Canada Energy Regulator | Régie de l'énergie du Canada

Canada Energy Regulator

Event Reporting Guidelines
Revised June 2020

Canadian Energy Regulator Onshore Pipeline Regulations
Canadian Energy Regulator Processing Plant Regulations
Canadian Energy Regulator Pipeline Damage Prevention Regulations – Authorizations
Canadian Energy Regulator Pipeline Damage Prevention Regulations – Obligations of Pipeline Companies

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1.0 Goal

The goal of this document is to provide Canada Energy Regulator (CER) regulated companies with greater clarity regarding the CER's expectations for event reporting (e.g., incidents, occurrences, etc.) under its regulations. This will (a) provide companies with the information necessary to clearly understand the CER's expectations with respect to event reporting; and (b) require companies to provide the CER with the information necessary for the CER to conduct the appropriate follow-up.

In the event of a discrepancy between this document and any legislative requirement, the relevant legislative requirement takes precedence.

2.0 Background

This document sets out the events that are reportable under the regulations administered by the CER and provides examples of such events. It also explains the CER's expectations as to the timing of reporting and the information required when reporting events and making submissions to the CER's Online Event Reporting System (OERS).

All companies regulated by the CER under the *Canadian Energy Regulator Act* (CER Act) and the *Canada Oil and Gas Operations Act* (COGOA, as it applies to the Norman Wells proven area, and the offshore) are responsible for following the reporting requirements set out in this document. Companies may have additional reporting requirements under other legislation such as the *Canada Labour Code* (CLC) or the Northwest Territories Oil and Gas Operations Act (OGOA), and are responsible for reporting to the appropriate government departments or agencies.

The CER and the Transportation Safety Board of Canada (TSB) have adopted a single window approach for event reporting. However, in some areas, the TSB reporting requirements are somewhat different than the CER requirements. For additional details on the TSB reporting requirements, companies must refer to the *Transportation Safety Board Regulations* and the TSB website (http://www.tsb.gc.ca/eng/incidents-occurrence/pipeline/index.asp).

It should be noted that information required by the TSB as per their regulations is separately identified in the OERS. It is the responsibility of the company to ensure the information required by the TSB is entered into OERS in accordance with their 30 day timeline. OERS will automatically forward this information to the TSB within the timeline.

2.2 Precautionary Approach

The CER's top priorities are the safety and security of people, and the protection of the environment and property. Accordingly, it is the CER's expectation that each company take a precautionary approach to the reporting of events. This means that even if there is some doubt as to whether an event should be reported, the company is to report the event. In other words, companies should adopt a "when in doubt, report" approach. This approach to event reporting is consistent with CER-regulated companies' responsibility for anticipating, preventing, mitigating and managing incidents of any size or duration.

The OERS now contains a field where the company must indicate that it is reporting an incident on a precautionary basis. In these cases, the CER will determine whether the incident is reportable based on information provided by the company. In cases where an event was reported using the precautionary approach and subsequent information indicates that it was not reportable, the CER records will reflect this and the event will not be included on the company's compliance record and will not be posted on the CER Interactive Incident Map.

2.3 CER Oversight of Event Reporting

In accordance with section 12 of the CER Act, the CER reviews all events that are reported in order to assess whether companies have taken the appropriate corrective and preventative actions and to identify trends that may exist in regard to events. The CER implements enforcement actions where necessary if any non-compliance is identified during the course of review.

In addition, the CER may, on its own or working with other government bodies (e.g., the TSB), open a formal investigation of an event.

3.0 Immediately Reportable Events

Where regulations require an event to be reported "immediately"[1], companies must also consider whether the event meets any of the following definitions:

- An **Incident that Harms People or the Environment**:
    - a death;
    - a serious injury (as defined in the OPR or TSB regulations);
    - an unintended or uncontrolled LVP hydrocarbon release in excess of 1.5 m^3 that leaves company property or occurs on or off the right of way;
    - an unintended or uncontrolled sweet natural gas or HVP release >30,000 m^3;
    - any unintended or uncontrolled release of sour natural gas or hydrogen sulfide; and/or
    - a significant adverse effect on the environment.
- A **Rupture:**
    - an instantaneous release that immediately impacts the operation of a pipeline segment such that the pressure of the segment cannot be maintained.

[1] Or other equivalent term.

- A **Toxic Plume:**
    - a band of service fluid or other contaminant (e.g., hydrogen sulfide or smoke) resulting from an incident that causes people, including employees, to take protective measures (e.g., muster, shelter-in-place or evacuation).

Where an event meets any of the above definitions, companies are required to notify the TSB Reporting Hotline at 819-997-7887. Subsequently, the company is required to input the details required by both the TSB (see TSB regulations) and the CER into the OERS. The phone notification and the input of information into OERS are required to occur as soon as possible and no later than three hours of the incident being discovered. The goal of the initial phone notification is to allow the relevant agencies to mobilize a response to an incident, if required. Note that OERS will automatically determine whether the event meets the definition of an "Incident that Harms People or the Environment", however the company will be responsible for specifically indicating whether the incident meets the definitions of "Rupture" and "Toxic Plume".

For all other events that do not meet any of the definitions in this section, companies are not required to phone the TSB Reporting Hotline but must report the event as soon as possible and no later than twenty-four hours after the event was discovered.

4.0 Multiple Incident Types

It is possible that a single occurrence may result in multiple incident types. If multiple incident types occur as a result of a single occurrence, companies are expected to report those incident types under a single incident report.

Examples of situations where this might be the case include but are not limited to:

- a pipeline rupture (occurrence) where there is a release of gas (incident type) and an explosion (incident type);
- an industrial accident (occurrence) that causes a death (incident type), a serious injury (incident type) and a fire (incident type);
- an operational malfunction (occurrence) that causes an overpressure (incident type) and a release of product (incident type); or
- an operational malfunction (occurrence) that causes several concurrent or immediately consecutive overpressures (incident types).

In cases where an incident has occurred, and a second incident occurs during the response to the initial incident (e.g., a fire occurs during the clean-up of a spill), the second incident is considered distinct and should be reported separately.

5.0 CER Onshore Pipeline Regulations (OPR)

5.1 Definition of "Incident"

Section 52 of the OPR requires companies to notify the CER of all incidents relating to the construction, operation, or abandonment of their pipelines.

An "incident" is defined in section 1 of the OPR as:

> an occurrence that results in
>
> (a) the death of 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.

Paragraphs (*a*), (*b*), (c), (e), and (*f*) have been identified as requiring additional guidance and are clarified below.

5.1.1 "The death of or serious injury to a person"

Companies are required to report a death or serious injury to a person only where the death or injury is a result of an occurrence that relates to the construction, operation, or abandonment of a "pipeline"[2]. Whether a death or injury is related to the construction, operation, or abandonment of a pipeline will depend on whether the person who was killed or injured was working at the time of the incident and/or whether the work was a cause or contributing factor to the incident. It is important to note that, unlike the CLC, the OPR does not differentiate between different types of "persons". Therefore, companies must report all deaths or serious injuries to *any person* that occur relating to pipeline construction, operation, or abandonment regardless of whether or not that person was directly employed by the company.

The definition of "serious injury" in the OPR is not exhaustive and contains multiple injuries that qualify as serious, including "the fracture of a major bone". The CER uses the following definition of "major bone": skull, mandible, spine, scapula, pelvis, femur, humerus, fibula, tibia, radius, and ulna.

[2] As the term "pipeline" is defined in the CER Act.

5.1.2 "Significant adverse effect on the environment"

For the purposes of notification under section 52 of the OPR, the CER employs the following definition for significant adverse effect on 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.

Events that fall under this definition include, but are not limited to:

- release of a toxic substance (as defined in the OPR) into a sensitive environment (e.g., watercourse or wetland) or into a designated national/provincial area (e.g., national park, provincial park, wildlife refuge);
- "frac outs" released directly into a watercourse during horizontal directional drilling operations;
- the release of a toxic substance in an area where there is a pathway to a receptor nearby (e.g., the groundwater or surface water is used for drinking water, irrigation water, and/or is consumed by livestock); and
- the destruction of critical habitat, as that term is defined in the *Species at Risk Act*.

It should be noted that, if adverse effects are caused by residual contamination from a historical event or accumulation of contaminants over time, it should be reported through OERS as a Notification of Contamination. This process is further described in the *CER Remediation Process Guide*.

5.1.3 "An unintended fire or explosion"

For the purposes of notification under section 52 of the OPR, the CER employs the following definition for an "unintended fire or explosion":

> Any unintended fire or explosion that is caused by or impacts the construction, operation or abandonment of a pipeline.

Events that fall under this definition include, but are not limited to:

- battery explosion;
- fire caused by an arc, or a cable fault or a breakdown of any component of the uninterruptible power system (UPS) or the back-up generator;
- wildland or forest fires that damage pipeline infrastructure or impact the construction, operation or abandonment of a pipeline; and
- small welding or housekeeping related fires.

Events that are not reportable under this section include, but are not limited to:

- events that are not caused by the construction, operation or abandonment of a pipeline and do not have an impact on the construction, operation or abandonment of a pipeline (e.g., grass or wildland fires that are caused by another party and do not impact pipeline facilities or operations).

5.1.4 "An unintended or uncontrolled release of gas or high-vapour pressure (HVP) hydrocarbons"

The CER expects companies to minimize their operational emissions of natural gas or HVP hydrocarbons across the systems that they operate. For the purposes of notification under section 52 of the OPR, the CER employs the following definition for "unintended or uncontrolled" in the context of a release of gas or HVP hydrocarbons:

> An event that is not part of planned pipeline maintenance or operation and occurs during the construction, operation or abandonment of a pipeline and results in:
>
> 1. a release of gas or HVP hydrocarbons occurring at a rate greater than 0.1 kg/second from any malfunctioning or faulty part of a pipeline, facility or appurtenance including but not limited to seals, packing, gaskets, o-rings, plugs, valves; or
>
> 2. a release of *any size* that occurs through the body of the pipeline or a welded connection.

Events that do not fall under this definition include but are not limited to:

- intended and controlled flaring or venting of natural gas or hydrocarbons including venting through properly functioning pressure relief valves or pressure safety valves.

Note that companies will be required to supply an estimation of rate of release and total volume released when they report incidents to OERS.

For the purposes of estimating release rate, companies should use the following formula[3]:

$$Rate\ (kg/\mathrm{sec}) = \ 132.52 \times \left(\frac{h}{1000}\right)^2 \times \sqrt[2]{D \times P}$$

Where:

h = Equivalent hole diameter (mm)
D = density of gas (kg/m3)
P = Pressure of gas (bar(a), absolute pressure)

For the purposes of calculating a total mass released for use in estimating volume companies should use:

Total Mass (kg) = Rate (kg/sec) x duration of release (sec)

[3] Derived from the International Regulators Forum (http://www.irfoffshoresafety.com/country/performance/scope.aspx)

When calculating the duration of release, companies should follow these guidelines in order:

- If the start and end times of the release are known: the actual duration of the release.
- If the start of the release is not known: the time of the last inspection/surveillance/site-visit of that part of the facility/pipeline to the time the release was discovered.
- If the last inspection/surveillance/site-visit date is not known: assume the leak was present for a minimum 30 days or the date the facility/pipeline was commissioned whichever is less.

For the purposes of estimating volume companies should use the following formula[4]:

$$Volume\ (standard\ m^3) = \frac{n * R * 288}{1000}$$

Where:

V = volume in cubic metres
n = the number of moles of product
R = 0.08205 L atm/mol K

NOTE: Pressure is standard at 1 atm and temperature is standard at 288 K. Therefore these parameters are not shown

5.1.5. "Operation of pipeline beyond its design limits…"

For the purposes of notification under section 52 of the OPR, the CER employs the following definition for "operation beyond design limits":

> The operation, for any amount of time, of a pipeline beyond the criteria for which the pipeline was designed and/or the operation of the pipeline beyond criteria imposed by the CER to mitigate a condition on the pipeline. This includes any condition that triggered an engineering assessment to be conducted to determine continued fitness for service of the pipeline.
>
> Note: the CER is of the view that a pipeline that is operated within its design limits demonstrates that proper operational controls are in place for that pipeline as per CSA Z662-15 Clause 3.1.2. f) iv). Therefore, if a company is unable to operate its pipeline system within its design limits, the CER must be notified and will provide oversight on the cause and corrective and preventive actions implemented by the company.

[4] Ideal Gas Law

In the paragraphs below, the following terms are defined as:

1) Maximum Operating Pressure (MOP): the maximum pressure at which a piping is qualified to be operated. Also referred to as certified/authorized/granted by the CER as per the Schedule A attached to pipeline's Order or Certificate.

2) Amended MOP: reduced/adjusted/approved/revised MOP.

3) Restricted Operating Pressure (ROP): Regulator-imposed pressure restrictions, including but not limited to those in Safety Orders, Miscellaneous Orders, Inspection Officer Orders, Letters of Direction.

4) Self-Imposed Pressure Restriction: pressure restrictions imposed by the company for safety and/or integrity concerns.

Events that fall under this definition include, but are not limited to:

- operation of a pipeline at a pressure above the design overpressure protection limit given in CSA Z662 (that is, operating pressure exceeds the licensed or amended MOP by 10% or by 35 kPa, whichever is greater);
- operation of a pipeline at a pressure greater than 100% of any ROP;
- operation of a pipeline at a pressure greater than 110% of any company's self-imposed pressure restriction implemented for safety and/or integrity reasons;
- operation of a pipeline at a temperature greater than the design temperature;
- slope movements that exceed what was predicted at the design stage or were not predicted in the design stage;
- unintended exposures of pipelines including in waterbodies (e.g., rivers, wetlands) and on land; and
- the introduction of an inappropriate product into the pipeline (e.g., sour product in a line or facility designed for sweet product; any exceedance of product's chemical properties as defined in the tariff limits).

5.1.6. Reporting Timelines

Section 52 of the OPR requires companies to immediately notify the CER of any incident. Companies should refer to section 3 of this document for guidance regarding timing of this notification.

Section 52 of the OPR also requires the submission of a Preliminary Incident Report (PIR) and a Detailed Incident Report (DIR) "as soon as is practicable". Generally, companies' initial notification of an incident will satisfy the PIR requirements. The information required for a DIR must be submitted within 12 weeks of reporting an incident. For complex incidents, companies may request an extension for submission of a DIR.

5.2 Annual Report Notifications

Subsection 6.6(2) of the OPR states:

> "No later than April 30 of each year, the company shall submit to the Regulator a statement, signed by the accountable officer, indicating that it has completed its annual report."

The reporting company will upload a formal copy of the template (https://www.cer-rec.gc.ca/bts/ctrg/gnnb/nshrppln/tmpltntfctnnnlrprt-eng.html) signed by the Accountable Officer to the portal in OERS.

6.0 CER Processing Plant Regulations

There are several relevant reporting sections in the PPR, including reporting of incidents, emergency flaring, hazards, and emergency shutdowns. The following sections will outline the CER's expectation with respect to each of the reporting requirements.

6.1 Definition of "Incident"

Incident reporting requirements are located in section 46 of the PPR. "Incident" is defined in section 1 of the PPR 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:

a) the death of or serious injury to a person (for additional guidance on this term, see section 5.1.1);

b) a significant adverse effect on the environment (for additional guidance on this term, see section 5.1.2);

c) an unintended fire or explosion that results in or has the potential to result in damage to company, public/crown or personal property (see section 6.1.1, for additional guidance on the role of flaring, see section 6.3);

d) Unintended or uncontrolled releases of processing or hydrocarbon fluids (see section 6.1.3) ;

e) an unintended or uncontrolled release of gas, HVP hydrocarbons, hydrogen sulfide or other poisonous gas (see section 6.1.2); or

f) the operation of a plant beyond its design limits or any limits imposed by the CER (see section 6.1.4).

Paragraphs (c), (d), (e), and (*f*) have been identified as requiring additional guidance and are clarified below.

6.1.1 An unintended fire or explosion

For the purposes of notification under section 46 of the PPR, the CER employs the following definition for an “unintended fire or explosion”:

> Any unintended fire or explosion that is caused by the construction, operation or abandonment of a processing plant and/or its equipment.

Events that fall under this definition include, but are not limited to:

- Any incorrect operation of fired equipment causing damage to the associated equipment.
- Any flaring activity that results in an excursion of heat outside of the periphery of the flare pit causing any vegetation to catch fire or causing damage to property.

6.1.2 An unintended or uncontrolled release of gas, HVP[5] hydrocarbons, hydrogen sulfide or other poisonous gas

The CER expects companies to minimize their operational emissions of natural gas or HVP hydrocarbons across the systems that they operate. For the purposes of notification under section 46 of the PPR, the CER employs the following definition for an “unintended or uncontrolled” in the context of a release of gas or HVP hydrocarbons:

> An event that is not part of planned plant maintenance or operation and occurs during the construction, operation or abandonment of a plant and results in:
>
> 1. a release of gas or HVP hydrocarbons occurring at a rate greater than 0.1 kg/second from any part of a facility;
> 2. a release of gas containing hydrogen sulphide or other dangerous gas(es) (e.g., carbon dioxide) that activates a personal monitoring device or a facility/station alarm; or
> 3. a release of gas containing hydrogen sulphide that is likely to have produced a concentration of hydrogen sulphide > 10 ppm within a 1 meter radius of the release point.

Events that do not fall under this definition include but are not limited to:

- Flaring of natural gas or hydrocarbons (for unintended burning or flaring reporting requirements under section 48 of the PPR see section 6.3 of this document).

Note that companies will be required to supply an estimation of rate of release and total volume released when they report incidents to OERS. For the purposes of estimating release rate companies should use the following formula[6]:

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[5] For the purposes of reporting under the PPR companies should use the following definition of HVP hydrocarbons: hydrocarbons or hydrocarbon mixtures in the liquid or quasi-liquid state with a vapour pressure greater than 110 kPa absolute at 38 °C.

[6] Derived from the International Regulators Forum (http://www.irfoffshoresafety.com/country/performance/scope.aspx)

$$Rate\ (kg/\sec) = \ 132.52 \times \left(\frac{h}{1000}\right)^2 \times \sqrt[2]{D \times P}$$

Where:

h = Equivalent hole diameter (mm)
D = density of gas (kg/m3)
P = Pressure of gas (bar(a), absolute pressure)

For the purposes of calculating a total mass released for use in estimating volume companies should use:

Total Mass (kg) = Rate (kg/sec) x duration of release (sec)

When calculating the duration of release, companies should follow these guidelines in order:

- If the start and end times of the release are known: The actual duration of the release.
- If the start of the release is not known: the time of the last inspection/surveillance/site-visit of that part of the facility/pipeline to the time the release was discovered.
- If the last inspection/surveillance/site-visit date is not known: Assume the leak was present for a minimum 30 days or the date the facility/pipeline was commissioned whichever is less.

For the purposes of estimating volume companies should use the following formula[7]:

$$Volume\ (standard\ m^3) = \frac{n * R * 288}{1000}$$

Where:

V = volume in cubic metres
n = the number of moles of product
R = 0.08205 L atm/mol K

NOTE: Pressure is standard at 1 atm and temperature is standard at 288 K. Therefore these parameters are not shown

6.1.3 Unintended or uncontrolled releases of processing or hydrocarbon fluids

The CER refers to the Globally Harmonized System (GHS)[8] as a benchmark standard for hazard assessment and categorization of processing and hydrocarbon fluids. As such the CER has implemented the following reporting volume thresholds for liquid releases at its processing plants:

[7] Ideal Gas Law
[8] http://www.ccohs.ca/oshanswers/chemicals/ghs.html

Any release >0.1 cubic meter (100 L) applies to:

- GHS class Flammable liquids: hazard categories 1, 2 or 3 (e.g., condensate, methanol); or
- Any GHS hazard class that applies to liquids (excluding the aspiration hazard class): hazard category 1 or Signal-Word “Danger”

Any release >1 cubic meter applies to:

- GHS class Flammable liquids: hazard category 4 (e.g., lean oil); or
- Liquid sulphur (notwithstanding its GHS classification)

Any release >10 m^3 applies to:

All other GHS classified liquids that do not fall into 1 or 2 above.

6.1.4 Operation of a plant beyond its design limits or any limits imposed by the CER

For the purposes of notification under section 46 of the PPR, the CER employs the following definition for “operation beyond design limits”:

> The operation, for any amount of time, of any equipment beyond the criteria for which the equipment was designed and/or the operation of the equipment beyond criteria imposed by the CER to mitigate a condition on the plant equipment. This includes any condition that triggered an engineering assessment to be conducted to determine continued fitness for service of the equipment.

Events that fall under this definition include, but are not limited to:

- For process equipment protected against over-pressure under a single pressure-relief device, an exceedance beyond 110 % of the equipment’s maximum allowable working pressure (MAWP).

- For equipment protected by multiple pressure-relief devices, an exceedance beyond 116 % of the equipment’s MAWP.

6.1.5 Reporting Timelines

Section 46 of the PPR requires companies to immediately notify the CER of any incident. Companies should refer to section 3 of this document for guidance regarding timing of this notification.

Section 46 of the PPR also requires the submission of a PIR and a DIR “as soon as practicable”. Generally, companies’ initial notification of an incident will satisfy the PIR requirements. The information required for a DIR must be submitted within 12 weeks of reporting an incident. For complex incidents, companies may request an extension for submission of a DIR.

6.2 Hazard that Renders the Plant Unsafe to Operate

Under section 47 of the PPR, a company is required to immediately notify the CER of any hazard that renders or may render its processing plant unsafe to operate.

For the purposes of reporting under this section, events that fall under this definition include, but are not limited to, natural hazards such as earthquakes, landslides, or floods, as well as protests or other types of civil unrest that may affect operations in this way.

Companies should refer to section 12 of this document for additional information on reporting information requirements.

6.2.1 Reporting Timelines

Paragraph 47(*a*) of the PPR requires companies to immediately notify the CER of any hazard that renders the plant unsafe to operate. Companies should refer to section 3 of this document for guidance regarding timing of this notification.

In addition to immediate notification, paragraph 47(*b*) of the PPR requires companies to provide a report to the CER "as soon as practicable". The information required to be contained in the report is qualitatively similar to that required for a DIR required under the PPR (see section 12) and, therefore, the CER expects this report to be submitted within 12 weeks of notification.

6.3 Emergency Burning or Flaring

Section 48 of the PPR requires companies to report to the CER any burning of either:

- hydrocarbon gas; or
- a by-product of the processing of hydrocarbon gas that occurs as a result of an emergency condition.

Any flaring that is a result of an emergency condition, including full or partial shut down, must be reported. Companies are not required to report routine flaring, such as that resulting from pigging or regular/required maintenance.

For the purposes of reporting under this section an "emergency condition" is defined as any situation where emergency or contingency procedures were enacted. This includes situations where flaring occurs due to process upsets resulting in an automated or manual emergency shutdown (ESD).

If a flaring event also has or may have a significant adverse effect on property, the environment, or the safety of persons, that event is also reportable under section 46 of the PPR as an incident (see section 6.1).

Companies should refer to section 12 of this document for additional information on reporting information requirements.

6.3.1 Reporting Timelines

The PPR do not contain explicit timing requirements for reporting of emergency burning or flaring under section 48. The CER expects that a company will report such events within one week of occurrence.

6.4 Suspension of Operations

Section 49 of the PPR sets out the notification and reporting requirements for the suspension of operations at processing plants.

Companies should refer to section 12 of this document for additional information on reporting information requirements.

6.4.1 Reporting Timelines

Subsection 49(1.1) of the PPR requires that companies notify the CER of suspensions under section 49 as soon as practicable. The CER expects that companies will provide such notification to the CER within 24 hours of:

- the suspension of an entire plant for a period exceeding 24 hours; or
- the suspension of part of a plant for a period exceeding seven days.

For the purposes of the detailed report required under subsection 49(2), the CER expects that companies will provide this information within one week of notification.

7.0 CER *Pipeline Damage Prevention Regulations*

Subsection 11(1) of the *Canadian Energy Regulator Pipeline Damage Prevention Regulations – Obligations of Pipeline Companies* (DPR-O states) that the pipeline company must immediately report to the CER:

(a) every contravention of the *Canadian Energy Regulator Pipeline Damage Prevention Regulations – Authorizations* (DPR-A);

(b) all damage to its pipe caused or identified during the construction of a facility across, on, along or under a pipeline, the operation, maintenance or removal of a facility, an activity that caused a ground disturbance within the prescribed area or the operation of vehicles or mobile equipment across the pipeline; and

(c) any activity related to the construction of a facility across, on, along or under a pipeline, an activity that caused a ground disturbance within the prescribed area or the operation of vehicles or mobile equipment across a pipeline that the pipeline company considers could impair the safety or security of the pipe.

7.1 Contraventions of DPR-A

Contraventions of the DPR-A are commonly referred to as unauthorized activities. The following activities qualify as Contraventions of DPR-A under section 335 of the CER Act and the DPR-A:

- Ground Disturbance: Contraventions of sections 10-11 of the DPR-A in relation to ground disturbance activities in the prescribed area, which extends 30 metres from each side of the centreline of the pipe. A “ground disturbance” is any activity that involves:
    - any activity to a depth of 30 cm or more;
    - any reduction of the earth cover over the pipeline; or
    - cultivation to depths of 45 cm or more.
- Construction of a Facility: Contraventions of sections 7-9 of the DPR-A in relation to the construction of a facility across, on, along, or under a pipeline (including the right-of-way). This category includes activities such as construction of structures/facilities (e.g., fences, decks, swimming pools) on a right-of-way, placement of structures/facilities (e.g., sheds, sea can storage containers) on a right-of-way, as well as storage / stockpiling of materials (e.g., woodpile, soil/berm) on a right-of-way; and
- Vehicle Crossings: Operation of a vehicle or mobile equipment across a right-of-way, outside the travelled portion of a highway or public road without written consent from the pipeline company, pursuant to sections 12-13 of the DPR-A.

7.2 Damage to Pipe

Paragraph 11(1)(b) of the DPR-O requires companies to report:

> “all damage to its pipe caused or identified during the construction of a facility across, on, along or under a pipeline, the operation, maintenance or removal of a facility, an activity that caused a ground disturbance within the prescribed area or the operation of vehicles or mobile equipment across the pipeline”.

The definition of “pipe” is located in section 1 of each of the DPR-O and DPR-A. “Pipe” means a pipe that is part of a pipeline and that is used or is to be used for the transmission of hydrocarbons or any other commodity.

The CER considers “damage” as impacts caused by *any person* to an operational (including deactivated) pipe coating or body where those impacts were:

- unintended (e.g., a back-hoe contacting the pipe during an integrity dig; a 3rd party staking a fence post into a pipe; surface load stress from the operation of a vehicle or mobile equipment across the pipeline); or,
- discovered during the course of operations or maintenance activities and are indicative of contact with the regulated pipe (e.g., historical damage).

Events that do not fall under this definition include activities with pipe contact that are planned, anticipated, controlled, and approved (e.g., replace/repair of pipe during an integrity dig; anticipated and mitigated contact with pipe during slope stability work).If an activity resulted in both a Contravention of DPR-A and damage to a pipe (e.g., the pipe was damaged during a contravention), the report will include both event types.

If damage to a pipe is unrelated to a Contravention of DPR-A (e.g., historical damage), the event can be reported as Damage to Pipe only.

7.3 Suspension of Consent

Subsection 10(2) of the DPR-O requires companies to notify the CER should it suspend the consent it has given to a party to do work in accordance with the DPR-A. The grounds for suspension are outlined in subsection 10(1) of the DPR-O. If at any time a company suspends consent it has previously given, the company is directed to submit a notification to the CER via OERS.

7.4 Reporting Timelines

A report of a Contravention, Damage to Pipeline or Suspension of Consent is required to be submitted to the CER immediately. Companies should refer to section 3 of this document for guidance regarding timing of this report.

The CER is aware that all of the required information may not be available within the reporting timeframe of "immediately" (see section 3 of this document). Where this is the case, companies must still report immediately and provide as much information as possible. If the information is not complete, companies must provide the remainder of the information within 12 weeks of the initial report. For details on reporting information requirements see section 12 of this document.

8.0 Canada Oil and Gas Drilling and Production Regulations under COGOA (COG-DPR)

The applicable reporting requirements found in section 75 of the COG-DPR include both "incidents" and "near-misses". The following sections will provide guidance on both of these requirements.

8.1 Incident Reporting

Under subsection 1(1) of the COG-DPR, "incident" is defined as:

(a) any event that causes

(i) a lost or restricted workday injury (as defined in the COG-DPR),

(ii) death,

(iii) fire or explosion,

(iv) a loss of containment of any fluid from a well,

(v) an imminent threat to the safety of a person, installation or support craft, or

(vi) pollution;

(b) any event that results in a missing person; or

(c) any event that causes

(i) the impairment of any structure, facility, equipment or system critical to the safety of persons, an installation or support craft, or

(ii) the impairment of any structure, facility, equipment or system critical to environmental protection.

Subparagraphs (*a*)(iv), (*a*)(v), and (*a*)(vi) have been identified as requiring additional guidance and are clarified below.

8.1.1 "A loss of containment of any fluid from a well"

A "loss of containment" is an event that allows any fluid in the well bore to bypass well barriers and reach the surface or potentially adversely impact a downhole hydrocarbon-bearing reservoir. This includes a formation kick or a blow-out, or lost circulation into a hydrocarbon bearing reservoir. It does not include lost circulation into a non-hydrocarbon bearing zone below the surface casing depth.

Lost circulation of any fluid in the well above the surface casing depth may qualify as an incident under this definition if it has potential to result in any adverse impact to the environment (e.g., contamination of soil or surface or groundwater).

8.1.2 "Imminent threat to the safety of a person, installation or support craft"

An imminent threat to safety means that a person, installation, or support craft will be harmed in the near future unless the threat can be avoided, additional control measures are put in place to prevent the threat, or emergency response procedures are implemented.[9]

Imminent threats include events such as:

- overdue contact with a vehicle, vessel or aircraft transporting operations personnel;
- person overboard at an offshore installation or a support craft;
- unauthorized vessel entering the safety zone of an installation or a vessel that is unable to be reached by radio or for which a support craft is sent to intercept;
- precautionary evacuation in whole or in part (for example, removal of non-essential personnel);
- securing the well or depressurization of flow lines;
- emergency landings of helicopters;
- alert to search and rescue resources; and

[9] "Support craft" is defined in subsection 1(1) of the DPR and OGOA DPR. "Installation" is defined in subsection 2(1) of the IR and OGOA IR.

- deployment of search and rescue helicopter or requesting emergency response standby for landing in response to in-flight issues with a helicopter.

8.1.3 "Pollution" and significant pollution

Subsection 1(1) of the COG-DPR defines "pollution" as the introduction into the natural environment of any substance or form of energy outside the limits applicable to the activity that is subject to an authorization, including spills.

Companies are expected to report an introduction of substance or form of energy as pollution if it exceeds a limit of discharge outlined in an environmental protection plan prepared in relation to an authorization (sections 6 and 9 of the COG-DPR). In the absence of such a limit, companies must report any release of that substance or form of energy into the natural environment.

Subparagraph 75(2)(*b*)(vi) of the COG-DPR addresses, among other things, reporting requirements for incidents of significant pollution. Events that constitute significant pollution include:

- spills of hydrocarbons, well or formation fluids; and
- discharge of substances that result in an exceedance of relevant quality criteria such as Canadian Council for Ministers of the Environment Canadian Environmental Quality Guidelines.

For example, if the limit of discharge for natural gas to a flare that cannot be feasibly conserved is a gas flow rate of 100 x 10^3 m^3/d, a flow rate of 150 x 10^3 m^3/d exceeds the discharge limit and is pollution. If the discharge also exceeds quality criteria or standards, such as the National Ambient Air Quality Objectives or the Northwest Territories Ambient Air Quality Standards, it is considered to be significant pollution.

8.2 "Near-miss"

"Near-miss" is defined in subsection 1(1) of the COG-DPR as an event that would likely cause an event set out in paragraph (*a*) of the definition of "incident", but does not, due to particular circumstances.

Section 75 of the COG-DPR does not differentiate between the information requirements for near-misses and incidents. As such, companies must provide equivalent reports for both types of events to the CER.

8.3 Reporting Timelines

Paragraph 75(1)(*a*) of the COG-DPR states that the operator must ensure that the CER is notified of any incident or near-miss "as soon as the circumstances permit".[10] In this context, this phrase is substantively the same as "immediately"; therefore the notification period is the same

[10] Note that the COG-DPR refers to the National Energy Board; however, pursuant to the *Interpretation Act* paragraph 44(h), the references to the Board in the COG-DPR shall be read as references to the CER.

as the notification periods that is expected where the term “immediately” appears. Companies should refer to section 3 of this document for guidance regarding timing of this notification.

Paragraph 75(1)(*b*) of the COG-DPR requires that the CER be notified at least 24 hours in advance of any press release or press conference held by the operator concerning any incident or near-miss, except in an emergency situation, in which case the CER shall be notified without delay before the press release or press conference.

In these cases, companies must call the CER Incident Phone line at 403-807-9473 and indicate the subject of the press release or conference, the date and time of occurrence, and the relevant company personnel’s contact information.

In addition to notification, paragraph 75(2)(*b*) of the COG-DPR requires companies to submit an investigation report identifying the root cause, causal factors, and corrective action taken to the CER no later than 21 days after the day on which the incident or near-miss occurred for the following incidents or near-misses:

- a lost or restricted workday injury;
- death;
- fire or explosion;
- a loss of containment of any fluid from a well;
- an imminent threat to the safety of a person, installation or support craft; and
- a significant pollution event.

Companies should refer to section 12 for additional information on reporting information requirements.

9.0 Canada Oil and Gas Geophysical Operations Regulations (GOR)

9.1 Serious accident or incident reporting

Section 40 of the GOR requires the notification of any serious accident or incident that occurs during a geophysical operation and that:

- causes injury to or loss of life of any person;
- causes damage to property; or
- that constitutes a threat to the environment.

“Damage to property” and “threat to the environment” have been identified as requiring additional guidance and are clarified below.

9.1.1 "Property"

Property includes, but is not limited to:

- land;
- buildings;
- vehicles;
- equipment owned by the operator;
- equipment such as hunting/trapping/fishing gear owned by a third party.

9.1.2 "Threat to the environment"

Threats to the environment include, but are not limited to:

- fuel spills outside of lined containment;
- blocking of game trails with windrows;
- explosive charges that misfire;
- cratered holes that are susceptible to erosion; or
- natural gas or water flowing from a shot hole.

9.2 Reporting timelines

Section 40 of the COGOA require every operator to inform the Chief Conservation Officer and the Chief Safety Officer immediately, by the most rapid and practical means, of any serious accident or incident. Notification via the online reporting system or through the TSB incident hotline meets the requirements of informing the Chief Conservation and Safety Officers.

10.0 *Canada Oil and Gas Installations Regulations* (COGIR)

10.1 Emergency or accident reporting

Subsection 71(1) of the COGIR require every operator to inform the Chief Safety Officer of any situation or event involving any danger or accident to a person or property and lists events that qualify as such.

10.2 Reporting timelines

Subsection 71(1) requires every operator to inform the Chief Safety Officer of any of the listed situations or events "by the most rapid and practical" means. Notification via the OERS or through the TSB incident hotline meets the requirements of informing the Chief Conservation and Safety Officers. Companies should refer to section 3 of this document for guidance regarding timing of this notification.

Subsection 71(2) also requires the submission of a “full written report” to the Chief Officer. These reports described are qualitatively the same as a DIR; therefore, companies must submit such reports within 12 weeks of the initial notification. See section 12 of this document for additional guidance on contents of this report.

11.0 *Canada Oil and Gas Diving Regulations* (DR)

11.1 Accident, illness, and incident reporting

Paragraphs 6(1)(*i*) and 6(1)(*j*) of the COGOA DR contains the reporting requirements in respect of accidents and serious illnesses involving members of diving crews involved in diving programs, as well incidents in connection with diving programs.

Companies should refer to section 12 for additional information on reporting information requirements.

11.2 Reporting timelines

Paragraphs 6(1)(*i*) and 6(1)(*j*) of the COGOA DR requires that accidents, as well as serious illnesses and incidents be reported “by the most rapid and practicable means” and “as soon as possible”, respectively. In this context, these phrases are substantively the same as “immediately”; therefore the notification periods for paragraphs 6(1)(*i*) and 6(1)(*j*) of the COGOA DR are the same as the notification periods that are expected where the term “immediately” appears. Companies should refer to section 3 of this document for guidance regarding timing of this notification.

Paragraphs 6(1)(*i*) and 6(1)(*j*) of the COGOA DR also require companies to submit prescribed reports pertaining to accidents, serious injuries, and incidents. These reports described are qualitatively the same as a DIR; therefore, companies must submit such reports within 12 weeks of the initial notification. See section 12 of this document for additional guidance on contents of this report.

12.0 Information Requirements for Reporting Events

12.1 Incident Reporting

This section applies to the following events (collectively known as incidents):

- incidents (PPR, OPR, DPR);
- accidents, serious illnesses, and incidents (DR);
- emergencies or accidents (COGIR); and
- serious accidents or incidents (GOR).

The information requirements for incident reporting are generally aligned with Annex H of Canadian Standards Association (CSA) Z662-11 (CSA Annex H). However, in addition to the technical details outlined in CSA Annex H, companies must provide to the CER the root cause

of the incident, as well as details regarding any corrective action that was taken to prevent future occurrence.

Other reporting requirements (e.g., hazard identification under the PPR) and any additional supporting information (e.g., metallurgical analysis reports) may be uploaded directly to the OERS system for the event in question.

12.1.1 Notification and Preliminary Incident Report

For initial notifications for all incidents and PIRs (for incidents under the OPR and PPR), companies must provide, via the OERS, the following information:

- company contact information;
- date and time of occurrence and/or discovery;
- how the incident was discovered (e.g., routine patrol, landowner/public reported);
- type of incident being reported (e.g. death, release of substance, fire/explosion);
- type of substance released and initial release volume estimate, if applicable;
- qualitative details of incident type (e.g., broken bone if serious injury, exposure of a pipeline in a water body if operation beyond design limits, etc.);
- nearest populated center;
- GPS coordinates of the event in decimal degrees;
- facility name/pipeline name;
- narrative that includes a description of the events leading up to the occurrence or discovery and any immediate actions taken to protect the safety of the public, the company's employees, and/or the environment (e.g., evacuation, containment of product);
- initial narrative information on the component that failed, if applicable; and
- affected lands (e.g., restricted to company owned land, right-of-way, private land, crown land).

12.1.2 Detailed Incident Reports

For any of the following:

- DIR under the OPR and PPR (sections 5 and 6 of this document);
- 21 day reports under paragraph 75(2)(*b*) of the DPR (section 8 of this document);
- full written reports under subsection 71(1) of the COGIR (section 9 of this document); and
- causal investigation reports under paragraphs 6(1)(*i*) and 6(1)(*j*) of the DR (section 10 of this document),

Companies must provide, via the OERS, the following information:

- any relevant updates to the information contained in the notification and/or preliminary incident reports;
- detailed information on the pipeline/facility component that failed (e.g., equipment type, such as gate valve, and the component that failed, such as the valve packing), if applicable;
- operating conditions of the pipeline/facility at the time of incident discovery (e.g., operating pressure, product type, depth of cover, etc.), if applicable;
- maintenance history of failed component (e.g., date of last inspection/maintenance, type of inspection such as visual or non-destructive examination, etc.), if applicable;
- corrective actions completed (or planned for completion) by the company to prevent reoccurrence of the incident at local level (see appendix 1 for additional guidance);
- preventive actions completed (or planned for completion) by the company to prevent the similar incidents across its systems (if applicable, see appendix 1 for additional guidance);
- root cause analysis that includes at least one immediate cause (e.g., equipment/component failure), as well as at least one basic (root) cause (e.g., normal wear and tear); and
- supporting information (e.g., metallurgical reports), if applicable.

12.1.3 Incident Costs

The CER now expects companies to report on costs, as described below, for any incident that meets the following definition under any of the CER's regulations:

i) An unintended or uncontrolled release of low-vapour pressure (LVP) hydrocarbons in excess of 1.5 m^3 that extends beyond a company's property;

ii) Significant adverse effect on the environment;

iii) A rupture;

iv) A toxic plume; and/or

v) A loss of containment of any fluid from a well.

Companies will be expected to report categorized costs related to the incident as follows:

- Category 1 – Actual costs (to be reported separately) related to:
  - The emergency response, including containment of the incident;
  - The clean-up and remediation of the incident; and
  - The repair or replacement of regulated facilities.
- Category 2 – Actual or estimated value of losses or damages not included in Category 1.

Companies are expected to provide the above costs annually (calendar) beginning the year the incident was reported and ending either when there are no further costs related to the incident

or 5 years after the incident was reported (inclusive of the year that is was reported), whichever occurs first.

Reporting of costs will be integrated into the OERS at a later date and at that time OERS will automatically determine when companies are required to report costs. However, until the system changes are made, the CER will contact companies on an as-needed basis and will provide instructions and a standard form to report costs.

12.2 Near-Miss Reporting (DPR)

The information requirements for near-miss reporting are the same as incident reporting under the DPR. Therefore, companies must provide, via the OERS, the same level of detail for both incidents and near-misses.

12.3 Emergency Burning or Flaring (PPR)

Companies must provide, via the online reporting system, the following information to meet the requirements for emergency burning or flaring pursuant to section 48 of the PPR:

- company name;
- company contact;
- location; and
- a narrative summary of the events leading up to the emergency flaring or burning event.

12.4 Hazard Identification (PPR)

Companies must provide, via the OERS, the following information to meet the requirements for hazard identification pursuant to paragraph 47(*b*) of the PPR:

- a proposed contingency plan;
- a description of cause, duration, and potential impacts of the hazard;
- repairs to be made; and
- measures to prevent future failures.

12.5 Suspension of Operations (PPR)

Companies must provide, via the online reporting system, the following information to meet the requirements for suspension of operations pursuant to subsections 49(1.1) and (2) of the PPR:

- details of the operations to be suspended;
- reason for the suspension;
- duration of the suspension; and
- effect of the suspension on the throughput of the plant, on the safety of persons or on the environment.

12.6 Contravention of DPR-A Reporting (as defined in the DPR-O)

This section applies to Contraventions of DPR-A.

The information requirements for reporting are generally aligned with Annex H of Canadian Standards Association (CSA) Z662 (CSA Annex H). However, in addition to the technical details outlined in CSA Annex H, companies must provide to the CER the causes that resulted in the event as well as details regarding any corrective and preventive actions that were taken to prevent future occurrence.

12.6.1 Contravention of DPR-A Preliminary Event Reports

For initial notifications for all Contraventions of DPR-A, companies must provide the following information via OERS:

- Company contact information;
- Date and time of occurrence and/or discovery;
- How the event was discovered (e.g., scheduled aerial patrol, landowner);
- Type of activity that relates to the event (e.g., ground disturbance, construction of a facility, and/or vehicle or mobile equipment crossing);
- Nearest populated centre;
- GPS coordinates of the event in decimal degrees;
- Pipeline name
- Narrative that includes a description of the circumstances leading up to the occurrence or discovery and any immediate actions taken to protect the safety of the public, the company's employees, and/or the environment (e.g., pressure restriction, evacuation); and

Land use and population density at the event location.

12.6.2 Contravention of DPR-A Detailed Event Reports

- Any relevant updates to the information contained in the preliminary report;
- Type of activity and equipment that caused the contravention, if known
- Parties involved, if known
- Corrective actions completed (or planned for completion) by the pipeline company to prevent reoccurrence of the event at local level (see appendix 1 for additional guidance);
- Preventive actions completed (or planned for completion) by the pipeline company to prevent similar events across its systems (if applicable, see appendix 1 for additional guidance); and
- Root cause analysis that includes at least one immediate cause (e.g., no notification made to one call centre), as well as at least one basic (root) cause (e.g., unaware of requirement to make a notification to one call centre).

12.7 Damage to Pipe

In circumstances where damage to a pipe occurs or is discovered and the damage is related to a report of Contravention of DPR-A, pipeline companies are directed to notify the CER via the Damage to Pipe event type in OERS.

12.7.1 Damage to Pipe Preliminary Event Reports

For initial notifications for all Damage to Pipe, pipeline companies must provide the following information via OERS:

- Company contact information;
- Date and time of occurrence and/or discovery;
- Who discovered the event (e.g., pipeline company);
- Identification of any concerns for the safety of persons, regulated facilities, or the protection of property and the environment;
- Description of damage (e.g., coating scratch, pipe gouge, pipe dent);
- Nearest populated centre;
- Location of event in decimal degrees to 4 decimal points;
- Pipeline name;
- Narrative that includes a description of the circumstances leading up to the occurrence or discovery and any immediate actions taken to protect the safety of the public, the company's employees, and/or the environment (e.g., pressure reduction, evacuation); and
- Land use and population density at the event location.

12.7.2 Detailed Event Reports

- Any relevant updates to the information contained in the preliminary report;
- Description of damage, including a summary of NDE results (if applicable)
- Available dimensions of damage;
- Interactions with other features (if applicable);
- Measures that were taken or will be taken to mitigate the damage; and
- Parties involved (if applicable, note that the CER will not collect personal details at the time of reporting. If these are needed later, a CER staff member will contact the reporting company.);

12.8 Suspension of Consent (DPR-O)

In circumstances where a company suspends consent previously given under the DPR-A, the company must provide a report to OERS that includes but is not limited to:

- Company Name

- Company Contact
- When the Revocation occurred
- The type of party (e.g., municipality, landowner) that had their authorization revoked
- Reason for revocation

Appendix 1: Corrective and Preventive Actions

An event (whether an incident or regulatory contravention) is the result of multiple causes. These include the most immediate cause(s) that led to the event (e.g., malfunction/defect that resulted in pinhole leak in a pipe body) cascading to basic cause(s) that are related to deficiencies in a procedure for inspecting the pipe body, or deficiencies in management system processes that define how procedures across the system are developed and implemented. Correspondingly, each of the cause(s) will usually cascade to one or more corrective and/or preventive actions.

The CER expects that for all reported events, companies will work to understand the:

- nature and extent of the causes including those causes related to the management system and various programs;
- actions required to correct the causes at the specified locations[11] as well as other similar locations to ensure immediate compliance and protection of people and the environment; and
- actions required to prevent occurrence or reoccurrence of causes at a facility or during an activity or to prevent occurrence of identical causes at similar facilities or similar activities.

The CER expects that companies will use structured and defensible processes for analyzing events to identify causes as well as corrective and preventive actions. In the comment box provided under the list of corrective and preventive action endorsements, companies should include

i. the method used to determine causes in order to appropriately develop corrective and preventive actions, and
ii. additional contextual information about the nature of ***each*** corrective and preventive action implemented and/or planned for implementation.

The CER recognizes that variation exists in definitions of corrective and preventive actions.

The CER uses the following definitions:

> **Corrective Actions:** actions taken to remove or control the cause(s) (most often the immediate cause) in order to eliminate the hazard, or minimize the associated risk (e.g., fix an existing problem).[12]
>
> **Preventive Actions:** actions taken to remove or reduce the likelihood of the occurrence or reoccurrence of the cause(s) in order to anticipate a hazard or minimize the associated risk that could occur (e.g., take steps to address a potential problem).[11] Typically, actions are preventive if they proactively address analogous/comparable causes or potential causes.

[11]The term “location(s)” refers to different locations across a single worksite or across various worksites.
[12] Adapted from CSA. (2014). *Occupational health and safety management* (Z1000-14). Toronto, Canada: Canadian Standards Association.

Preventive actions can be further broken down into:

Tier I – actions taken to address causes at additional locations where similar/identical situations exist in order to proactively eliminate the identified risk; and

Tier II – actions taken to address systemic causes; typically associated with changes to a company's management system that impact the entire company or pipeline system.

Figure 1 helps to illustrate how the CER differentiates between corrective and preventive actions:

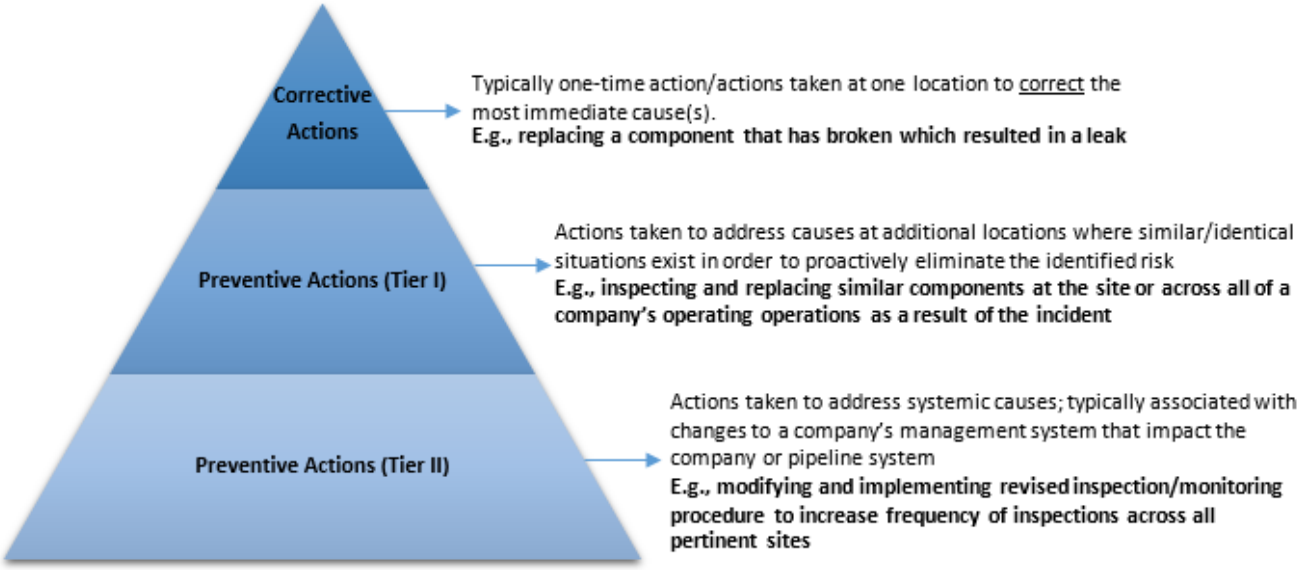

Figure 1. Graphical representation of corrective and preventive actions.

The tables below provide definitions and examples for the corrective and preventive action options available in ERS. The corrective and preventive action options, descriptions, and examples are under continuous improvement. If you have input or questions regarding these options please contact DLERSSupport@cer-rec.gc.ca.

Note: When selecting corrective and preventive actions in ERS it is expected that a detailed description is included in the accompanying comment box for all of the endorsed corrective and preventive actions.

Corrective Action Examples	
Action	**Description**
No Actions Taken	No actions were taken at the site level in response to the incident
Update Procedures/Standards/ Specifications	A gap in procedures/standards/specifications was identified to have contributed to the incident and change were subsequently made to an existing procedure, standard, or specification and appropriately communicated to pertinent staff. Example: procedure was out of date, not representative of operational practice or missing a pertinent step which directly contributed to the incident; procedure is revised accordingly.
Create New Procedure/Standard/ Specifications	A gap in procedure/standards/specification was identified to have contributed to the incident and a new procedure, standard, or specification was subsequently developed and implemented (e.g., communicated to appropriate staff / training is provided if necessary). Example: a missing procedure was identified as directly contributing to the incident; a new procedure is developed to appropriately document the steps necessary for the completion of a new work task.
Worker Specific Action	Performance management is used for one or more individuals in response to the incident. Example: (Informal) - Supervisors are coached on the importance of inspection activities that i) ensure proper implementation of procedures and ii) ensure the necessary competency to conduct specific activities. (Formal) - Company's discipline process was used. *Please be sure to include the nature of the performance management used in the comment box provided (e.g., if it was field staff, leadership, or both who received the performance management and the type of performance management used).*
Competency Assessment, Training and/or Retraining for those staff involved in the incident	Assessment of staff competency, training, or re-training are used in response to the incident for those staff directly involved in the incident. Example: staff who were involved in the incident had limitations in competency and receive refresher training as a result. *Please be sure to include the nature of the competency assessment or type of training that was given in the comment box provided.*
Repair/Replacement	A repair or replacement of material/materials is completed in response to the incident. Example: an O-ring is replaced with a new one of the same material. *Please be sure to include the type of repair (e.g., permanent versus temporary repair) in the comment box provided.*
Upgrade	An upgrade is performed in response to the incident (replacement of material/materials with upgraded material/materials). Example: an O-ring is replaced with an upgraded version that contains longer life expectancy.
Modify Schedule/Plan	A modification is made to a work schedule or work plan. Example: a contributing factor to the incident was identified to be insufficient time for communication between staff during shift handover.

	Consequently, a modification is made to the staff's work plan to require additional time for necessary communications during shift handover.
Correct Role Responsibilities for those staff involved in the incident	Correction of roles and responsibilities is made or role responsibilities are clarified for staff. Example: written clarity regarding who is the leader/decision-maker in a work group is made to staff; responsibility for who communicates what information (and when) to other work groups is corrected (e.g., defined).
Increase Inspection/Review Frequency for the specific material or practice involved in the incident	A change in the frequency or scope of site-level inspection is made for the specific material or practice involved in the incident. Example: an inspection is made to occur bi-weekly instead of once per month.

*Note: Examples provided are not inclusive of all options that may fall within the respective category.

Preventive Action (Tier I) Examples

Actions taken to address causes at additional locations* where similar/identical situations exist in order to proactively eliminate the identified risk

***The term "location(s)*" used below can mean different locations across a single worksite or across various worksites.**

- **Example 1 – different locations across a single worksite:** in addition to correcting the material that contributed to the incident, the same material is inspected and replaced as necessary on numerous structures within the worksite.
- **Example 2 – different locations across various worksites:** In addition to addressing a procedural gap identified to contribute to the incident, the procedure is updated and appropriately communicated to staff at all other worksites where the risk exists.

Action	Description
Local/Regional Staff Communication	At a local/regional level staff were made aware of the incident's causes and lessons learned. This includes information on what happened, causal and contributing factors, steps taken to address the causal and contributing factors and prevent future occurrence, and important factors for local/regional sites to check and take action on. Example: safety alert issued for all sites in the region where the risk exists.
Incident/Event data is included in holistic analysis to determine if company-wide processes or procedures require modification	The information from the incident/event is utilized in data analysis to examine patterns or trends over time. Findings help identify the need for company-wide changes (e.g., to processes or procedures).

Update Procedures/Standards/Specifications at more than one location*	As a result of an incident, a change is made to an existing procedure, standard, or specification at more than one location* where the risk exists. Example: procedures were revised to more clearly describe the steps necessary for completion of the work task and implemented (communicated appropriately) to staff at all pertinent company locations*.
New Procedure/Standard/Specifications at more than one location*	As a result of an incident, a new procedure, standard, or specification is developed and implemented (communicated / training is provided if necessary) at more than one location* where the risk exists. Example: a new procedure was developed to appropriately document the steps necessary for the completion of a new work task and implemented (communicated appropriately) to staff at all pertinent company locations*.
Competency Assessment, Training and/or Retraining at more than one location*	Assessment of staff competency, training, or re-training are used in response to the incident for pertinent staff at more than one location* where the risk exists. Example: pertinent staff at all locations* where the risk exists receive refresher training. *Please be sure to include the nature of the competency assessment or type of training that was given in the comment box provided.*
Repair/Replacement made at more than one location*	A repair or replacement of material/materials is completed in response to the incident at more than one location* where the risk exists. Example: after a leak was identified in an above ground storage tank the remaining above ground storage tanks across the site are inspected and, as necessary, repaired. *Please be sure to include the type of repair (e.g., permanent versus temporary repair) in the comment box provided.*
Upgrade made at more than one location*	An upgrade is performed in response to the incident (replacement of material/materials with upgraded material/materials) at more than one location* where the risk exists. Example: after a leak was identified in an above ground storage tank, the remaining above ground storage tanks across the site are inspected and, as necessary, the tanks were replaced with new (upgraded) storage tanks.
Schedule/Plan Modification for more than one location*	A modification is made to a work schedule or work plan at more than one location* where the risk exists. Example: for all work groups at the worksite, staff arrival and departure times are adjusted on the work schedule in order to facilitate more time for shift handover.
Correct Role Responsibilities at more than one location*	Correction of roles and responsibilities is made or role responsibilities are clarified for pertinent staff at more than one location* where the risk exists. Example: clarity of who is the leader/decision-maker in a work group is made to staff at more than one location* where the risk exists; responsibility for who communicates what information (and when) to other work groups is corrected (e.g., defined) at more than one location* where the risk exists.
Increase Inspection/Review Frequency at more than one location*	A change in the frequency or scope of site-level inspection is made and at more than one location* where the risk exists. Example: an inspection type is made to occur bi-weekly instead of once per month

	Preventive Action (Tier II) Examples Actions taken to address systemic causes; typically associated with changes to a company's management system that impact the entire company or pipeline system.	
	Action	**Example***
	No Actions Taken	No actions were taken across the system/company level in response to the incident.
	Communication made across company/system	Example: safety alert issued across the company (or across the company at those sites where the risk exists).
Modify and implement <u>company-wide/system-wide</u> processes or procedures for…	**setting/achieving goals, objectives and targets**	Example: Company develops specific objectives, short term objectives and/or performance measures for senior management to monitor the inspection of all similar facilities to ensure oversight of suspected hazards and risk.
	hazard identification or risk assessment	Example: Company modifies and implements revised Front Line Hazard Assessment Process to include updated information related to specific hazards or controls (e.g., Common Hazard Information).
	control of identified hazards	Example: Company modifies and implements revised Front Line Hazard Assessment Process to include updated information related to specific hazards and risk. e.g., Changes to standard probability or consequence ratings.
	identifying and inventorying legal requirements	Example: Company modifies and implements revised procedures for monitoring changes to legal requirements in order to include technical standards that may have contributed to or prevented incident causation.
	management of change	Example: modification and implementation of management of change procedures to include specific requirements for management of changes applicable to multiple sites necessitated by incident investigations (e.g., Changes necessitated by identification of root cause analysis activities.
	developing competency requirements, training programs, and verification of competency	Example: New or refresher training requirements were identified and provided across operational areas and/or learning management system updated to manage new or modified competency and training requirements. This includes developing competency requirements, training programs and verification of competency for leadership (e.g., supervisory) positions.
	inspecting and monitoring the company's activities and facilities	Example: revision of inspection criteria, protocols, and schedules is made for inspection of above ground storage tanks at all sites across the company.
	developing contingency plans for abnormal events	Example: procedures related to who must be contacted in the event of an abnormal operation (e.g., operating design limits have been exceeded due to a pressure, flow rate, or temperature change outside the limits of normal conditions) are revised to include additional parties.
	awareness/communication of key information	Example: Company modifies and implements revised procedures for the documentation and communication of lessons learned from incidents.

	control and management of documentation/records including procedures/practices/standards	Example: Modify document control procedures to ensure that all safety critical standard operating procedures and practices such as confined space entry, tank gauging, field level hazard assessment, pipe stringing, etc. are reviewed and approved on a frequency above minimum standards that reflect the risk evaluation or potential consequence of the activities controlled by each.

*Note: Examples provided are not inclusive of all options that may fall within the listed category.