

What are pipeline companies doing to keep their operations safe?

About Pipelines is a series, dedicated to sharing the facts about transmission pipelines in Canada and their role in Canadians' lives. This information is provided by the Canadian Energy Pipeline Association (CEPA).

3
meters
per second

The average speed a smart pig (an in-line inspection tool) moves through the pipeline to monitor conditions.

3,151

In 2015, the number of pipeline integrity digs CEPA members conducted to examine for defects and make repairs.

\$1.3
billion

Invested by the industry into pipeline safety in 2015.

BY THE NUMBERS

Pipeline Operations

Canada is the second largest country in the world and one of the top five largest energy producers. In fact, the Canadian transmission pipeline system spans 119,000 kilometres! It's no wonder that Canada's pipeline operators use a variety of systems and technologies to keep them running safely and efficiently.

Pipeline operators are responsible for meeting the majority of Canadians' energy needs, and are committed to safely shipping natural gas and crude oil products through well-maintained pipes.

That's why the industry carefully plans out every detail in the life of a pipeline – materials to monitoring, inspection and maintenance. This process is known as pipeline integrity management and makes sure pipelines are designed, built and operated to be safe, reliable and sustainable.

The technology behind safety

It's the industry's commitment to pipeline integrity management that drives us to use the most innovative technologies.

Technology plays an important role in the safe operation of pipelines, particularly:

- Corrosion prevention
- Inspections
- Leak detection
- Damage prevention

Protecting and inspecting

Corrosion is the natural enemy of pipelines. It's caused by a chemical reaction between the metal of the pipeline and an element in the environment it's buried in – like water or oxygen. Often corrosion results in rust, which can weaken the pipeline.

To prevent corrosion, the industry uses special coatings on the pipes to stop oxygen and water from reaching the metal and corroding it. Pipeline companies also apply a low voltage electrostatic current to the pipes that blocks the chemical reaction resulting in corrosion. This is called cathodic protection.

Corrosion prevention is critical and so is maintenance, which is why pipelines are inspected regularly. Whether it's simply walking along the pipeline route or using aerial patrols – inspections keep pipelines safe.



CORROSION TESTING

Pipeline operators monitor and test for corrosion to mitigate any potential issues long before a leak or a failure occurs.

Pipeline Operations

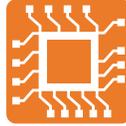


ACOUSTIC TECHNOLOGY is being used to monitor pipelines

One innovation, the SmartBall™, has an acoustic data system that listens for leaks as it moves through the pipeline.

It will be used to detect small, possibly even pinhole sized leaks

Read about SmartBall on our blog: bit.ly/ZrC24L



DIGITAL SENSORS are being considered for potential use for pipeline leak detection

University of Alberta researchers are exploring using them for everything from monitoring pipeline structure to sensing leaking fluids

Read about digital sensors on our blog: bit.ly/1u3P59g

Technologies coming down the pipe

Researchers and engineers around the world are focused on developing new technologies to advance the safety of pipelines.



CEPA members are 100% focused on safety and on achieving zero incidents.

The safety performance of the Canadian transmission pipeline industry is world class and continues to improve.”

CHRIS BLOOMER
PRESIDENT + CEO
CANADIAN ENERGY PIPELINE ASSOCIATION

While some inspections take place outside the pipeline, it's important to look inside to determine the condition of the pipe. That's where 'smart pigs' come in. They are advanced inspection tools that use sensors to identify and locate anything out of the ordinary within the pipe. By using smart pigs, operators can identify problems that may be difficult to see from outside the pipeline. If an in-line inspection detects a problem, operators will conduct an integrity dig to examine the pipe, make the repair, re-coat and re-bury it. Sometimes it may be necessary to replace the section of pipe.

Sensing and preventing

Pipeline monitoring doesn't always have to be up close and personal – one of the methods the industry uses for leak detection is actually done at a distance, using control rooms. These rooms are active 24 hours a day, seven days a week, and are equipped with systems that collect information about the temperature, flow rate and pressure of the product in the pipeline, using sensors along the pipeline route. Alarms automatically go off if a leak or problem is detected, and parts of the pipeline can be instantly shut off using valves. All of this can be done hundreds of kilometres away.

The most common cause of damage to pipelines during operation is from construction and excavation activities. But this damage can be easily prevented if contractors, construction companies and homeowners check to see where the underground utilities are before they undertake a project, like planting a tree or building a fence. Every province has a line-locating service Canadians must contact before they begin a project, so that buried utilities can be located and marked before the digging starts.

This simple call or click prevents project delays, disruption of essential services, property damage, environmental contamination and serious injury. Visit clickbeforeyoudig.com for more information.

CEPA members are committed to safe operations, demonstrated by the \$1.3 billion they invested in 2015 in pipeline safety. Technology – which plays a role in every phase of the pipeline lifecycle – ensures that the industry is pushing its performance to make pipeline operations safer and more sustainable every day.

aboutpipelines.com/en/safety



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