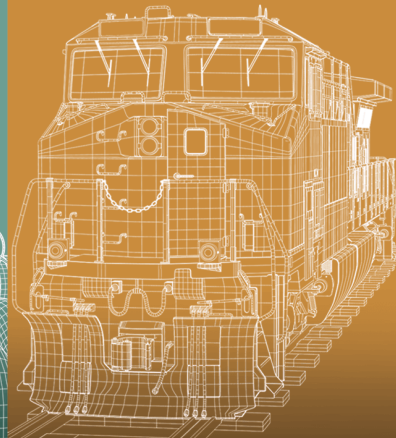
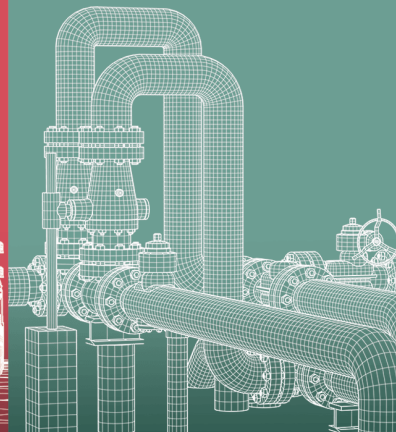




Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY

Pipeline Transportation Occurrences in 2020

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Statistical summary: Pipeline transportation occurrences in 2020

Cat. No. TU1-19E-PDF
ISSN 2562-671X

This document is available on the website of the
Transportation Safety Board of Canada at www.tsb.gc.ca

Le présent rapport est également disponible en français.

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Statistical Summary

Pipeline Transportation Occurrences in 2020

This document covers federally regulated pipelines only. Any non-federally regulated pipeline data reported to the Transportation Safety Board of Canada (TSB) are not included in this report.

The TSB gathers and uses these data during the course of its investigations to analyze safety deficiencies and identify risks in the Canadian pipeline transportation system.

It should be noted that certain characteristics of the data constrain statistical analysis and identification of emerging trends. These include the small totals of accidents and incidents, the large variability in the data from year to year, and changes to regulations and definitions over time. The reader is cautioned to keep these limitations in mind when viewing this summary to avoid drawing conclusions that cannot be supported by statistical analysis.

The 2020 data were collected according to the reporting requirements described in the *Transportation Safety Board Regulations* in force during that calendar year.¹

The statistics presented here reflect the TSB Pipeline Occurrence Database System (PODS) at 18 March 2021. Since the occurrence data are constantly being updated in the live database as additional information becomes available, the statistics may change slightly over time.

Also, as many occurrences are not formally investigated, information regarding some of the reported occurrences recorded in the database may not have been verified by the TSB.

¹ On 12 December 2018, amendments to the *Transportation Safety Board Regulations* were published in the *Canada Gazette*, Part II. The amendments were made to reorganize and update some of the pipeline occurrence reporting provisions to ensure consistency and clarity. In addition, minor discrepancies between the English and French texts were addressed.

The pipeline system

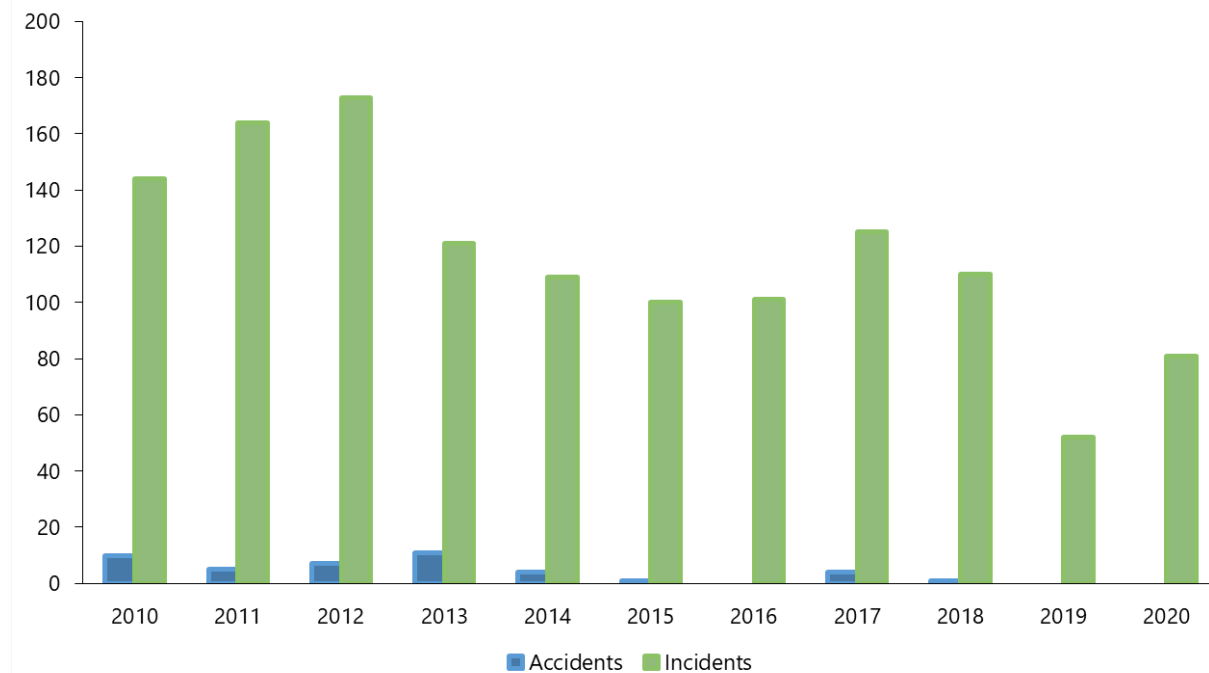
In 2020, in the federally regulated pipeline system, 40 companies transported 220 million cubic metres of oil through approximately 21 500 km of oil pipelines (including 19 companies that transported both oil and gas). Also in 2020, 83 companies transported over 180 billion cubic metres of gas through approximately 57 600 km of gas pipelines (including 19 companies that transported both oil and gas). A further 1 500 km of pipelines carried other commodities and substances. Altogether, this represents approximately 16.6 exajoules (EJ) of energy content transported.²

Pipeline transportation occurrences

In 2020, there were 81 pipeline transportation occurrences reported to the TSB (Table 1 and Figure 1), none of which were accidents. This number is below the average number of occurrences for the previous 10 years; fluctuations to the reported numbers over this period may result from various factors, including changes to regulations and definitions. On average, from 2010 to 2019, 124 occurrences were reported each year (120 incidents and 4 accidents per year).

There were no accidents, serious injuries, or fatalities arising directly from the operation of any federally regulated pipeline in 2020. Indeed, there have been no fatal accidents on a federally regulated pipeline system directly resulting from the operation of a pipeline since the inception of the TSB in 1990.

Figure 1. Pipeline accidents and incidents reported to the TSB (according to reporting requirements in effect at the time), 2010 to 2020

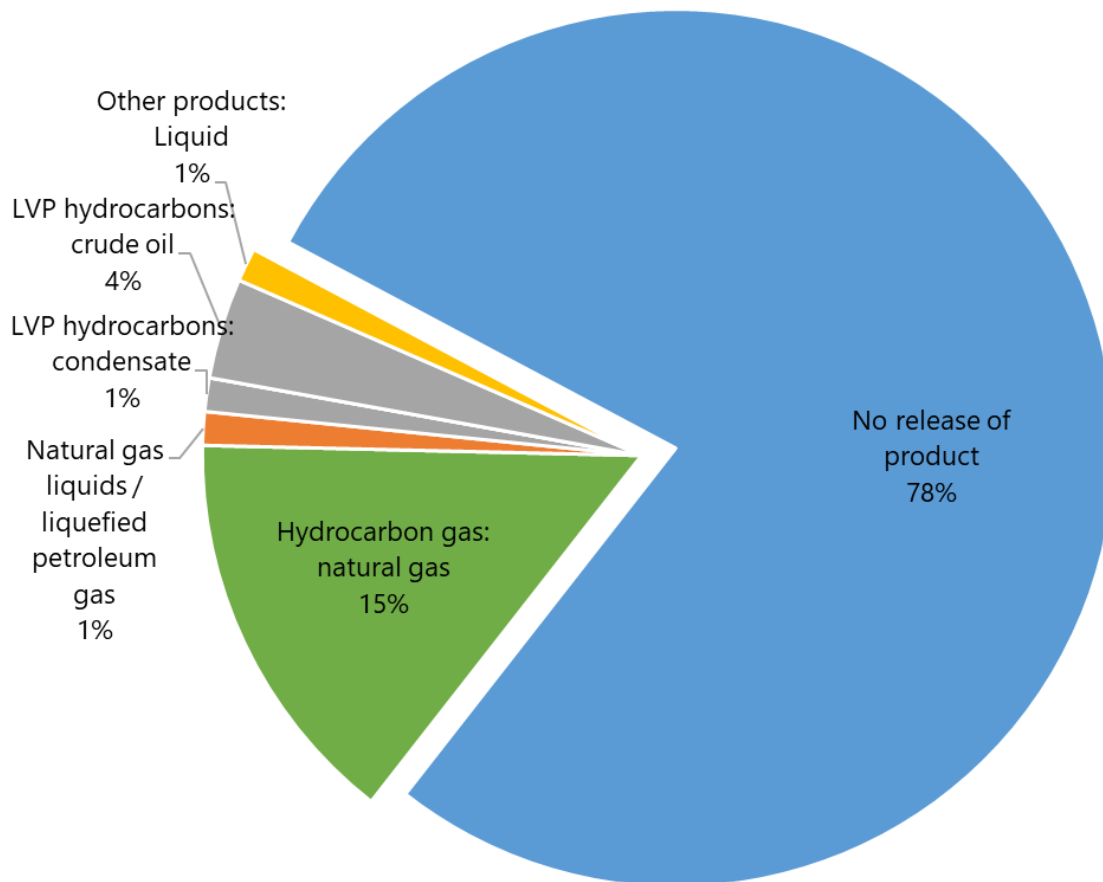


² The size of the federally regulated pipeline system, the number of companies, and the volumes of product transported were provided by the Canada Energy Regulator (CER).

Release of product

Of 81 occurrences in 2020, 18 involved a release of product (Table 5), far lower than the average of 88 per year over the previous 10 years. The products released in the 18 occurrences were as follows (Figure 2): 12 hydrocarbon gas (all were sweet natural gas) and 4 low vapour pressure (LVP) hydrocarbons (three involving crude oil and one, condensate). One occurrence involved the release of high vapour pressure hydrocarbons and one the release of a liquid other than hydrocarbons. In 2020, 63 occurrences did not involve a release of product, well above the average number of occurrences without release over the previous 10 years (36).

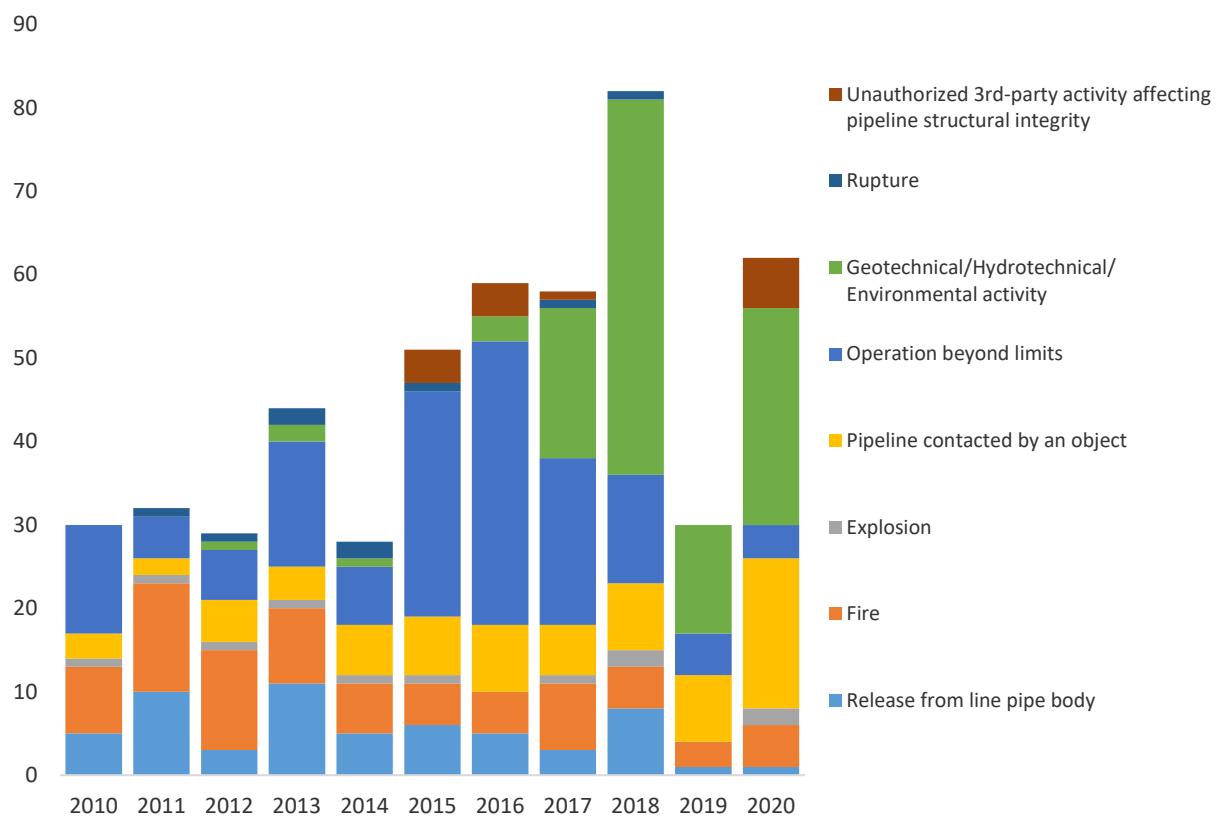
Figure 2. Percentages of occurrences with and without release of product, by type of product released, 2020



Events other than product release

In 2020, 26 occurrences (32% of 81 total occurrences) involved “geotechnical, hydrotechnical or environmental activity,” for example, slope movements or river erosion that exposed a length of pipe (Table 1 and Figure 3). This was the second-highest level reported over the past 10 years, after the 45 reported occurrences in 2018, and twice the number of reports of this type in 2019 (13). These fluctuations may be related to variations in enforcement and company inspection and reporting practices, as well as changes to weather patterns. Only 4 of 81 occurrences involved “operation of the pipeline beyond limits,” well below the average of 15 occurrences of this type over the previous 10 years. There were 18 reports of pipelines being contacted by an object in 2020, compared with the average of 5 reports per year during the previous 10 years; there were also 6 occurrences where “unauthorized third-party activity affects pipeline structural integrity,” compared with an average of one such occurrence per year over the previous 10 years. Also, five of the 2020 occurrences involved fires (identical to the 10-year average) and two involved explosions (where each of the previous ten years had one or none).

Figure 3. Pipeline occurrences other than those solely categorized as “product released,” by type of event, 2010 to 2020³



³ Figure includes all types of events for pipeline transportation occurrences reported to the TSB under the *Transportation Safety Board Regulations*, aside from those solely categorized as “product released.” Product release is defined as an occurrence “resulting directly from the operation of a pipeline where an unintended or uncontrolled release of commodity resulted in a significant adverse effect on people or the environment.” Some occurrences may be coded to multiple event types.

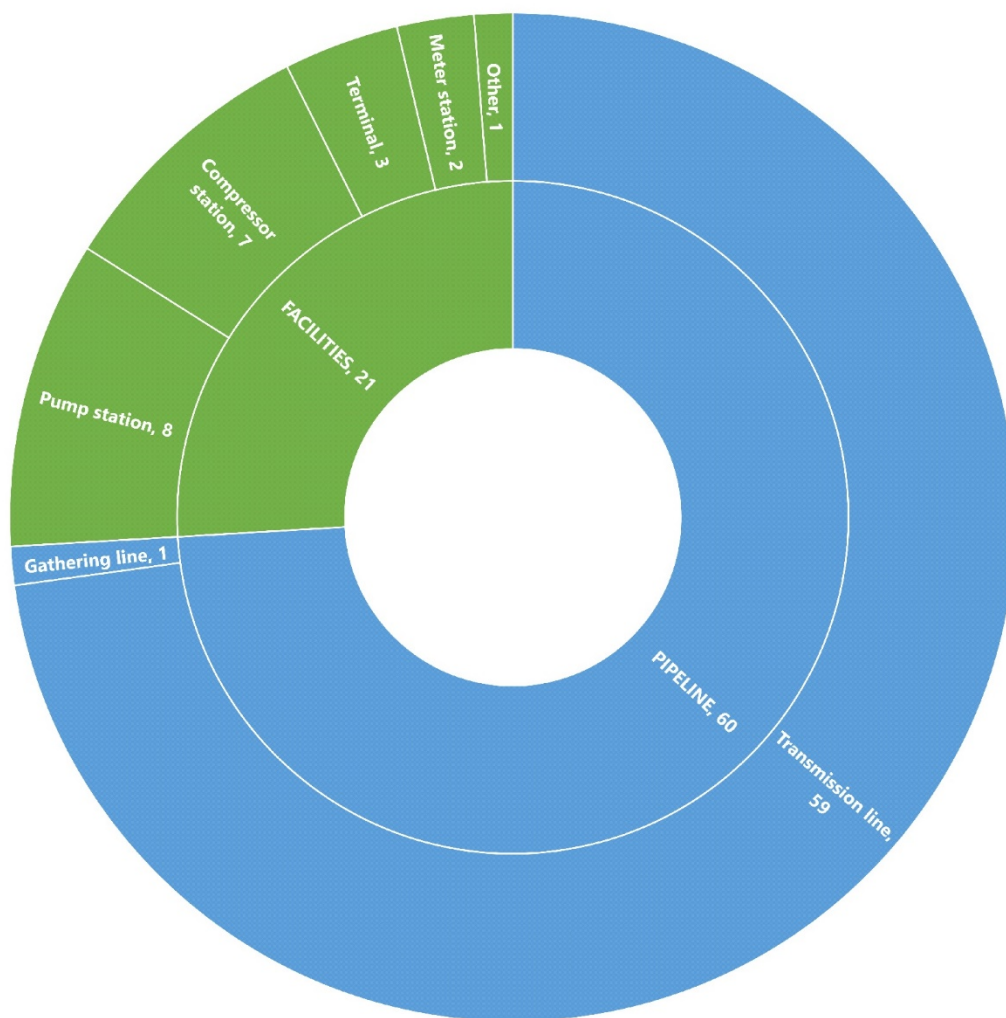
Geography

The largest number of occurrences in 2020 (29 out of 81) took place in Alberta (Table 2). Ontario had 19 occurrences and British Columbia had 15. Quebec had 6 occurrences, Saskatchewan had 5 and Manitoba had 4. The Northwest Territories had one occurrence and, after reporting no occurrences in 2019, New Brunswick and Nova Scotia reported one each.

Facilities

In the 10-year period 2010–2019, there were 808 occurrences (65%) at facilities and 434 (35%) at locations along pipeline (Table 3). However, in 2020 a solid majority (74%) of the occurrences (60 of 81) occurred at locations along pipeline (Figure 4). This is due in part to the number of reports of geotechnical, hydrotechnical, or other environmental activity that affected sections of pipeline during the year. Of the 21 occurrences at facilities in 2020, 8 occurred at pump stations, 7 at compressor stations, 3 at terminals, 2 at meter stations, and 1 at another facility.

Figure 4. Location of occurrences in 2020

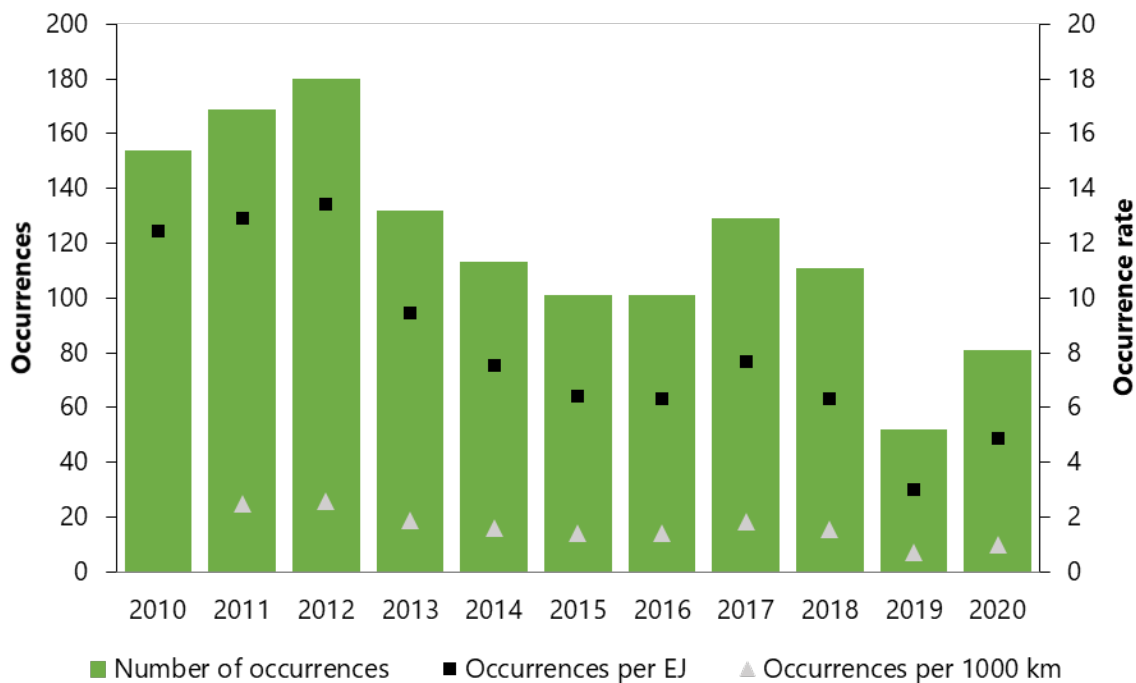


Pipeline occurrence rate

An occurrence rate of 1.0 occurrences per 1 000 km of operating pipeline was calculated for 2020 based on the 81 occurrences reported and the 80 500 km of federally regulated pipelines that were operational in Canada according to the Canada Energy Regulator (CER) during the same year (Table 4 and Figure 5). This occurrence rate is up from 0.7 in 2019, but below the average of 1.7 in the period 2011 to 2019.⁴

An occurrence rate can also be calculated using EJ of energy as a denominator (Table 4 and Figure 5). In 2020, the equivalent of 16.6 EJ of energy was transported in federally regulated pipelines. This translates to a rate of 4.9 occurrences per EJ in 2020, a figure higher than the 2019 rate of 3.0, but below the 2010–2019 average of 8.2 occurrences per EJ.

Figure 5. TSB reportable occurrences (according to reporting requirements in effect at the time) and occurrence rates, 2010 to 2020



⁴ Federally regulated pipeline length data are only available from CER from 2011 onwards.

Data tables

Table 1. Pipeline transportation occurrences, by accident/incident type and casualties, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Occurrences	154	169	180	132	113	101	101	129	111	52	81
Occurrences with product release	135	149	156	107	94	60	41	75	41	23	18
Persons fatally injured	0	0	0	0	0	0	0	0	0	0	0
Persons seriously injured	0	0	2	0	0	0	0	1	0	0	0
Accidents	10	5	7	11	4	1	0	4	1	0	0
Product released	7	4	3	7	2	1	0	4	1	0	0
Release of hydrocarbon gas	3	2	3	5	2	1	0	0	1	0	0
Release of HVP hydrocarbons ¹	0	0	0	0	0	0	0	1	0	0	0
Release of LVP hydrocarbons ^{2,3}	3	2	0	2	0	0	0	2	0	0	0
Release of other product ⁴	1	0	0	0	0	0	0	1	0	0	0
Release from line pipe body	0	2	1	2	2	1	0	1	1	0	0
Fire	6	3	6	8	3	0	0	0	1	0	0
Explosion	0	1	1	1	1	0	0	0	1	0	0
Rupture	0	1	1	2	2	1	0	1	1	0	0
Pipeline contacted by an object	1	1	1	1	0	0	0	2	0	0	0
Operation beyond limits	0	0	0	0	0	0	0	0	0	0	0
Geotechnical/hyrotechnical/environmental activity	0	0	0	0	0	0	0	0	0	0	0
Incidents	144	164	173	121	109	100	101	125	110	52	81
Product released	128	145	153	100	92	59	41	71	40	23	18
Release of hydrocarbon gas	56	59	67	47	31	30	35	47	35	18	12
Release of HVP hydrocarbons ¹	2	5	2	5	7	8	4	10	1	0	1
Release of LVP hydrocarbons ^{2,3}	61	72	78	35	36	4	1	3	4	5	4
Release of other product ⁴	9	9	6	13	18	17	1	11	0	0	1
Release from line pipe body	5	8	2	9	3	5	5	2	7	1	1
Fire	2	10	6	1	3	5	5	8	4	3	5
Explosion	1	0	0	0	0	1	0	1	1	0	2
Pipeline contacted by an object	2	1	4	3	6	7	8	4	8	8	18
Operation beyond limits	13	5	6	15	7	27	34	20	13	5	4
Geotechnical/hyrotechnical/environmental activity	0	0	1	2	1	0	3	18	45	13	26
Unauthorized third-party activity affects pipeline structural integrity	0	0	0	0	0	4	4	1	0	0	6

Data extracted 18 March 2021

¹ HVP: high vapour pressure as defined in Canadian Standards Association Standard Z662.

² LVP: means low vapour pressure as defined in Canadian Standards Association Standard Z662.

³ In July 2014, the minimum reporting threshold for releases of low vapour pressure hydrocarbons was established at 1.5 m³.

⁴ As of January 2017, "other products" are specified to be either liquid or gas.

Table 2. Pipeline transportation occurrences, by provinces and territories, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Accidents	10	5	7	11	4	1	0	4	1	0	0
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Prince Edward Island	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	0	0	0	0	0	0	0	0	0	0	0
New Brunswick	0	0	0	0	0	0	0	0	0	0	0
Quebec	0	0	0	0	0	0	0	0	0	0	0
Ontario	1	2	2	2	0	0	0	0	0	0	0
Manitoba	1	0	0	0	1	0	0	0	0	0	0
Saskatchewan	1	1	1	1	0	0	0	1	0	0	0
Alberta	4	1	2	6	1	1	0	2	0	0	0
British Columbia	3	0	2	2	1	0	0	1	1	0	0
Yukon	0	0	0	0	0	0	0	0	0	0	0
Northwest Territories	0	1	0	0	1	0	0	0	0	0	0
Nunavut	0	0	0	0	0	0	0	0	0	0	0
Incidents	144	164	173	121	109	100	101	125	110	52	81
Newfoundland and Labrador	0	0	0	0	0	0	0	0	0	0	0
Prince Edward Island	0	0	0	0	0	0	0	0	0	0	0
Nova Scotia	1	4	2	3	1	2	3	0	2	0	1
New Brunswick	6	13	19	16	9	3	5	4	2	0	1
Quebec	2	2	1	3	1	8	7	4	1	5	6
Ontario	20	22	22	11	14	14	18	15	19	6	19
Manitoba	14	11	10	12	8	9	2	3	3	2	4
Saskatchewan	38	35	45	18	17	5	6	11	4	2	5
Alberta	49	54	45	35	32	27	37	36	32	22	29
British Columbia	13	11	18	17	27	30	22	52	47	12	15
Yukon	0	0	0	0	0	0	0	0	0	0	0
Northwest Territories	1	12	11	6	0	2	1	0	0	3	1
Nunavut	0	0	0	0	0	0	0	0	0	0	0
Occurrences	154	169	180	132	113	101	101	129	111	52	81

Data extracted 18 March 2021

Table 3. Pipeline transportation occurrences by facility type or pipeline type, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Accidents	10	5	7	11	4	1	0	4	1	0	0
Facilities	9	3	6	8	1	0	0	2	0	0	0
Compressor station	5	0	3	4	1	0	0	0	0	0	0
Gas processing plant	0	0	0	2	0	0	0	1	0	0	0
Meter station	1	2	1	0	0	0	0	0	0	0	0
Pump station	1	0	2	1	0	0	0	0	0	0	0
Storage facility	0	0	0	0	0	0	0	0	0	0	0
Terminal	2	1	0	1	0	0	0	1	0	0	0
Receipt/delivery facility	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0
Pipeline	1	2	1	3	3	1	0	2	1	0	0
Gathering line	1	0	1	0	0	0	0	0	0	0	0
Transmission line	0	2	0	3	3	1	0	2	1	0	0
Incidents	144	164	173	121	109	100	101	125	110	52	81
Facilities	104	126	132	86	88	67	48	67	41	20	21
Compressor station	26	22	31	15	14	11	12	23	18	6	7
Gas processing plant	5	3	6	11	21	21	3	20	7	3	0
Meter station	19	18	17	19	9	7	16	7	6	3	2
Pump station	30	48	37	19	22	17	9	10	4	4	8
Storage facility	0	1	1	0	0	0	0	1	0	0	0
Terminal	21	27	35	19	18	10	5	6	6	3	3
Receipt/delivery facility	1	1	0	1	1	0	0	0	0	0	0
Other	2	6	5	2	3	1	3	0	0	1	1
Pipeline	40	38	41	35	21	33	53	58	69	32	60
Gathering line	7	7	8	2	2	5	3	8	11	3	1
Transmission line	33	31	33	33	19	28	50	50	58	29	59
Occurrences	154	169	180	132	113	101	101	129	111	52	81

Data extracted 18 March 2021

Table 4. Pipeline transportation occurrence rates, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Accidents	10	5	7	11	4	1	0	4	1	0	0
Incidents	144	164	173	121	109	100	101	125	110	52	81
Occurrences	154	169	180	132	113	101	101	129	111	52	81
Total length of operating pipelines ¹ (x1000 km)		68.7	69.7	70.8	70.7	70.8	71.0	70.7	70.6	70.9	80.5
Accidents per 1000 km of operating pipelines		0.1	0.1	0.2	0.1	0.0	0.0	0.1	0.0	0.0	0.0
Incidents per 1000 km of operating pipelines		2.4	2.5	1.7	1.5	1.4	1.4	1.8	1.6	0.7	1.0
Occurrences per 1000 km of operating pipelines		2.5	2.6	1.9	1.6	1.4	1.4	1.8	1.6	0.7	1.0
Total exajoules of energy transported ¹ (EJ)	12.4	13.1	13.4	14.0	15.0	15.7	16.0	16.8	17.5	17.3	16.6
Accidents per EJ	0.8	0.4	0.5	0.8	0.3	0.1	0.0	0.2	0.1	0.0	0.0
Incidents per EJ	11.6	12.5	12.9	8.6	7.3	6.4	6.3	7.4	6.3	3.0	4.9
Occurrences per EJ	12.4	12.9	13.4	9.4	7.5	6.4	6.3	7.7	6.3	3.0	4.9

Data extracted 18 March 2021

¹ Source: Canada Energy Regulator (CER)(email communications 19 and 20 April 2021).

Table 5. Pipeline transportation occurrences with product release, by type of product, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydrocarbon gas	59	61	70	52	33	31	35	47	36	18	12
Gas - sour or acid	2	3	5	3	3	10	2	7	6	1	0
Natural gas	57	58	65	49	30	21	33	40	30	17	12
HVP hydrocarbons¹	2	5	2	5	7	8	4	11	1	0	1
Natural gas liquids / Liquefied petroleum gas	2	5	2	5	7	8	4	11	1	0	1
LVP hydrocarbons^{2,3}	64	74	78	37	36	4	1	5	4	5	4
Condensate	2	0	0	3	4	0	0	1	0	0	1
Condensate - sour	0	0	0	0	0	0	0	0	0	0	0
Crude oil	58	74	77	33	32	3	1	4	3	5	3
Crude oil - sour	0	0	0	1	0	1	0	0	0	0	0
Refined products	4	0	1	0	0	0	0	0	1	0	0
Other products⁴	10	9	6	13	18	17	1	12	0	0	1
Other - unspecified	10	9	6	13	18	16	1	0	0	0	0
Other - gas	0	0	0	0	0	1	0	1	0	0	0
Other - liquid	0	0	0	0	0	0	0	11	0	0	1
Occurrences	135	149	156	107	94	60	41	75	41	23	18

Data extracted 18 March 2021

¹ HVP: high vapour pressure as defined in Canadian Standards Association Standard Z662.

² LVP: means low vapour pressure as defined in Canadian Standards Association Standard Z662.

³ In July 2014, the minimum reporting threshold for releases of low vapour pressure hydrocarbons was established at 1.5 m³.

⁴ As of January 2017, "other products" are specified to be either liquid or gas.

Table 6. Pipeline transportation occurrences with product release, by quantity released, 2010 to 2020

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Hydrocarbon gas	59	61	70	52	33	31	35	47	36	18	12
100 m ³ or less	59	54	69	48	26	20	24	20	15	11	9
101 to 30,000 m ³	0	5	0	3	5	7	10	25	17	4	2
30,001 to 100,000 m ³	0	0	0	0	0	3	1	1	1	1	0
100,001 to 1,000,000 m ³	0	1	1	0	1	0	0	1	2	2	0
1,000,001 to 10,000,000 m ³	0	1	0	0	1	1	0	0	1	0	0
Greater than 10,000,000 m ³	0	0	0	1	0	0	0	0	0	0	1
HVP hydrocarbons¹	2	5	2	5	7	8	4	11	1	0	1
8 m ³ or less	2	4	2	5	7	8	4	10	1	0	1
9 to 25 m ³	0	0	0	0	0	0	0	1	0	0	0
26 to 100 m ³	0	1	0	0	0	0	0	0	0	0	0
101 to 1000 m ³	0	0	0	0	0	0	0	0	0	0	0
1001 to 10,000 m ³	0	0	0	0	0	0	0	0	0	0	0
Greater than 10,000 m ³	0	0	0	0	0	0	0	0	0	0	0
LVP hydrocarbons^{2,3}	64	74	78	37	36	4	1	5	4	5	4
1.5 m ³ or less	60	67	76	34	29	0	0	0	2	0	0
1.6 to 8 m ³	0	6	1	2	4	2	1	1	2	4	0
9 to 25 m ³	2	0	0	1	2	1	0	2	0	0	0
26 to 100 m ³	1	0	1	0	0	1	0	1	0	1	3
101 to 1000 m ³	1	1	0	0	1	0	0	0	0	0	1
1001 to 10,000 m ³	0	0	0	0	0	0	0	1	0	0	0
Greater than 10,000 m ³	0	0	0	0	0	0	0	0	0	0	0
Other products⁴	10	9	6	13	18	17	1	12	0	0	1
8 m ³ or less	9	9	6	13	15	14	0	12	0	0	1
9 to 25 m ³	0	0	0	0	2	2	0	0	0	0	0
26 to 100 m ³	1	0	0	0	1	0	0	0	0	0	0
101 to 1000 m ³	0	0	0	0	0	1	1	0	0	0	0
1001 to 10,000 m ³	0	0	0	0	0	0	0	0	0	0	0
Greater than 10,000 m ³	0	0	0	0	0	0	0	0	0	0	0
Occurrences	135	149	156	107	94	60	41	75	41	23	18

Data extracted 18 March 2021

¹ HVP: high vapour pressure as defined in Canadian Standards Association Standard Z662.² LVP: means low vapour pressure as defined in Canadian Standards Association Standard Z662.³ In July 2014, the minimum reporting threshold for releases of low vapour pressure hydrocarbons was established at 1.5 m³.⁴ As of January 2017, "other products" are specified to be either liquid or gas.

Table 7. Pipeline transportation occurrences, by provinces and territories and product released, 2010 to 2020

Province or territory	No release of product		Release of hydrocarbon gas		Release of HVP hydrocarbons ¹		Release of LVP hydrocarbons ^{2,3}		Release of other product ⁴	
	2010-2019 average	2020	2010-2019 average	2020	2010-2019 average	2020	2010-2019 average	2020	2010-2019 average	2020
Newfoundland and Labrador	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Prince Edward Island	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Nova Scotia	0.1	0	1.6	1	0.0	0	0.0	0	0.1	0
New Brunswick	0.0	0	7.5	0	0.0	0	0.0	0	0.2	1
Quebec	2.6	6	0.4	0	0.0	0	0.4	0	0.0	0
Ontario	7.4	19	6.6	0	0.4	0	1.7	0	0.7	0
Manitoba	1.3	4	1.3	0	0.6	0	4.1	0	0.3	0
Saskatchewan	1.8	2	2.8	0	1.8	0	11.7	3	0.5	0
Alberta	13.6	20	13.8	9	0.8	0	10.1	0	0.3	0
British Columbia	8.7	12	10.0	2	0.5	0	0.6	1	6.1	0
Yukon	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Northwest Territories	0.6	0	0.2	0	0.4	1	2.2	0	0.4	0
Nunavut	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Occurrences	36.1	63	44.2	12	4.5	1	30.8	4	8.6	1

Data extracted 18 March 2021

¹ HVP: high vapour pressure as defined in Canadian Standards Association Standard Z662.

² LVP: means low vapour pressure as defined in Canadian Standards Association Standard Z662.

³ In July 2014, the minimum reporting threshold for releases of low vapour pressure hydrocarbons was established at 1.5 m³.

⁴ As of January 2017, "other products" are specified to be either liquid or gas.

Definitions

Before 1 July 2014

Before 1 July 2014 (under the previous TSB Regulations), pipeline transportation accidents and incidents were defined as follows:

Pipeline accidents

Reportable commodity pipeline accident means an accident resulting directly from the operation of a commodity pipeline, where

- a) a person sustains a serious injury or is killed as a result of being exposed to
 - i) a fire, ignition or explosion, or
 - ii) a commodity released from the commodity pipeline, or
- b) the commodity pipeline
 - i) sustains damage affecting the safe operation of the commodity pipeline as a result of being contacted by another object or as a result of a disturbance of its supporting environment,
 - ii) causes or sustains an explosion, or a fire or ignition that is not associated with normal operating circumstances, or
 - iii) sustains damage resulting in the release of any commodity.

Pipeline incidents

Reportable commodity pipeline incident means an incident resulting directly from the operation of a commodity pipeline, where

- a) an uncontained and uncontrolled release of a commodity occurs,
- b) the commodity pipeline is operated beyond design limits,
- c) the commodity pipeline causes an obstruction to a ship or to a surface vehicle owing to a disturbance of its supporting environment,
- d) any abnormality reduces the structural integrity of the commodity pipeline below design limits,
- e) any activity in the immediate vicinity of the commodity pipeline poses a threat to the structural integrity of the commodity pipeline, or
- f) the commodity pipeline, or a portion thereof, sustains a precautionary or emergency shut-down for reasons that relate to or create a hazard to the safe transportation of a commodity;

Since 1 July 2014

On 1 July 2014, new reporting provisions of the TSB Regulations came into effect; additional clarifications came into effect on 1 January 2019 with respect to these regulations. According to section **4(1)** of the TSB Regulations, the operator of a pipeline must report any of the following pipeline occurrences to the Board:

- (a) the pipeline sustains damage that affects the safe operation of the pipeline as a result of another object coming into contact with it;
- (b) an unauthorized third party activity affects the structural integrity of the pipeline;
- (c) a geotechnical, hydrotechnical or environmental activity poses a threat to the safe operation of the pipeline.

Under section **4(1.1)**, the operator must report any of the following pipeline occurrences to the Board if they result directly from the operation of the pipeline:

- (a) a person sustains a *serious injury* as defined in section 1 of the *National Energy Board Onshore Pipeline Regulations* or is killed;
- (b) there is a fire, ignition or explosion that
 - (i) affects the safe operation of the pipeline, or
 - (ii) poses a threat to the safety of any person, property or the environment;
- (c) there is an occurrence that results in
 - (i) an unintended or uncontrolled release of hydrocarbon gas,
 - (ii) an unintended or uncontrolled release of HVP hydrocarbons,
 - (iii) an unintended or uncontrolled release of LVP hydrocarbons in excess of 1.5 m³, or
 - (iv) an unintended or uncontrolled release of a commodity other than hydrocarbon gas, HVP hydrocarbons or LVP hydrocarbons;
- (d) there is a release of a commodity from the line pipe body;
- (e) the pipeline is operated beyond design limits or any operating restrictions imposed by the National Energy Board;
- (f) the pipeline restricts the safe operation of any mode of transportation.

Pipeline accidents

A pipeline accident is an occurrence resulting directly from the operation of a pipeline that results in:

- a. serious injury or loss of human life;
 - b. a rupture (an instantaneous release that immediately affects the operation of a pipeline segment such that the pressure of the segment cannot be maintained);
 - c. a fire, ignition or explosion that poses a threat to the safety of any person, property or the environment; or
 - d. an unintended or uncontrolled release of commodity which results in a significant adverse effect on people or the environment (a release of any chemical or physical substance at a concentration or volume sufficient to cause an irreversible, long-term, or continuous change to the ambient environment in a manner that causes harm to human life, wildlife, or vegetation).
- in a manner that causes harm to human life, wildlife, or vegetation)

Pipeline Incidents

A pipeline incident is

- a. an occurrence in which
 - i. the pipeline sustains damage that affects the safe operation of the pipeline as a result of another object coming into contact with it,
 - ii. an unauthorized third party activity affects the structural integrity of the pipeline, or
 - iii. a geotechnical, hydrotechnical or environmental activity poses a threat to the safe operation of the pipeline;
- b. an occurrence resulting directly from the operation of a pipeline in which
 - i. there is a fire, ignition or explosion that affects the safe operation of the pipeline,
 - ii. there is an unintended or uncontrolled release of hydrocarbon gas,
 - iii. there is an unintended or uncontrolled release of HVP (high vapour pressure as defined in CSA Z662. CSA Z662 means Canadian Standards Association Standard Z662 entitled Oil and Gas Pipeline Systems, as amended from time to time) hydrocarbons,
 - iv. there is an unintended or uncontrolled release of LVP (low vapour pressure as defined in CSA Z662) hydrocarbons in excess of 1.5 m³,
 - v. there is an unintended or uncontrolled release of a commodity other than hydrocarbon gas, HVP hydrocarbons or LVP hydrocarbons,
 - vi. there is a release of a commodity from the line pipe body,
 - vii. the pipeline is operated beyond design limits or any operating restrictions imposed by the Canada Energy Regulator, or
 - viii. the pipeline restricts the safe operation of any mode of transportation.