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PIPELINE SAFETY INCIDENT RATE DOUBLED IN PAST DECADE

Database gives detailed picture of 1,047 reported problems

Pipelines regulated by the federal government — which include some of the longest lines in the country - have experienced a swell in the number of safety-related incidents over the past decade, documents obtained by CBC News suggest.

In recent months, a spate of oil and gas spills both from train derailments and pipelines have raised questions about what mode of transport is the safest.

The pipeline industry has touted its record as it seeks support for numerous controversial projects across the continent, including TransCanada's Keystone XL to the U.S. Gulf Coast and Enbridge's Northern Gateway to the B.C. coast.

However, according to figures from a National Energy Board (NEB) data set obtained under access-to-information by CBC, the rate of overall pipeline incidents has doubled since 2000.

By 2011, safety-related incidents covering everything from



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unintentional fires to spills - rose from one to two for every 1,000 kilometres of federally-regulated pipeline. That reflects an increase from 45 total incidents in 2000 to 142 in 2011. Pipeline watchers like Pembina Institute associate Nathan Lemphers suggest the rise may be a worrisome aging infrastructure. sign of



NEB documents The give detailed information about 1,047 safety incidents from pipeline



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Jan. 1, 2000 until late The federal regulator oversees any pipeline that crosses provincial or international borders, which includes about 90 companies that own about 71.000 kilometres of pipelines. The data does not include smaller pipelines monitored by provinces.

2012.

The National Energy Board attributes



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the rise in incidents to heightened awareness among companies about what they need to report.

"We've been out there talking with industry associations and the companies themselves to ensure that they are fully aware of what the reporting requirements are and I think that's why we're seeing an increase right now," said NEB's business leader for operations, Patrick Smythe.

Leaks, spills triple

Each company overseen by the NEB must report safety issues including the death or serious injury of a worker, fires, explosions, liquid product spills over 1,500 litres and every gas leak.

Among the other findings based on NEB's pipeline database is that there's been a three-fold increase in the rate of product releases spills and leaks - ranging from small leaks and spills to large - that have been reported in the past decade.

B.C. saw the most reported incidents for a single province, followed by Alberta and Ontario (John Rieti/CBC)

More than four reportable releases happened for every 10,000 kilometres in 2000, or 18 incidents in total, according to NEB data. By 2011, that rate had risen to 13 per 10,000 kilometres, or 94 incidents.

Those numbers include any oil or natural gas releases companies are required by law to report.

Carl Weimer, executive director of U.S. advocacy group Pipeline Safety Trust, says each small leaks may not be significant on its own, but taken

together they provide a better picture when looking at safety trends.

"It shows how really carefully they are taking care of the said pipelines," Weimer.

British Columbia experienced the most pipeline safety incidents for a single province, with 279 recorded events from 2000 to 2012 in the data set. Alberta came in second with 244 incidents, followed by Ontario with 146.

The community with the highest number of incidents in its vicinity is the remote town of Norman Wells, Northwest Territories. which has seen 71 events. NEB concerned about incidents severe

CBC News turned the NEB data set into a user-friendly map that allows Canadians to explore pipeline incidents using filters such as the nearest community, year, company, pipeline or substance spilled.

It provides an unprecedented bird's eye view of safety issues plaguing pipelines over the past decade and also gives users the ability to drill down into the details of each report.

NEB's Smythe says that the regulator has not seen an alarming increase in the "significant, serious or major incident over the last little while."

Recent documents published by the NEB show that they have expressed some concern over rising numbers.

"Notwithstanding the safety record of NEB-regulated pipelines, the board has noticed an increased trend in the number and severity of incidents being reported by NEBregulated companies in recent years," one 2012 report states. Another 2011 document citing the same concern also notes the need for NEB to "enhance data collection" in order to tackle that problem and other troubling trends in the industry.

It goes on to say that a reduction in the numbers ultimately "depends on actions taken by the industry."

Brenda Kenny, president of the Canadian Energy Pipelines Association, represents which major companies, says there's industry-wide an commitment to incidents." "qet zero to

"We're driving that out very hard through our risk-based management approach at the industry level that involves a lot of best practices, integrity, management, technology and these indicators," said Kenny.

"The Canadian pipeline industry is one of the very safest in the world second to none in terms of actual results," said Kenny. Pipelines have faced unparalleled attention in recent years as global demand fuels a production boom across the continent, resulting in a rise in pipeline proposals.

"Pipelines were very much out of sight out of mind until recently," said Ian Goodman, a U.S. energy consultant who works with regulators and community groups across North America.

The is pipeline debate not generally "front-page news day

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after day ... the way it now is. That's a new development."

SPOOKY SCENARIO: THE CHANGING FACE OF THE US OIL INDUSTRY

PF Group Inc. is pleased to announce the results of its latest study. Data released by the US Energy Information Administration (EIÂ) over the past several years have pointed to a compelling shift in the strategic context of US oil markets that may emerge in coming decades. The interwoven threads of pipelines, railways, carbon emissions, and political maneuvering are joined together in the loom of US refiners.

Incremental increases in US refining capacity over the past twenty years have roughly kept utilization rates in the mid-80% range, with fewer than one million barrels per day of idle capacity, while at the same time that overall refiner output has grown by approximately 25%. This increase in output has roughly kept pace with population growth on a year-over-year basis.

Since the turn of the century the quality of crude oil used as feedstock for refineries, as measured by sulfur content and API gravity, has been relatively stable. Prior to this period, however, there was a material change in crude oil sourness and density, with average sulfur content rising by ~50% and API gravity falling by ~10%. Although US crude oil production

has increased since the mid-





2000s, the EIA is forecasting crude oil production shortfalls of ten (currently) to twelve (after 2019) million barrels per day compared to US refining capacity; the US will demand substantial imported crude oil into the foreseeable future. Consequently, Canadian pipeline and railway access to the US will remain a major policy issue. If Canadian oil production doubles as projected, escalating conflict over transportation of Canadian crude oil may dominate Canada-US relations with a spillover effect into Canadian trade arrangements outside of North Ámerica.

However, of more interest are the recent developments in US oil product end market sales. In particular, growth of US refinery output has outpaced US domestic demand for refined petroleum products, leading to a tripling of US petroleum product exports since the financial crisis. This suggests that US refineries supplying non-US demand for refined oil products are driving a portion of US oil import demand; compared to domestic demand, US refiners have excess capacity.

Refining overcapacity may attract the attention of environmental constituents and become the new carbon battleground, displacing current attention focused on crude oil transportation. As long as US refiners have capacity and an end market they will demand crude oil. Combatting the transportation of oil to refiners, whether by pipeline, rail, or ship, is similar to squeezing a balloon full of water - market forces, like water, cannot be compressed and undue external pressure will cause them to expand outside of the pressure zones.

Instead of fighting the multiple transportation effects of US refinery demand, the strategic context may shift to the single proximate cause, refining capacity itself. If refining capacity were to be statutorily limited to supply of domestic demand, either by limiting refined product export in the same manner as crude oil, or by decommissioning excess capacity (with the caveat that environmental and national security concerns could more directly collide), then there would be a ripple effect across global oil markets.

In this scenario, as US import demand wanes a corresponding shortfall in accessible global refining capacity would increase the economic importance of non-US refining operations. To the extent that North American oil production quality deviates from that of imported oil, low quality North American oil production would become stranded or the cost of refined products would necessarily increase in dollar and carbon output terms. There may be other knock-on effects that are difficult to predict, similar to anticipating where exactly the water filled balloon will expand when squeezed.

Sound far-fetched? Consider the impact of Ultra-Low-Sulfur-Diesel (ULSD) legislation. Since the implementation of ULSD in the US a decade ago, distillate production with sulfur content below 15 ppm has risen from 0% to over 90% of total distillate production, which has grown approximately in line with overall petroleum products. Any additional cost of refining lower sulfur distillates seems obvious, but there was also a knock-on effect that impacted global graphite markets and possibly electric car production.

Increasing distillation to reduce sulfur content requires a heat source, and to minimize costs refiners cannibalized their production of marketable petcoke, effectively recycling a byproduct of the distillation process by feeding the petcoke back into refineries. Total petcoke production since ULSD has been relatively stable, but the amount of petcoke supplied to end markets has fallen dramatically.

Marketable petcoke serves as a feedstock for synthetic graphite, which is used in multiple products including lithium-ion batteries. The negative supply shock in the synthetic graphite market caused a reciprocal demand shock in natural graphite markets, and a corresponding jump in natural graphite prices.

Capital markets responded with a redeployment of capital to Greenfield graphite projects, and a simultaneous marketing effort that erroneously identified the demand shock culprit as demand from electric car producers. Ironically, the longer-term effect of reducing sulfur emissions may be to hinder more attractive electric car pricing, and thereby overall reduction in carbon output and fossil fuel reliance.

What will be the ultimate impact of recent changes in US oil markets? Only time will tell, but historically change has signaled opportunity, with greater change opening the door to greater opportunity.

PROVINCE WON'T CONDUCT ENVIRONMENTAL ASSESSMENT OF LINE 9 PIPELINE

The Ontario government said it will not conduct its own environmental assessment of Enbridge's



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controversial Line 9 pipeline.

was approved in July 2012.

On Monday, Ontario's Minister of Energy Bob Chiarelli said the issue is a matter of federal jurisdiction and Ottawa will make the final decision on whether the project goes ahead.

He said the Ontario government has called for a "stress test" to ensure the pipeline is safe, but that "the National Energy Board is responsible for getting the right information on which to make a decision."

Enbridge Inc. wants to ship Alberta heavy crude oil from Sarnia to Montrealthroughalinewhich currently transports light conventional oil.

In November of 2012, Enbridge filed an application asking the National Energy Board (NEB) to let it reverse the flow of a segment of the pipeline between North Westover, Ont., and Montreal. That application Now Enbridge is seeking permission to increase the capacity of the pipeline to transport 300,000 barrels of oil a day. It currently transports around 240,000.

Enbridge is also seeking permission to transport heavy crude oil from the Alberta oilsands.

Hundreds of residents, community groups and environmentalists have protested the proposal. More than 100 interveners expressed their concerns during NEB hearings on the proposal, held this month in Montreal and Toronto, as protests and rallies were held outside. The final day of hearings in Toronto was cancelled due to security concerns.

Chiarelli said the Ontario government intervened in the NEB hearings to emphasize that public safety and environmental protection must come first.

However, because the pipeline crosses provincial boundaries, Chiarelli said the proposal is in the hands of the federal government.

Line 9 runs through numerous communities in Ontario and Quebec – cutting through rivers, parks, backyards and transit corridors.

Enbridge says the plan is safe and relatively low-impact: The pipeline, after all, is already in the ground.

But environmentalists say the decades-old pipeline was never meant to carry heavy crude, and the line cuts through numerous communities, puts First Nations communities at risk, threatens water supplies and could endanger vulnerable species in ecologically sensitive areas.

Members of Environmental Defence, along with activists and musicians including Sarah Harmer, held protests and rallies urging the Ontario government to conduct an EA.

Changes pushed through as part of the federal government's 2012 omnibus budget bill mean Line 9 could get approved without an environmental assessment at all. Groups have already argued that changes to the NEB introduced in Bill C-38 has kept the public out of the consultation process.

Enbridge says it has a safe record on Line 9, and that increasing the capacity to carry heavy crude and diluted bitumen will bolster "the security of Canada's energy supply" while "safeguarding jobs."

To allow it to flow through pipelines, tar-like bitumen is mixed with diluents the Natural Resources Defense Council says are highly corrosive and acidic – raising the risk of pipeline corrosion and oil spills.

Enbridge argues that diluted bitumen isn't corrosive, citing a study from U.S.-based National Academy of Sciences. The study said that diluted bitumen doesn't have a unique property that would make it any more corrosive than other crude oils.

Enbridge said it's safe delivery record stands at 99.999 per cent, adding that anything less than a perfect safety record is "not good enough."

Reports of oil leaking from pipelines across Canada are not uncommon.

In 2010, an Enbridge pipeline running underground from Griffith, Ind., to Sarnia, Ont., ruptured, spilling more than 3 million litres of oil into the Kalamazoo River and a tributary creek. The cleanup efforts have cost the company more than \$1 billion so far, and are not yet completed.

Enbridge spokesperson Graham White has said that if a spill occurred on Line 9 the company would be on the hook for clean up and associated costs. But several groups in Ontario are afraid that it would in fact be local responders who would arrive to the scene of a spill first, with no proper training on how to handle it.

The National Energy Board is expected to decide on Enbridge's application around the end of the year.

SHELL MOVES AHEAD WITH 80,000 BARREL PER DAY CARMON CREEK PROJECT

Royal Dutch Shell plc (Shell) today announced its decision to proceed with its Carmon Creek project in Alberta, Canada, expected to produce up to 80,000 barrels of oil per day. Carmon Creek is a thermal in situ project that is 100 per cent Shell owned and will be part of the company's broader production, refining and marketing business across the full value chain in North America.

"I'm pleased we're moving ahead with this important project," said Lorraine Mitchelmore, Executive Vice President Heavy Oil. "Shell's Peace River oil leases represent a significant development opportunity. Our decision to invest in Carmon Creek has been carefully studied with the goal of designing a project that is competitive from a commercial, technological and environmental perspective."

At Carmon Creek, Shell combined its global procurement reach and technology with access to local expertise to design a facility that is both commercially viable and minimizes environmental impacts. This design includes a novel well delivery system and the use of cogeneration that will also feed power into the Alberta grid; enough to power half a million homes. Once the project is up and running the aim is to virtually eliminate the need for freshwater use for steam generation through recycling of water produced with the oil.

Carmon Creek will build on Shell's more than 30 years of experience developing its Peace River heavy oil leases and established relationships with local communities and First Nations. It is expected to employ more than 1,000 local trades and contractors during peak construction periods.

Shell submitted its regulatory application for Carmon Creek in 2010 and received approval from the Alberta Energy Regulator in April 2013, following a rigorous and transparent review process. The project is expected to provide a secure, reliable energy source and benefits to Alberta and Canada for more than 35 years.

PIPELINE SAFETY: CANADA LAGS U.S. ON MAKING DATA PUBLIC

Maps, detailed reports available online in the U.S. After a long day tending his expansive canola farm near Swan Lake, in central Manitoba, Dan Hacault turns on his computer to try to find out more about what's buried below his cash crops — eight pipelines.

The veteran farmer says he spends hours looking at the website of the federal pipeline regulator, the National Energy Board, but finds it a confusing labyrinth that leads him in circles. "Sometimes you luck out" and



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Call Dan McCormick phone 250.787.1037 * cell 250.262.7676 fax 250.787.1019 www.mccormickventures.ca for, says Hacault, who is also a director with the Manitoba Pipeline Landowners Association. "Usually, it's just by accident." Hacault may not be the only one frustrated. When it comes to being transparent about pipeline data, a U.S. pipeline watchdog says Canada lagsfar behind its southern neighbour.

"I was kind of shocked how little there is available in Canada," says Carl Weimer, executive director of Pipeline Safety Trust in Bellingham, Wash., a non-profit group focused on improving pipeline safety.

The group publishes annual reports ranking pipeline regulators across the U.S., at both the federal and state levels.

This past summer, Weimer came to Canada to speak at a safety forum organized by the NEB.

He told an audience made up of oil and gas company heavyweights as well as government representatives that the NEB would rank a "pretty low" — nine out of 30 in the transparency rung — if he used the trust's criteri

Over at the NEB, the head of business operations, Patrick Smythe, acknowledges that its information may not always be available online.

"But if anyone wants any information on any Canadian pipeline that we regulate they can come to us and ask us for that information and we'll provide it," he said.

In Canada, general maps are available from individual pipeline companies, but there is no comprehensive one showing all the systems and their exact locations. The difference in the U.S. is that any member of the public can go online and view maps of pipelines accurate to about 150 metres right across the country.

The National Pipeline Mapping System allows citizens to search by operator, pipeline name or even the status of the pipeline, whether it's in service or abandoned. U.S. pipeline maps first went online in 2000, though security

fears prompted the government to pull them down after the Sept. 11, 2001, attacks, says Weimer.

They came back online about two years later. "We kind of came to the realization that it was more important for the public to know where the pipelines were than to worry about the terrorists," says Weimer.

Reams of pipeline data are also available about incidents and much of it is downloadable.

A homeowner can look up a company to see how many barrels of oil or gas it spilled in a year, what the associated property damage cost and even details about how often the company was inspected.

"Once a person realizes that they have a pipeline near their house, the questions they want to know is 'What's the potential impact, am I far enough away from it if something fails?" says Weimer.

The federal regulator oversees about a tenth of pipelines in the country. Provinces monitor lines within their own borders. (John Rieti/CBC)

"The second thing they often ask is 'How well has this pipeline been

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operated, how many incidents has this company had on this pipeline in the last 10 years?"

Most importantly, the U.S. data covers pipelines and incidents across the country. Nowhere in Canada can the public find out details about pipeline incidents across the country. That's part of the reason why the CBC has produced a map of federally-regulated pipeline incidents over the past decade, gained from access to information data, and is looking to expand it. Upon seeing the map, Manitoba farmer Hacault said he had no idea about many of the incidents in his part of the province. "It's a lot worse than I thought," he said. "We've never had access to something like this. We just know

about [incidents] by hearsay." At the NEB, Smythe acknowledges that the U.S. is "a little further ahead," and noted that it has a different structure, with a tighter relationship between the national regulator and state counterparts.

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"We don't have that same relationship here in Canada," he said.

The NEB only oversees 71,000 pipelines that cross borders and are run by about 90 companies, about a tenth of the overall network. Provinces monitor the remaining 760,000 kilometres that are contained inside their borders.

This past August, the Senate energy committee recommended that the NEB and the Transportation Safety Board, another body that probes pipeline issues, give the public more detailed information about safety issues.

The committee called for the regulators to produce an interactive map, which would not only tell Canadians about spill amounts but also what caused each incidents.

Smythe says the NEB agreed with the Senate committee recommendations for a website and understands the need for greater transparency. The board plans to consult with Canadians about "what it is they need and how to get it to them."

More demand for raw details

In June, Alberta Energy Regulator, the new body watching over the province's vast internal network of pipelines, took the bold step of posting all pipeline incidents that affect the public.

A unique trust The Pipeline Safety Trust is a unique advocacy group with no Canadian equivalent.

It was born out of a catastrophe in Bellingham, Wash., in 1999 when three young people died after a

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pipeline ruptured and was set ablaze.

The first victim was an 18-yearold who was fishing in a creek and drowned after he was overcome by noxious fumes. Two 10-yearold schoolmates also died after suffering burns to 90 per cent of their bodies in the explosion.

After that, the community vowed to fund an oversight agency. And when criminal fines were imposed on the company in 2003, the judge ordered \$4 million of that to go to the trust.

"The NEB doesn't have that," said Barry Robinson, a Calgarybased lawyer with Eco justice. "You kind of have to hear through the grapevine that there might have been an incident."

Robinson says that some of the key information the public should have access to is the specific location of a spill and what action regulators took against the company involved.

Canadian Energy Pipelines (CEPA), Association a group representing some of the largest companies, says that the industry strives to present accurate data about their members' 99.999 per cent safety record. "What has changed an is expectation for the public to be

able to parse that data themselves and we welcome that," said CEPA president Brenda Kenny.

At the Pipeline Safety Trust in Bellingham, Weimer says pipeline data should be as transparent as possible so that the public can make informed decisions about the oil and gas lines

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crisscrossing their neighborhoods.

"We feel that we can really help strengthen pipeline safety regulations by getting more people aware that they do have these pipelines and what the impacts can be," he says.

gaps

Filling the

The data that the CBC collected for our searchable map suggests that the rate of pipeline incidents has doubled, from one to two incidents for every 1,000 kilometres, between 2000 and 2011.

It was difficult to do much analysis with the data set since some reports were incomplete or had inconsistent information.

NEB said the database provided through access-to-information was a "snapshot in time," and that while its employees didn't always update the records, there are supporting documents in other files.

Weimer notes that the move to more transparency can involve growing pains. When the U.S. began publishing pipeline data, similar holes appeared. "Because of the transparency, people were able to push to fill in those gaps," he says.

Now, he says, the conversation between industry and interest groups has turned to more important issues, such as the best way to measure pipeline safety and how to make all the data easier to understand.

"That can't happen in Canada at this point because there really isn't any data to argue about," he says.

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