Canada Energy Regulator | Régie de l'énergie du Canada

Incident Data: Methodology

Incidents at CER-regulated Pipelines and Facilities is an interactive tool that allows users to visualize, download, and share the Canada Energy Regulator's (CER) data on any reported incident at federally regulated pipelines and related facilities.

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ABOUT THE DATA

The data involves incidents reported to the CER (previously the NEB) since January 2008. Reportable incidents are those that fall under the definitions from the *Onshore Pipeline Regulations* (OPR) and the *Processing Plant Regulations* (PPR). On 28 August 2019, the National Energy Board became the Canada Energy Regulator (CER). Regulations made under the *National Energy Board Act* remain in force under the *Canadian Energy Regulator Act*.

As defined in the OPR, "incident" means an occurrence that results in:

a) the death or serious injury to a person;

b) a significant adverse effect on the environment;

c) an unintended fire or explosion;

d) an unintended or uncontained release of low vapour pressure (LVP) hydrocarbons in excess of 1.5 m^3;

e) an unintended or uncontrolled release of gas or high vapour pressure (HVP) hydrocarbons;

f) the operation of a pipeline beyond its design limits as determined under CSA Z662 or CSA Z276 or any operating limits imposed by the CER.

As defined in the PPR, "incident" is defined as an occurrence that results or could result in a significant adverse effect on property, the environment, or the safety of persons. For the purposes of incident reporting in the PPR, events that fall under this definition include, but are not limited to:

- the death of or serious injury to a person;
- a significant adverse effect on the environment;
- an unintended fire or explosion that results in or has the potential to result in damage to company, public/ crown or personal property;
- an unintended or uncontained release of LVP liquids in excess of 1.5 m^3;
- an unintended or uncontrolled release of gas, HVP hydrocarbons, hydrogen sulfide or other poisonous gas; or
- the operation of a plant beyond its design limits or any limits imposed by the CER.

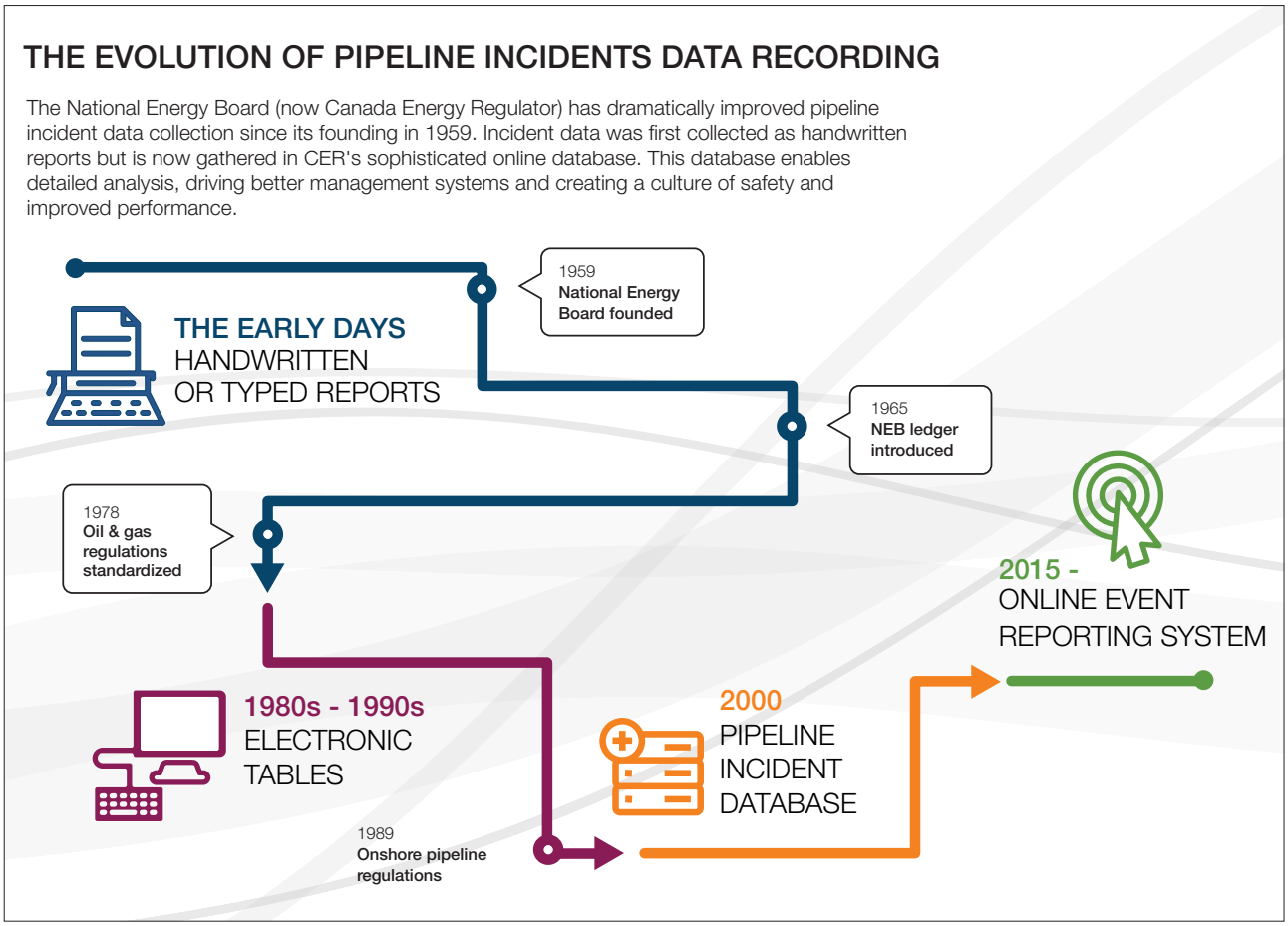
Companies self-report incidents and are expected to take a precautionary approach in doing so. This means that even when there is doubt as to whether an incident should be reported, the company must report it. The approach is, "When in doubt, report." This is consistent with CER-regulated companies' responsibility for anticipating, preventing, mitigating and managing incidents of any size or duration.

In cases where an incident was reported and subsequent evidence indicates it was not reportable, the CER records will reflect this. While the CER retains the information, the incident will not be included on the company's compliance record and the incident will not appear in this tool.

The CER reviews all reported incidents to assess whether companies have taken the appropriate corrective actions and to identify potential trends in incidents. A CER employee and peer reviewer will have reviewed data on any incident with a status of "Closed". Incident data with a status of "Initially Submitted" or "Submitted" contain preliminary information that is subject to change as company investigations are conducted, or as other new information becomes available.

DATA SOURCES

Incident data are derived from the CER's internal incident database. Since January 2015, incidents have been reported through the CER's Online Event Reporting System (OERS) – an online web application that allows companies to enter information directly into the CER's system for incidents and related events. Before January 2015, incidents were reported to the NEB (which preceded CER), by phone and then this information was transcribed into the NEB's Pipeline Incident Database. The advent of OERS sped up data recording, providing staff with more time to focus on other initiatives, such as finding ways to prevent future incidents. The infographic below summarizes incident data collection history at the NEB.



DEFINITIONS AND INDICATORS

The visualization tool can filter on these categories and possible values:

INCIDENTS:

The unique identifier – or label – the CER assigns to each incident.

REPORTED DATE/YEAR:

The date the company reported the incident to the CER. This date may differ from when the incident occurred or was discovered.

COMPANY:

The company that holds the regulatory instrument on the pipeline/facility where the incident took place.

PROVINCES:

The province where the incident occurred.

INCIDENT TYPE:

- **Adverse Environmental Effects** - When any chemical substance is released at a concentration or volume that has the potential to change the ambient environment in a manner that would cause harm to human life, wildlife or vegetation (e.g., glycol, potassium carbonate, methanol, methanol mix from hydrostatic testing, etc.).
- **Explosion** - An unintended explosion
- **Fatality** - Any death involving employees, contractors or members of the public related to the construction, operation, maintenance or abandonment of pipelines
- **Fire** - An unintended fire
- **Operation Beyond Design Limits** - Includes situations, such as:
  - over-pressures - i.e., pressures that are higher than the maximum the equipment was designed to safely handle;
  - vibration beyond design limits;
  - slope movements causing movement in the pipeline beyond design limits;
  - pipe exposures in rivers or streams; and
  - introduction of an inappropriate product (e.g., sour gas in excess of CSA limits)

Operation beyond design limit is typically linked to an over-pressure of the product in the pipe; however, if a pipe was exposed to excessive vibration and was not designed for this, this could be considered operation beyond design limits. Operation beyond design limits does not include equipment contacting the pipe, or corrosion pits, etc.

- **Release of Substance** - Any time a product is unintentionally released. (Releases of non-gas low pressure products in volumes of less than 1.5 cubic metres are exempt from reporting.)
- **Serious Injury (CER or Transportation Safety Board)** - Any serious injury involving employees, contractors or members of the public related to the construction, operation or maintenance of pipelines.

STATUS:

The current stage of the incident investigation.

- **Initially Submitted:** The company has notified the CER that an incident has occurred and provided preliminary information. An investigation is has been initiated.
- **Submitted:** The company has submitted all of the required information and the CER is reviewing the incident.
- **Closed:** The CER's incident review has been completed and the file is closed.

SUBSTANCE:

The product released in a Release of Substance incident.

- Amine
- Calcium carbonate
- Casing cement
- Chlorodifluoromethane
- Contaminated water
- Corrosion inhibitor
- Drilling fluid
- Drip oil
- Glycol
- Grey water (sewage)
- Hydraulic fluid
- Hydrogen sulphide
- Lube oil
- Methanol
- Methyl tert-Butyl ether
- Morphysorb
- Oil well effluent
- Polychlorinated biphenyls
- Potassium carbonate
- Potassium hydroxide (caustic solution)
- Produced water
- Sulphur dioxide
- Toluene
- Waste oil
- Water
- Butane
- Mixed HVP hydrocarbons
- Natural gas liquids
- Propane
- Condensate
- Crude oil - sour
- Crude oil - sweet
- Crude oil - synthetic
- Diesel fuel
- Gasoline
- Isooctane
- Jet fuel
- Carbon dioxide
- Sulphur
- Natural gas - sweet
- Natural gas - sour
- Odourant
- Pulp slurry

RELEASE TYPE:

This is the primary product being transported in the pipeline. Examples of the substance types applicable to each category are as follows:

- **Gas:** substances such as natural gas, sweet gas, fuel gas, and acid gas
- **Liquid:** substances such as low-vapour pressure hydrocarbons, crude oil, natural gas liquids, and jet fuel
- **Miscellaneous:** substances such as mechanical pulp slurry, steam, effluent, processed water, and fresh water
- **Not Applicable:** incidents that do not involve a release of substance

WHAT HAPPENED:

The circumstances that directly led to the incident.

- **Defect and Deterioration** - Defects in manufacturing processes or materials, or deterioration as a result of damage or service life limitations, lack of inspection or maintenance
- **Corrosion and Cracking** - External corrosion or cracking caused by damage to coating systems or failed coating systems; weld cracking as a result of stress or workmanship issues; or internal corrosion as a result of contaminates in products
- **Equipment Failure** - A failure of the pipeline's equipment components. Examples of equipment include valves, electrical power systems and control systems
- **Incorrect Operation** – Typically, personnel fail to follow procedures or use equipment improperly
- **External interference** - External activities that cause damage to the pipeline or components. Examples include excavation damage and vandalism
- **Natural Force Damage** - Damage caused by natural forces, such as earthquakes, landslides and wash-outs
- **Other Causes** - All other causes or when an incident's circumstances could not be determined

WHY IT HAPPENED:

The underlying reasons for the incident.

- **Engineering and Planning** - Failures of assessment, planning or monitoring that may be related to inadequate specifications or design criteria, evaluation of change, or implementation of controls
- **Maintenance** - Inadequate preventive maintenance or repairs, and excessive wear and tear
- **Inadequate Procurement** - Failures in the purchasing, handling, transport and storage of materials
- **Tools and Equipment** - Tools and equipment that are inadequate for the task or used improperly
- **Standards and Procedures** - Inadequate development, communication, maintenance or monitoring of standards and procedures
- **Failure in communication** - Loss of communication with automatic devices, equipment or people
- **Inadequate Supervision** - Lack of oversight of a contractor or employee during construction or maintenance activities
- **Human Factors** - Individual conduct or capability, or physical and psychological factors
- **Natural or Environmental Forces** - External natural or environmental conditions

PIPELINE PHASE:

The type of activity at time of the incident.

- **Operation:** typical operation of the pipeline or facility
- **Construction:** the building of a pipeline or facility
- **Maintenance:** work done to maintain the pipeline or facility
- **Abandonment:** the work required to abandon a pipeline or facility

APPROXIMATE VOLUME RELEASED:

The amount released, in cubic metres.

SYSTEM COMPONENT INVOLVED:

The type of equipment or components involved in the incident.

Components in this case refer to a segment of the piping that is designed to maintain pipe pressure but is not the main body of the pipe. Examples include a pipe elbow or flange.

- Compression station
- Metering station
- Pigging
- Pipeline
- Power generation
- Processing plant
- Pumping station
- Regulating facility
- Storage facility
- Vehicle/Mobile equipment

For a list of other relevant definitions, please consult the CER's Safety Performance Portal – Glossary of Terms and the National Energy Board Event Reporting Guidelines.

ACCESS TO DATA

Data may be downloaded through the Incidents at CER-regulated Pipelines and Facilities online tool. The full data sets and the visualization source code may also be downloaded from the Government of Canada's Open Data site. These data are updated quarterly.

The Canada Energy Regulator (CER) works to keep energy moving safely across the country. We review energy development projects and share energy information, all while enforcing some of the strictest safety and environmental standards in the world. To find out how the CER is working for you visit us online or connect on social media.