Government of Canada | Gouvernement du Canada

Oil Sands

A strategic resource for Canada, North America and the global market

Pipeline Safety

Pipelines are a safe method of transporting oil and gas

Pipelines are a safe and economical method of transporting crude oil, including oil sands crude and natural gas, to Canadian and other markets. Spills, leaks and ruptures are extremely rare, representing a tiny percentage of what is flowing through the pipelines. Between 2008 and 2013, 99.999 percent of the oil transported on federally regulated pipelines moved safely.

Oil and gas have been safely transported by pipeline for decades

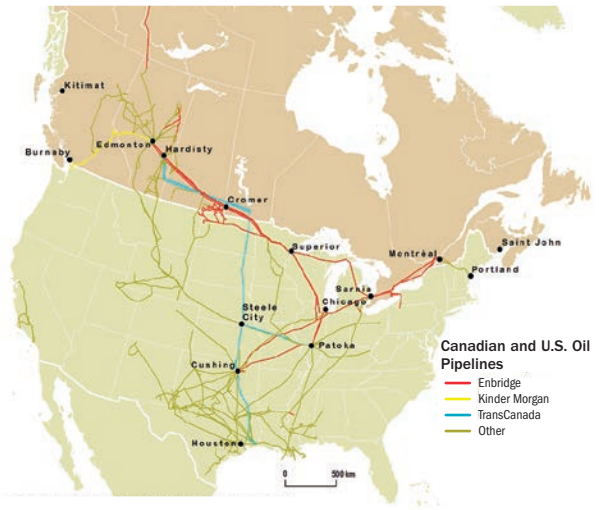
Pipelines have been used in Canada since 1853. Today, there are approximately 825,000 kilometres of transmission, gathering and distribution lines in Canada, which in 2012, transported up to 3.5 million barrels per day of crude oil and 14.0 billion cubic feet per day of natural gas.[1]

A rigorous pipeline safety regime

Canada has a comprehensive, rigorous pipeline safety system focused on prevention, preparedness and response, and liability and compensation.

The federal government believes it is crucial to keep improving the technology and updating its regulations around pipelines to maintain Canada's impressive safety record. Through the introduction of its *Pipeline Safety Act* in December 2014, it has proposed legislative measures to further enhance Canada's world-class pipeline safety system.

Crude Oil and Refined Petroleum Products Pipelines



Source: Canada Centre for Mapping and Earth Observation, Natural Resources Canada 2014

New prevention measures

- Clarify audit and inspection powers of the National Energy Board (NEB).

New preparedness and response measures

- Require companies operating pipelines to hold a minimum level of financial resources, set at $1 billion for companies operating major oil pipelines.
- Require a portion of each company's financial resources be readily accessible to ensure rapid response to any incident.
- Provide the NEB authority to take control of incident response and cleanup in exceptional circumstances, if a company is unable or unwilling to do so.

[1] Canadian Energy Pipeline Association (CEPA) and National Energy Board (NEB).

Canada

New liability and compensation measures

- Build on companies' unlimited liability under common law (when at fault or negligent) by implementing "no fault" or absolute liability for all companies operating pipelines, set at $1 billion for companies operating major oil pipelines.
- Enable the Government to establish a pipeline claims tribunal to examine and adjudicate claims for compensation in exceptional circumstances.
- Provide the NEB authority to order reimbursement of spill cleanup costs incurred by governments or individuals.
- Ensure resources are available for spill cleanup costs and damages if a company is unable or unwilling to clean up, and expand the NEB authority to recover costs incurred from industry.
- Ensure companies remain responsible for their abandoned pipelines.

Other non-legislative actions

- Seeking guidance from the NEB on the application of "best available technologies" for pipeline construction and operations.
- Working with Aboriginal communities and industry to develop a strategy to better integrate Aboriginal Peoples in pipeline safety operations, including planning, monitoring, incident response and related employment and business opportunities.

These measures build on previous action taken by the Government of Canada to prevent incidents, including increasing the number of annual pipeline inspections and audits conducted by the NEB and strengthening the board's enforcement capabilities by giving it authority to issue administrative monetary penalties to companies and individuals for violations.

Oil sands crude is no more corrosive

Pipelines have been safely transporting oil sands-derived crude oil for more than 30 years. During that time, there has been no evidence of an increased risk of pipeline corrosion compared with other forms of crude.

Both scientific research and industrial experience have determined crude oil from the oil sands is no more corrosive in transmission pipelines than other crudes.

ASTM International, an internationally recognized agency that develops standards tests, recently published ASTM G205 – 10 *Standard Guide for Determining Corrosivity of Crude Oils* for measuring the corrosivity of crude oil under pipeline conditions. Measurements obtained from these tests indicate the corrosivity of oil sands-derived crudes is no different than that of other crudes.[2]

The NEB must give approval before crude oil, including oil sands-derived crude, can be transported through a transmission pipeline in Canada. To obtain NEB approval, the pipeline operator must identify product specifications such as the corrosive (water) and erosive (mud, sand) content of crude oils that can be shipped through the pipeline. The industry-established limit for the combined basic sediment and water content is 0.5 percent by volume. As a result, all crude oils in transmission pipelines have low corrosivity.

Crude oils, including oil sands-derived crudes, contain little or no carbon dioxide or hydrogen sulphide. Furthermore, transmission pipelines typically operate well below 70°C. Consequently, naphthenic acid and sulphur compounds that can cause corrosion under refinery conditions (greater than 200°C) are very unlikely to cause corrosion in pipelines.

Pipelines that carry crude oil from the oil sands operate at approximately the same pressure levels as pipelines carrying other crude oils.

[2] Natural Resources Canada (2012), *Corrosion Conditions in the Path of Bitumen From Well to Wheel*, www.nrcan.gc.ca/minerals-metals/materials-technology/4542

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