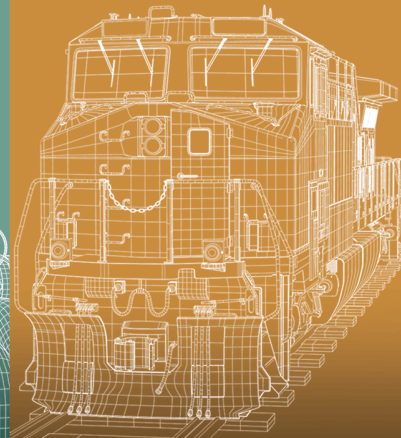
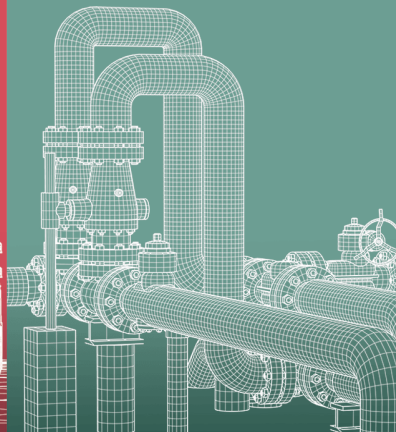
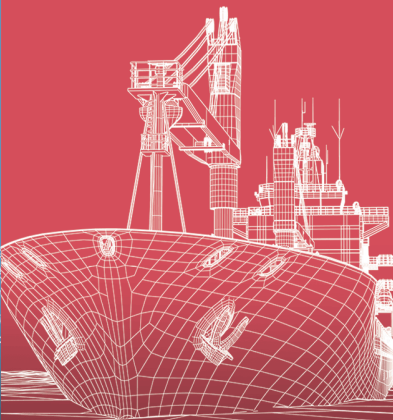




Transportation
Safety Board
of Canada

Bureau de la sécurité
des transports
du Canada



STATISTICAL SUMMARY

Pipeline Transportation Occurrences in 2021

Canada

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Statistical summary: Pipeline transportation occurrences in 2021

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Le présent rapport est également disponible en français.

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Statistical Summary

Pipeline Transportation Occurrences in 2021

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 2021 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) on February 15, 2022. 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

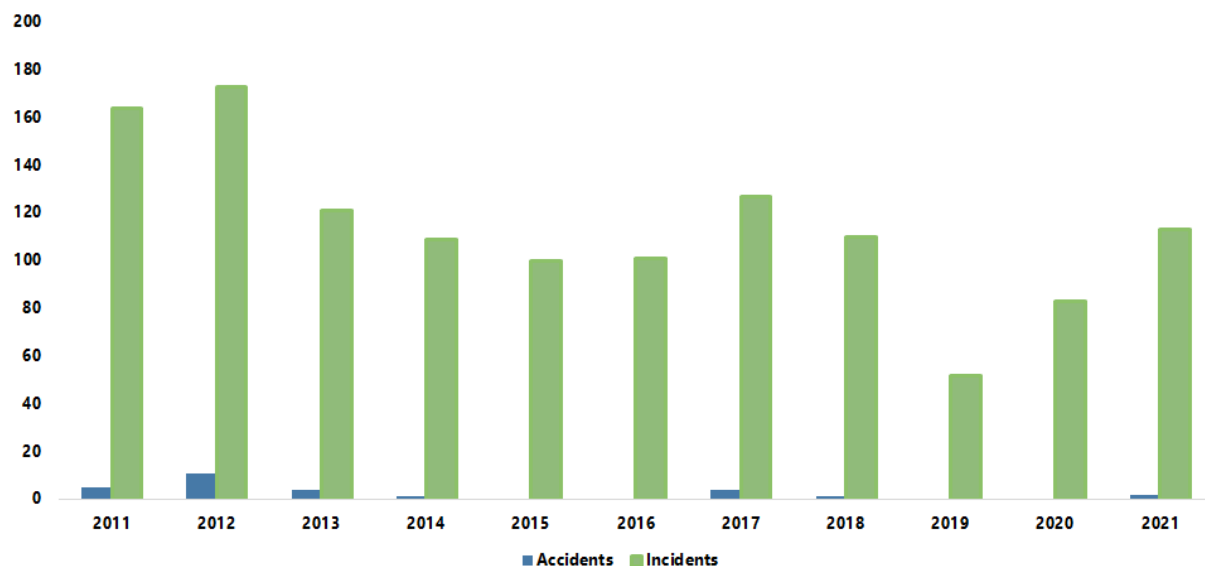
In the federally regulated pipeline system in 2021, 99 companies transported either oil or gas, or both, through approximately 21 300 km of oil pipelines and approximately 48 000 km of gas pipelines. A further 100 km of pipelines carried other commodities and substances. Altogether, this represents approximately 17.4 exajoules (EJ) of energy content transported.²

Pipeline transportation occurrences

In 2021, 115 pipeline transportation occurrences were reported to the TSB (Table 1 and Figure 1). This number is similar to the average number of occurrences for the previous 10 years (117 occurrences) and is the highest number of occurrences since 2017 (when there were 131 occurrences). Fluctuations to the reported numbers over this period may have resulted from various factors, including changes to regulations and definitions. Among all occurrences in 2021, two were accidents; these were the first accidents since 2018 (when there was one accident) and the most accidents since 2017 (when there were four accidents). From 2011 to 2020, however, there was an average of three accidents per year.

As in previous years since 2017, in 2021 there were no serious injuries or fatalities arising directly from the operation of a federally regulated pipeline. 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), 2011 to 2021

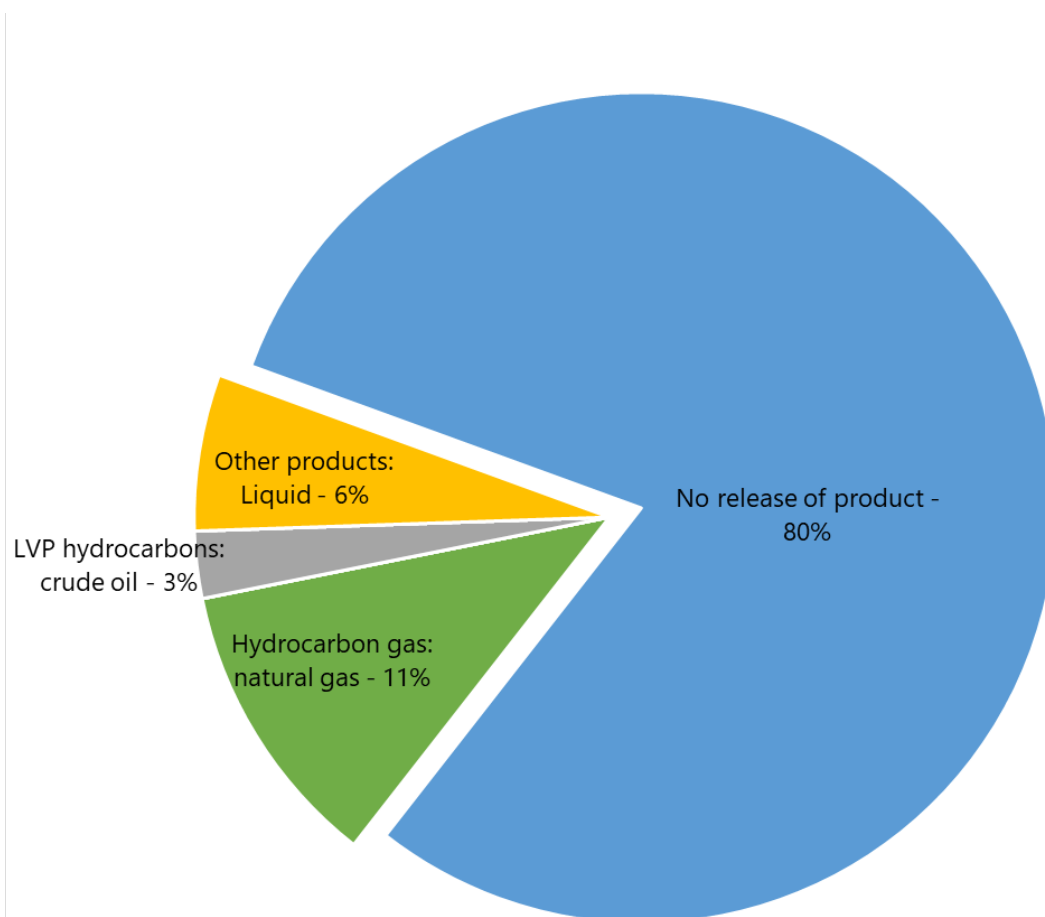


² The size of the federally regulated pipeline system, the number of companies, and the volumes of product transported were provided by the Canada Energy Regulator (CER).

Release of product

Of the 115 occurrences in 2021, 23 involved a release of product (Table 5), far lower than the average of 77 per year over the previous 10 years. The products released in these occurrences were as follows (Figure 2): 13 occurrences (one accident and 12 incidents) released hydrocarbon gas: sweet natural gas in each case. Also, low vapour pressure (LVP) hydrocarbons were released in three incidents, all involving crude oil. Seven occurrences (one accident and six incidents) resulted in the release of a liquid other than hydrocarbons, namely pulp process water (in all cases). In 2021, 92 occurrences did *not* involve a release of product, more than twice the average number of occurrences without release over the previous 10 years (41).

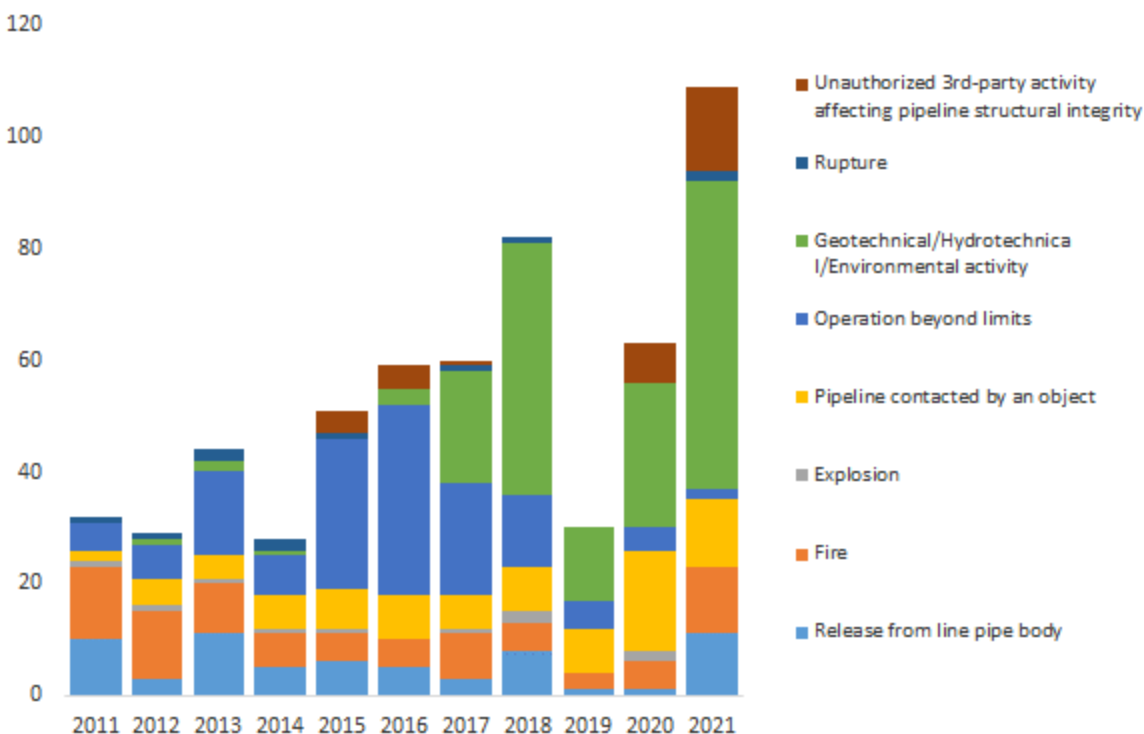
Figure 2. Percentages of occurrences with and without release of product, by type of product released, 2021



Events other than product release

In 2021, 55 occurrences (48% of 115 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 highest level reported over the past 10 years; previously the 45 occurrences reported in 2018 had been the highest level. The increase in this incident type may be related to the unusual weather patterns observed in 2021, particularly in Western Canada. In addition to weather-related factors, the fluctuations in this incident type since 2017 might be related to variations in enforcement and company inspection and reporting practices. Only two incidents involved “operation of the pipeline beyond limits”, well below the average of 14 occurrences of this type over the previous 10 years. There were 12 reports of pipelines being contacted by an object in 2021 (one accident and 11 incidents) compared with the average of seven reports per year during the previous 10 years; there were also 15 incidents where “unauthorized third-party activity affects pipeline structural integrity,” compared with an average of two such incidents per year over the previous 10 years. Finally, 12 fires were reported in 2021 (more than twice the 10-year average of 5) and no explosions were reported (down from two in 2020).

Figure 3. Pipeline occurrences other than those solely categorized as “product released,” by type of event, 2011 to 2021³



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

Geography

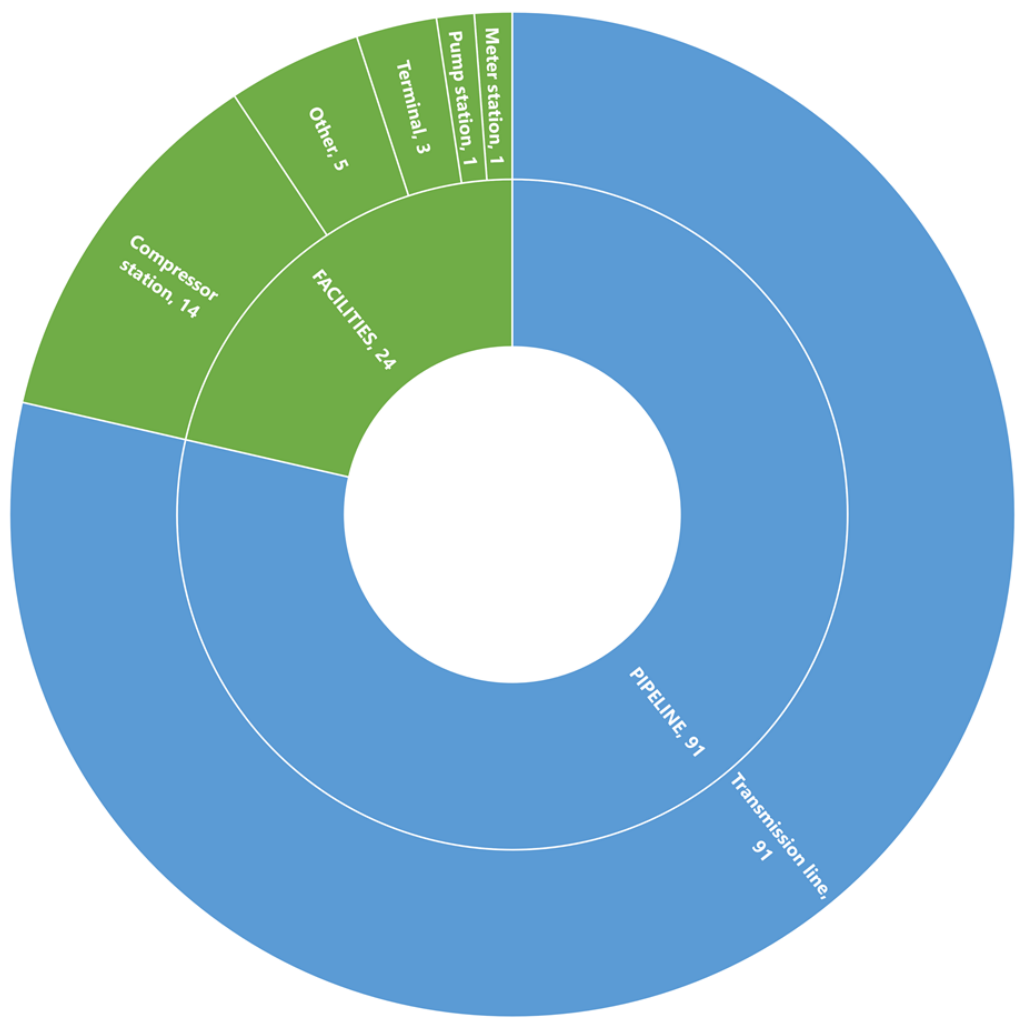
The largest number of occurrences in 2021 (46 out of 115) took place in British Columbia (Table 2); this is an increase from 15 occurrences in 2020, and accounts for the entire national increase in the number of occurrences. It is noteworthy that British Columbia had also reported the most occurrences in certain previous years characterized by high geotechnical activity (2017 and 2018), a sensitivity to this incident type not observed in other provinces. Alberta had 28 occurrences in 2021, down from 29 in 2020, and Ontario had 16, down from 20 in 2020. Quebec had 10 occurrences and New Brunswick had eight – seven of these (six incidents and one accident) involved pulp process water pipelines. Saskatchewan had four occurrences (all incidents) and Manitoba had two, including one incident and one accident. The Northwest Territories had one occurrence (also an incident) in 2021.

Facilities

As in 2020, a majority of occurrences in 2021 (79%; 91 of 115) occurred at locations along pipeline, while 21% (24 of 115) occurred at facilities (Figure 4). This is in direct contrast to the aggregate totals across the 10-year period 2011–2020, where there were 717 occurrences (61%) at facilities and 456 (39%) at locations along pipeline (Table 3). The greater proportion of occurrences along pipeline seen in 2021 is due in part to the large number of reports of geotechnical, hydrotechnical or environmental activity that affected sections of pipeline during the year. Of the 24 occurrences (all incidents) at facilities in 2021, 14 occurred at compressor stations, three at terminals, one at a pump station, one at a meter station, and five at other facilities.

uncontrolled release of commodity resulted in a significant adverse effect on people or the environment." Some occurrences may be coded to multiple event types.

Figure 4. Location of occurrences in 2021

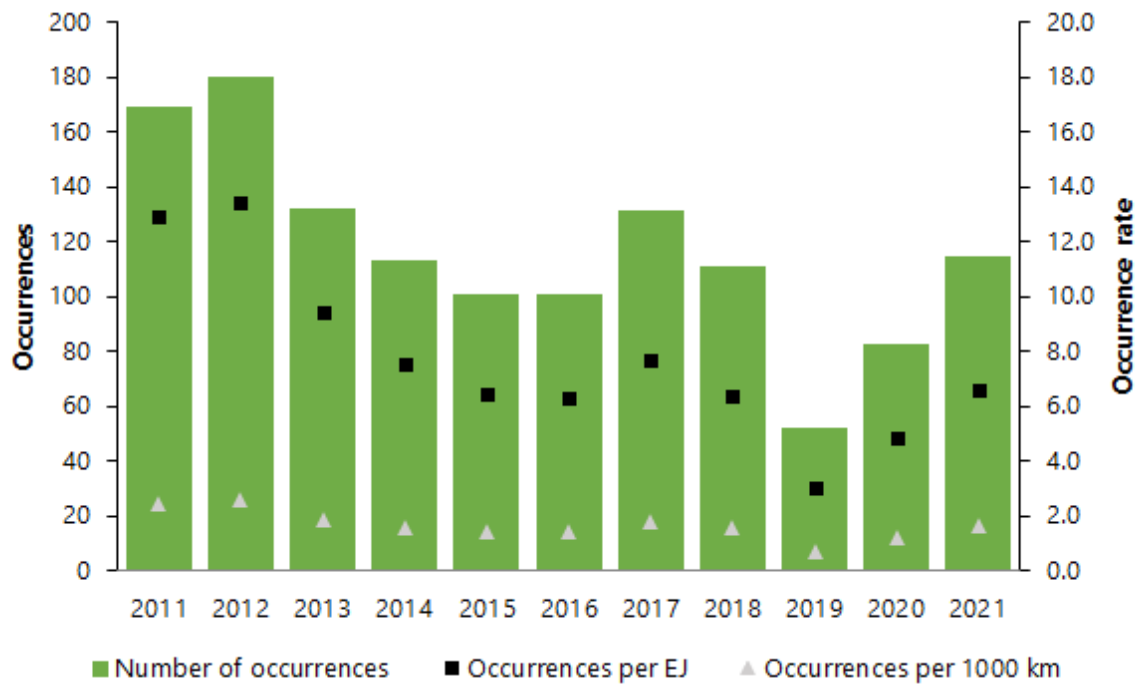


Pipeline occurrence rate

An occurrence rate of 1.7 occurrences per 1 000 km of operating pipeline was calculated for 2021 based on the 115 occurrences reported and the 69 400 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 1.2 in 2020, and equal to the average of 1.7 in the 10-year period 2011 to 2020.

An occurrence rate can also be calculated using exajoules (EJ) of energy as a denominator (Table 4 and Figure 5). In 2021, the equivalent of 17.4 EJ of energy were transported in federally regulated pipelines. This translates to a rate of 6.6 occurrences per EJ in 2021, a figure higher than the 2020 rate of 4.9, but below the 2011–2020 average of 7.5 occurrences per EJ.

Figure 5. TSB reportable occurrences (according to reporting requirements in effect at the time) and occurrence rates, 2011 to 2021



Data tables

Table 1. Pipeline transportation occurrences, by accident/incident type and casualties, 2011 to 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Occurrences	169	180	132	113	101	101	131	111	52	83	115
Occurrences with product release	149	156	107	94	60	41	75	41	23	19	23
Persons fatally injured	0	0	0	0	0	0	0	0	0	0	0
Persons seriously injured	0	2	0	0	0	0	1	0	0	0	0
Accidents	5	7	11	4	1	0	4	1	0	0	2
Product released	4	3	7	2	1	0	4	1	0	0	2
Release of hydrocarbon gas	2	3	5	2	1	0	0	1	0	0	1
Release of HVP hydrocarbons ¹	0	0	0	0	0	0	1	0	0	0	0
Release of LVP hydrocarbons ^{2, 3}	2	0	2	0	0	0	2	0	0	0	0
Release of other product ⁴	0	0	0	0	0	0	1	0	0	0	1
Release from line pipe body	2	1	2	2	1	0	1	1	0	0	2
Fire	3	6	8	3	0	0	0	1	0	0	0
Explosion	1	1	1	1	0	0	0	1	0	0	0
Rupture	1	1	2	2	1	0	1	1	0	0	2
Pipeline contacted by an object	1	1	1	0	0	0	2	0	0	0	1
Operation beyond limits	0	0	0	0	0	0	0	0	0	0	0
Geotechnical/hydratechnical/environmental activity	0	0	0	0	0	0	0	0	0	0	0
Incidents	164	173	121	109	100	101	127	110	52	83	113
Product released	145	153	100	92	59	41	71	40	23	19	21
Release of hydrocarbon gas	59	67	47	31	30	35	47	35	18	13	12
Release of HVP hydrocarbons ¹	5	2	5	7	8	4	10	1	0	1	0
Release of LVP hydrocarbons ^{2, 3}	72	78	35	36	4	1	3	4	5	4	3
Release of other product ⁴	9	6	13	18	17	1	11	0	0	1	6
Release from line pipe body	8	2	9	3	5	5	2	7	1	1	9
Fire	10	6	1	3	5	5	8	4	3	5	12
Explosion	0	0	0	0	1	0	1	1	0	2	0
Pipeline contacted by an object	1	4	3	6	7	8	4	8	8	18	11
Operation beyond limits	5	6	15	7	27	34	20	13	5	4	2
Geotechnical/hydratechnical/environmental activity	0	1	2	1	0	3	20	45	13	26	55
Unauthorized third-party activity affecting pipeline structural integrity	0	0	0	0	4	4	1	0	0	7	15

Data extracted 15 February 2022

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, 2011 to 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Accidents	5	7	11	4	1	0	4	1	0	0	2
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	1
Quebec	0	0	0	0	0	0	0	0	0	0	0
Ontario	2	2	2	0	0	0	0	0	0	0	0
Manitoba	0	0	0	1	0	0	0	0	0	0	1
Saskatchewan	1	1	1	0	0	0	1	0	0	0	0
Alberta	1	2	6	1	1	0	2	0	0	0	0
British Columbia	0	2	2	1	0	0	1	1	0	0	0
Yukon	0	0	0	0	0	0	0	0	0	0	0
Northwest Territories	1	0	0	1	0	0	0	0	0	0	0
Nunavut	0	0	0	0	0	0	0	0	0	0	0
Incidents	164	173	121	109	100	101	127	110	52	83	113
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	4	2	3	1	2	3	0	2	0	1	0
New Brunswick	13	19	16	9	3	5	4	2	0	1	7
Quebec	2	1	3	1	8	7	6	1	5	7	10
Ontario	22	22	11	14	14	18	15	19	6	20	16
Manitoba	11	10	12	8	9	2	3	3	2	4	1
Saskatchewan	35	45	18	17	5	6	11	4	2	5	4
Alberta	54	45	35	32	27	37	36	32	22	29	28
British Columbia	11	18	17	27	30	22	52	47	12	15	46
Yukon	0	0	0	0	0	0	0	0	0	0	0
Northwest Territories	12	11	6	0	2	1	0	0	3	1	1
Nunavut	0	0	0	0	0	0	0	0	0	0	0
Occurrences	169	180	132	113	101	101	131	111	52	83	115

Data extracted 15 February 2022

Table 3. Pipeline transportation occurrences by facility type or pipeline type, 2011 to 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Accidents	5	7	11	4	1	0	4	1	0	0	2
Facilities	3	6	8	1	0	0	2	0	0	0	0
Compressor station	0	3	4	1	0	0	0	0	0	0	0
Gas processing plant	0	0	2	0	0	0	1	0	0	0	0
Meter station	2	1	0	0	0	0	0	0	0	0	0
Pump station	0	2	1	0	0	0	0	0	0	0	0
Storage facility	0	0	0	0	0	0	0	0	0	0	0
Terminal	1	0	1	0	0	0	1	0	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	2	1	3	3	1	0	2	1	0	0	2
Gathering line	0	1	0	0	0	0	0	0	0	0	0
Transmission line	2	0	3	3	1	0	2	1	0	0	2
Incidents	164	173	121	109	100	101	127	110	52	83	113
Facilities	126	132	86	88	67	48	67	41	20	22	24
Compressor station	22	31	15	14	11	12	23	18	6	8	14
Gas processing plant	3	6	11	21	21	3	20	7	3	0	0
Meter station	18	17	19	9	7	16	7	6	3	2	1
Pump station	48	37	19	22	17	9	10	4	4	8	1
Storage facility	1	1	0	0	0	0	1	0	0	0	0
Terminal	27	35	19	18	10	5	6	6	3	3	3
Receipt/delivery facility	1	0	1	1	0	0	0	0	0	0	0
Other	6	5	2	3	1	3	0	0	1	1	5
Pipeline	38	41	35	21	33	53	60	69	32	61	89
Gathering line	7	8	2	2	5	3	8	11	3	1	0
Transmission line	31	33	33	19	28	50	52	58	29	60	89
Occurrences	169	180	132	113	101	101	131	111	52	83	115

Data extracted 15 February 2022

Table 4. Pipeline transportation occurrence rates, 2011 to 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Accidents	5	7	11	4	1	0	4	1	0	0	2
Incidents	164	173	121	109	100	101	127	110	52	83	113
Occurrences	169	180	132	113	101	101	131	111	52	83	115
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	68.7	69.4
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	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	1.2	1.6
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	1.2	1.7
Total exajoules of energy transported ¹ (EJ)	13.1	13.4	14.0	15.0	15.7	16.0	16.8	17.5	17.3	16.6	17.4
Accidents per EJ	0.4	0.5	0.8	0.3	0.1	0.0	0.2	0.1	0.0	0.0	0.1
Incidents per EJ	12.5	12.9	8.6	7.3	6.4	6.3	7.4	6.3	3.0	4.9	6.5
Occurrences per EJ	12.9	13.4	9.4	7.5	6.4	6.3	7.7	6.3	3.0	4.9	6.6

Data extracted 15 February 2022

¹ Source: Canada Energy Regulator (CER; email communications 30 March and 5 April 2022).

Table 5. Pipeline transportation occurrences with product release, by type of product, 2011 to 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hydrocarbon gas	61	70	52	33	31	35	47	36	18	13	13
Gas - sour or acid	3	5	3	3	10	2	7	6	1	0	0
Natural gas	58	65	49	30	21	33	40	30	17	13	13
HVP hydrocarbons¹	5	2	5	7	8	4	11	1	0	1	0
Natural gas liquids / Liquefied petroleum gas	5	2	5	7	8	4	11	1	0	1	0
LVP hydrocarbons^{2,3}	74	78	37	36	4	1	5	4	5	4	3
Condensate	0	0	3	4	0	0	1	0	0	1	0
Condensate - sour	0	0	0	0	0	0	0	0	0	0	0
Crude oil	74	77	33	32	3	1	4	3	5	3	3
Crude oil - sour	0	0	1	0	1	0	0	0	0	0	0
Refined products	0	1	0	0	0	0	0	1	0	0	0
Other products⁴	9	6	13	18	17	1	12	0	0	1	7
Other - unspecified	9	6	13	18	16	1	0	0	0	0	0
Other - gas	0	0	0	0	1	0	1	0	0	0	0
Other - liquid	0	0	0	0	0	0	11	0	0	1	7
Occurrences	149	156	107	94	60	41	75	41	23	19	23

Data extracted 15 February 2022

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, 2011 to 2021

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
Hydrocarbon gas	61	70	52	33	31	35	47	36	18	13	13
100 m ³ or less	54	69	48	26	20	24	20	15	11	8	5
101 to 30,000 m ³	5	0	3	5	7	10	25	17	4	3	3
30,001 to 100,000 m ³	0	0	0	0	3	1	1	1	1	0	2
100,001 to 1,000,000 m ³	1	1	0	1	0	0	1	2	2	1	3
1,000,001 to 10,000,000 m ³	1	0	0	1	1	0	0	1	0	0	0
Greater than 10,000,000 m ³	0	0	1	0	0	0	0	0	0	1	0
HVP hydrocarbons¹	5	2	5	7	8	4	11	1	0	1	0
8 m ³ or less	4	2	5	7	8	4	10	1	0	1	0
9 to 25 m ³	0	0	0	0	0	0	1	0	0	0	0
26 to 100 m ³	1	0	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}	74	78	37	36	4	1	5	4	5	4	3
1.5 m ³ or less	67	76	34	29	0	0	0	2	0	0	1
1.6 to 8 m ³	6	1	2	4	2	1	1	2	4	0	1
9 to 25 m ³	0	0	1	2	1	0	2	0	0	0	0
26 to 100 m ³	0	1	0	0	1	0	1	0	1	3	0
101 to 1000 m ³	1	0	0	1	0	0	0	0	0	1	0
1001 to 10,000 m ³	0	0	0	0	0	0	1	0	0	0	0
Greater than 10,000 m ³	0	0	0	0	0	0	0	0	0	0	1
Other products⁴	9	6	13	18	17	1	12	0	0	1	7
8 m ³ or less	9	6	13	15	14	0	12	0	0	1	3
9 to 25 m ³	0	0	0	2	2	0	0	0	0	0	0
26 to 100 m ³	0	0	0	1	0	0	0	0	0	0	0
101 to 1000 m ³	0	0	0	0	1	1	0	0	0	0	4
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	149	156	107	94	60	41	75	41	23	19	23

Data extracted 15 February 2022

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, 2011 to 2021

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	
	2011-2020 average	2021	2011-2020 average	2021	2011-2020 average	2021	2011-2020 average	2021	2011-2020 average	2021
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	0	0.0	0	0.0	0	0.1	0
New Brunswick	0.0	0	6.9	1	0.0	0	0.0	0	0.3	7
Quebec	3.5	9	0.4	1	0.0	0	0.2	0	0.0	0
Ontario	9.0	16	5.4	0	0.4	0	1.2	0	0.7	0
Manitoba	1.6	1	1.3	1	0.5	0	2.8	0	0.3	0
Saskatchewan	2.0	4	1.6	0	1.7	0	9.5	0	0.4	0
Alberta	14.5	21	12.2	5	0.8	0	8.4	2	0.3	0
British Columbia	9.5	41	10.0	5	0.5	0	0.6	0	5.2	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	0.5	0	2.1	1	0.4	0
Nunavut	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0
Occurrences	40.8	92	39.6	13	4.4	0	24.8	3	7.7	7

Data extracted 15 February 2022

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).

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.