asset that is owned and operated by Chevron. We are a longstanding part of this Province's history and plan to be here many years to come. For those reasons it's important for us to continue to have a reliable supply of crude oil. Rail deliveries are part of the equation but reliable access to crude via pipeline is the safest and the most cost-effective.

Elsewhere in this issue, we talk about refinery security. As part of Chevron's global network, we are able to leverage the very best practices

Safety at the

Burnaby Refinery Security

Mike Ward likes to test the refinery's high levels of security on a regular basis. As the facility's emergency response, safety and security lead, it's part of Mike's job to make sure staff follow the security protocols that have been put in place to prevent threats to the refinery's safe operations.

During training exercises, Mike develops various scenarios that test the refinery Incident Response Teams. "I'll include a security threat as part of the larger hypothetical emergency drills that we conduct on an annual basis," said Mike. "So, while our team are dealing with a simulated oil spill in the harbour, I'll throw in some protesters arriving at the front gates. Similarly, during the quarterly drills that we conduct in Area 1, I'll make sure staff knows what to do if a security issues arises: what steps to take; who to contact. We've never had a major security breach here in Burnaby but we recognize that we always need to be prepared."

Part of a Global Security Network

The Burnaby Refinery works locally within a professional network of regulatory and security authorities including the RCMP, CSIS (Canadian Security Intelligence Service), Transport Canada, Canadian Coast Guard, Canada Border Services Agency, Port Metro Vancouver, and the Vancouver Police Department on any potential threats.

"If there are threats elsewhere in the vicinity, I'll hear about them," said Mike. "We are closely associated with local, provincial and federal authorities and we all work together."

MANAGER'S MESSAGE CONTINUED

The Burnaby Refinery is located in one of the most beautiful environments I've ever worked in. With this spectacular setting comes responsibility and the absolute need to care for our environment. One of my top priorities is to manage our resources and our performance in ways that do not cause anxiety for our stakeholders. I fully understand the keen interest of the community to make sure the refinery is operated in the most responsible way.

The cover story in this issue of Neighbourhood News is a quick overview about crude oil - what it is; how it gets here; what we do with it. I have strong views about how Canada's oil

and expertise throughout our system. There are clear expectations across our operations and we are totally committed to meeting those rigorous standards.

I was raised in Australia but feel a keen connection to the Pacific Northwest. My wife, Nancy, and I are very happy to have this opportunity to be here and to explore this spectacular part of the world. I look forward to meeting members of our community as various opportunities present themselves. I hope you will feel free to contact me or our community affairs team if you ever wish to discuss common issues.

Refinery



Mike is also part of Chevron's corporate global security network which includes strong connections with such American security agencies as the CIA, FBI and Homeland Security. Security managers from across Chevron's refining network are in regular contact and can be accessed instantly in case of an emergency situation.

"If something happens in another Chevron refinery, I'll know about it," said Mike. "Security measures are in place at all Chevron facilities to ensure safer operations within our communities wherever they are. We do threat analysis, security awareness training, investigations, contingency planning and crisis management."

Prevention

The expression "an ounce of prevention is worth a pound of cure" applies well to steps taken at the refinery to ensure security incidents don't happen in the first place. Like many workplaces, the refinery makes sure information systems are thoroughly protected. Access to the facility is strictly controlled while vehicles and equipment are randomly searched before gaining entrance and the plant perimeter and facility infrastructure are regularly patrolled.

"We have a very high level of security at all times, which we heighten during certain events, such as Halloween, New Year's Eve, during the summer along the beach, or at the dock when there's lots of boat traffic in Burrard Inlet," added Mike. "Part of operational excellence is having effective security and that is a priority for us."

Tech Talk

UNDERSTANDING WHAT
GOES ON AT THE REFINERY

Daytime Versus Nighttime Operations

Why do we notice nighttime sounds a lot more than during daylight hours? That's a question we ask often at the refinery, a facility that operates 24 hours, seven days a week. While we do operate around the clock, we purposely schedule potentially noisy work for the daytime. But it's at night that public calls about noise are typically received.

"If anything, nighttime operations are quieter than during the day because we do less maintenance work during the night shift," said Operations Superintendent Russ Brown. "Nighttime is when the refinery is operating steadily, with all the major special activities scheduled for daylight hours. Even during planned maintenance turnarounds, we do our best to minimize sources of noise - especially at night."

When and Why Do We Notice Noise More?

Noise related calls to the refinery tend to increase in the summer. Neighbours are barbecuing, eating outside and sleeping with their windows open and are more likely to notice nighttime operations.

Calls come in on nice weather days more often than on rainy ones. Again, people are outside and there is no sound of rain to muffle the sounds of the refinery. At night there's less ambient noise from other sources like street traffic, lawn mowers and other typical sounds of a city. That's another reason the refinery's standard operations are more noticeable, especially if neighbours are sleeping with the windows open in the summer months.

Other weather conditions affect perceived noise levels. Wind direction and speed, cloud cover and inversions can make a tremendous difference to our perceptions of noise. Where you live also greatly influences how much you may hear from the refinery.

Steps to Minimize Noise

The refinery's flare is a pressure safety relief device that functions to eliminate excess process gas by safely burning it rather than venting hydrocarbons into the atmosphere. A pilot light burns at the top of the flare so it is ready to do its job when needed. The refinery's safety flare system has been designed to minimize noise during periods when a higher volume of gas is sent to the flare and more steam is introduced to improve combustion efficiency.

Noise reduction is a factor that is considered during the planning for any maintenance work at the refinery. Whenever possible, sound absorbing baffles are positioned around vacuum trucks or other potentially noisy equipment.

All Noise Complaints are Investigated

"After taking whatever mitigative steps we can, if we know what the noise is we'll explain what we're doing and how long it will last," said Russ. "If we are not aware of a noise issue, upon getting a complaint call, the shift supervisor will visit the suspected location to see if they can adjust or stop what's generating the noise."

Operating a heavy industrial site next to a residential neighbourhood has its challenges, including noise management, and we're committed to doing our best to minimize noise related impacts.



Across the Fence



NEW HEDGES HAVE BEEN PLANTED ALONG TANK FARM FENCE-LINE



REPAIRED PIPELINE RIGHT OF WAY IN CONFEDERATION PARK

Work in the Tank Farm

Refinery crews continue to be busy in the plant's tank farm where preventative maintenance continues on a number of tanks. Tank 117 - an insulated asphalt tank is having its roof insulation replaced and a new heating coil and mixer added. Tank Program Coordinator Dave Williamson expects the work to continue throughout the summer.

"We've added a couple more tanks to our list of ones to work on this year," said Dave. "We expect to clean and do a floor inspection of tank 21 in July and some needed repairs on tank 177 in September. Neither should cause any impact on neighbours as we'll be using carbon filters to mitigate any odours and sound-absorbing barriers to reduce noise. We've also been doing some repairs on tank 81 which we expect to wrap up within the month."

Some tank painting is also on Dave's "to-do" list this year. "At the minimum, we will redo the external coating on tank 27, probably over the summer," said Dave. "Several others are also being considered but if we don't get to them this year, we'll likely get to them in 2014."

New Firehall Update

After some minor delays, work is ready to begin on the refinery's new firehall. Project Engineer Tyson Sully expects construction to get underway in early June, with work

anticipated to be complete by the end of September.

The new firehall, which will improve the response time for the refinery's onsite firefighters in a potential emergency situation, will be located behind the existing Chevron training centre located just off Penzance Drive, east of the Confederation Park trail entrance.

All construction activity will take place on weekdays during daytime hours and efforts will be made to reduce any impacts during the construction.

Spring is in the Air!

But, if you have allergies, you already knew that. With all that pollen about, you might notice an abnormal amount of yellow particles on your porch or car. Rest assured it is not sulphur deposits from the refinery. If you are curious about what's leaving its calling card around the outside of your house, check out the pollen forecast at www.theweathernetwork.com/pollenfx/poyvr. It will tell you the current source of pollen and its local concentration.

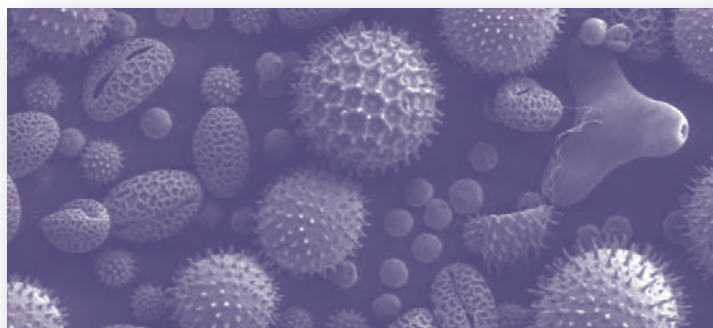
Repairs Made to Ditches

Near Pressure Steam Line in Park

The Confederation Park trail just west of the refinery gate was closed for a short period of time in early May while repairs were made to a drainage ditch in the area. Ground water coming off the hill was coming into contact with a heated line that runs between Areas 1 and 2 of the refinery, causing steam to rise from the ground.

In this instance, an old culvert across a popular trail along the interplant right of way had deteriorated, allowing ground water to come into contact with the heated underground line. The culvert was removed and the ditch repaired.

"The steam was completely harmless," said the refinery's Mechanical Maintenance Supervisor Chris Johnstone. "It was reported by a member of the public who was walking in the trail and staff was immediately sent to investigate. We appreciate neighbours calling the refinery's community contact line at 604-257-4040 anytime they notice something that doesn't seem quite right. We do walk the area regularly, but can't be there all the time."



HIGHLY MAGNIFIED
SCANNING ELECTRON IMAGE
OF POLLEN PARTICLES

Community Corner



OVER 160 BURNABY VOLUNTEERS WERE HONORED AT THE CITIZENS SUPPORT SERVICES LUNCH

Burnaby Volunteer Services Lunch

Chevron was once again a sponsor of Burnaby Volunteer Services' annual lunch honouring the city's Citizens Support Services department's many helpers. About 160 volunteers and VIPs attended April's event in which awards were handed out by Mayor Derek Corrigan and Councillor Paul McDonnell to people who have been volunteers for anywhere from five to 30 years.

"We have over 300 wonderful volunteers who help with our programs for seniors and people with disabilities as well for parents and children," said Anne Waller, the city's administrator of community volunteer resources. "Chevron has sponsored this event for years as well as our Christmas Gadabouts luncheon. It's a huge help to have financial support; without sponsors we wouldn't be able to offer such a quality event."

"We were happy to help honour these valuable members of our community," said Chevron's Community Affairs Representative Joanne Jamieson. "They're what make our community strong and healthy."

If you are interested in knowing more about becoming a volunteer with Citizens Support Services, visit the city's website at www.burnaby.ca and search for Citizens Support Services. You can find out more about the department as well as an application form. You can also call for more information: 604-294-7980.



THE 2013 HATS OFF DAY PARADE ALONG HASTINGS STREET IS ALWAYS A HI-LIGHT

Hats Off Day 2013

This year's Mad Hatter's Tea Party theme was a big hit with the crowds who came out to enjoy Burnaby's biggest street festival.

"It's always wonderful to see our neighbourhood showcase itself and to welcome Lower Mainland visitors to our front yard," said Heights Merchants Association Executive Director Isabel Kolic. "It was fun to try out new street entertainment this year like the roving magicians and stilt walkers. But the best part was working with community groups and the City of Burnaby to put on the festival. I'd also like to give a special tip of my hat to Chevron for sponsoring the

new family fun dash event that took place on Hastings. We were so excited to launch this event and our thanks to Chevron for stepping up to the plate to sponsor it."

Things were rocking at the Chevron station at Hastings and Willingdon. The high-energy band "So Tight" kept people moving and grooving with a medley of pop, disco, funk and rhythm and blues. Kids loved the face painting, glitter tattoos, balloon twists, and caricatures. And, the fun giveaway hats added to the festive atmosphere. Chevron was also pleased to support Hats Off Day by sponsoring the popular mini-train that shuttled people up and down Hastings Street.



Chevron Movie in The Park - Sunday, August 25

Save that date! Our annual Movie in the Park celebration will take to the big screen again this year on Sunday, August 25.

All kinds of family activities will get underway at 5pm and the movie starts at dusk. Expect an evening with a bit of a bite this year... we will be screening "Hotel Transylvania!"

Community Corner

Community Contact Line

Breakaway to Burnaby - The Giro di Burnaby Criterium Cycle Race - July 11

The Giro di Burnaby Criterium Cycle Race is back for another two-wheeled sprint through the local neighbourhood on the evening of July 11. Expect street closures and a festive mood as cyclists take to the course with the women's race starting at 6 p.m. and the men's at 7:15 p.m. This is a great spectator event that features some elite cycle racers from across Canada and the U.S. Don't miss this year's Giro!



2013 GIRO DI BURNABY PROMISES TO BE AS EXCITING AS EVER

14th Annual Burnaby Blues and Roots Festival - August 10

Mark August 10 on your calendar as the day you want to spend at Deer Lake Park enjoying the bluesy sounds of summer. Canadian band Blue Rodeo is this year's headline act with other performances by the "screaming eagle of soul" Charles Bradley, up and comer ZZ Ward, international jazz artist Shakura S'Aida, and many more. Chevron is a long-time supporter of the festival and is pleased to be on board again this year. Early bird tickets are available until June 30. Buy them online at www.burnabybluesfestival.com or call 604-205-3000.



2013 FESTIVAL HEADLINE ACT, BLUE RODEO

(604) 257-4040

Chevron's Burnaby Refinery welcomes your calls and feedback. If you have any comments or concerns, please do not hesitate to call our Community Contact Line: 604-257-4040.

This line is staffed on weekdays between 8 am and 4:30 pm. Your call will be directed to the most appropriate person who can respond quickly. In the event of an emergency, or significant maintenance work underway that may contribute to unusual operating conditions, information and regular updates for the public are made available.

If you are calling after hours or on a weekend, your call will be forwarded to our on-duty shift supervisors. If you would like to report an odour or if you notice anything that you think is unusual, please let us know. Your calls are very important to us and we will respond as quickly as possible.

To contact the Metro Vancouver air quality officer **604-436-6777**

For information about the Chevron/ North Burnaby Community Advisory Panel, visit www.chevroncap.com



For the refinery website, visit www.chevron.ca/operations/refining

Neighbourhood News is a quarterly newsletter produced by Chevron's Burnaby Refinery for residents of the Heights, Capitol Hill and surrounding areas of North Burnaby.

We invite your comments, questions or suggestions for future articles.

Please contact us at Neighbourhood News, Chevron Canada Limited, Burnaby Refinery, 355 North Willingdon Avenue, Burnaby, BC, V5C 1X4.

Ray Lord, MANAGER, PUBLIC AND GOVERNMENT AFFAIRS **604-257-4095**
Joanne Jamieson, COMMUNITY AFFAIRS REPRESENTATIVE, **604-257-5030**

Fax: **604-257-4093**
E-mail: cclrefineryinfo@chevron.com
www.chevron.ca

Looking Back

REFINERY
TANK FARM
CONSTRUCTION,
1940

