

Storage Tanks and Emission Control

No.
03

How do pipeline operators manage emissions from storage tanks?

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).

1

DID YOU KNOW? Storage tanks

Storage tanks are used by many industries, including milk producers. Even Disneyland resort has a thermal storage tank!

2

Pipeline companies use storage tanks to temporarily store crude oil, gasoline and other petroleum liquids.

3

Petroleum storage tanks use innovative design features to minimize emissions being released into the atmosphere.

In Canada, there are **119,000 kilometres of transmission pipelines, transporting both oil and natural gas all over the country. Often, when liquid petroleum products like crude oil and gasoline are in the process of being transported, they need to be temporarily stored before they safely reach their destination.**



TANK FARMS IN SIGHT

Hardisty, Alberta has become an important tank farm complex for the pipeline industry.

That's where above ground storage tanks come in. These cylindrical structures pop up along the route of an underground pipeline and are designed to safely hold liquid petroleum products.

CEPA members have more than 250 above ground storage tanks. These tanks and their related facilities are approved and regulated by the National Energy Board (NEB) or the appropriate provincial regulator. Tanks are regularly inspected for environmental and safety reasons.

Because liquids can evaporate easily, they must be stored responsibly.

Designed to protect

Storing petroleum liquids may not seem like an emission-creating action. But it can be an issue because of the properties of the liquids.

Committed to air quality

With over 70 storage tanks, the tank farms in Hardisty are one of Canada's most important liquid petroleum storage complexes. There are several pipeline companies who independently own and operate tank farms at this location, including CEPA members like Enbridge Pipelines, TransCanada PipeLines and Inter Pipeline.

Enbridge, along with other industry partners, have established an ambient air monitoring network at Hardisty, which collects and monitors the air quality both continuously and via the National Air Pollution Surveillance Program.

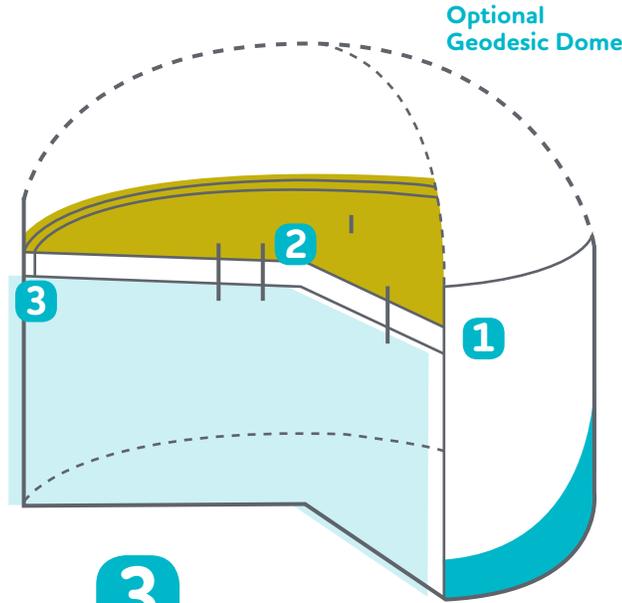
Learn more:
<http://bit.ly/1KIH8VW>

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BY DESIGN

Optional external cover

In certain areas, some storage tanks have external dome covers to protect from winds that could disperse emissions. The covers also protect the floating roof from excess snow and rain.



1

THE COLOUR. Tanks are often painted white to reduce heat being absorbed by the sun and prevent the stored liquids from evaporating.

2

THE ROOF. Storage tanks have floating roofs, which sit on top of the liquid to decrease the amount of air space in the tank and prevent evaporation. The roof moves up and down as the tank is filled and emptied.

3

THE SEALS. The floating roof has primary and secondary seal systems that create vapour-tight barriers between the roof and walls of the tanks to minimize the release of emissions.



What about natural gas storage?

Natural gas is stored differently than liquid petroleum products. Where storage tanks are above ground, gas pipeline operators use naturally-occurring below-ground storage for natural gas. The industry mainly uses depleted reservoirs that once held the natural gas that has been extracted, or salt caverns, which are known for their non-porous and waterproof properties.

Petroleum liquids are a mixture of various hydrocarbons. Some of the components very easily evaporate into the air, even when stored at normal pressure and temperature.

These are commonly known as volatile organic compounds (VOCs). VOC emissions can cause ozone to form at the ground level, which can contribute to smog or haze on warm, sunny days.

Because these components tend to evaporate easily, pipeline operators must store and care for these liquids responsibly. And one of the primary ways the industry minimizes emissions from being released into the atmosphere is through the design of storage tanks.

Monitored to minimize and recover

Pipeline operators inspect their storage tanks regularly to monitor them for leaks and external corrosion. An inspection is done regularly to check the condition of tank vents, drains and valves. The inspection includes

monitoring the condition of the seals, measuring gaps and repairing and replacing seals as required.

Even though tanks are designed and operated to minimize emissions, some emissions can escape past the seals into the atmosphere. Companies work with regulators and other industries to manage emissions within defined airsheds. In specific locations, pipeline operators use vapour control or recovery systems to avoid releasing VOCs into the atmosphere. These vapour control systems are highly efficient – collecting over 95 per cent of vapour emissions.

Storage tanks are an important part of the pipeline industry, and through regulation and the efforts of the industry, storage tanks ensure the petroleum liquid products we use every day are consistently available and safely stored.

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