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Regulator

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du Canada

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File OF-Surv-Gen 11
19 May 2022

**All Companies under the Jurisdiction of the Canada Energy Regulator
Canadian Association of Petroleum Producers
Provincial and Territorial Regulators**

Safety Advisory SA 2022-02 - Control of Hazardous Energy

Please find attached Safety Advisory SA 2022-02 Control of Hazardous Energy.

The Canada Energy Regulator (CER) expects regulated companies to take all reasonable care to ensure the safety and security of persons, the safety and security of regulated facilities, and the protection of property, and the environment. The CER also expects regulated companies to promote a positive safety culture as part of their management systems.

The CER reviewed recent reported incidents and enforcement actions taken and noticed several failures where a contributing cause factor was energy isolation and/or inadequate lockout tag out procedures or failure to properly follow them. This safety advisory is being issued to address this concern.

Safety Advisories are issued periodically to inform the pipeline, oil, and gas industry of an identified safety or environmental concern with the goal of preventing the occurrence of related incidents. A Safety Advisory serves to highlight CER regulatory requirements and to convey the CER's expectation that regulated companies take appropriate action to prevent and mitigate any potential impacts to people or the environment.

If you have any questions regarding this advisory, please contact the CER through the CER's toll-free number at 1-800-899-1265 or via email at cers&dp@cer-rec.gc.ca.

Best regards,

Signed by

Gitane De Silva
Chief Executive Officer

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SAFETY ADVISORY: Control of Hazardous Energy

Purpose of the Safety Advisory

The *Onshore Pipeline Regulations* require companies to notify the CER of incidents that are considered to be reportable. These incidents are then investigated by the CER. All information is collected, analyzed, and published to identify trends and mechanisms to improve safety in moving energy across Canada.

The safety of people and protection of the environment is the CER's top priority, therefore companies must ensure that personnel know and follow all processes and procedures related to energy isolation and lockout tag out (LOTO). The purpose of this Safety Advisory is to ensure broader awareness of these types of incidents and the factors that caused them, with the goal of preventing future occurrences.

Background

The CER reviewed recent reported incidents and enforcement actions taken and noticed several failures where a contributing cause factor was energy isolation and/or inadequate LOTO procedures or failure to properly follow them. Energy isolation refers to "what" separates people from a hazard, such as disconnecting equipment from an electrical source, whereby hazardous energy is any energy source that could cause harm to someone. LOTO is the placement of a locking device on a piece of equipment that can only be removed by an authorized individual as indicated on a tag. It is recognized as the most effective control to ensure that equipment under repair or unsafe is not used.

There can be any number of causal and/or contributing factors as to why an incident happens, but when proper processes and procedures are followed, nearly all incidents are 100 per cent preventable. The following are a few examples of recent LOTO non-compliances identified and incidents reported to the CER:

- Inspection Officer Orders:
 - Labelling on Motor Control Centers and on physical devices did not correspond with each other and/or with piping and instrumentation diagrams (PIDs) referencing the same energy isolation points.
 - Valves were either not labelled or labelled incorrectly.
- Incidents:
 - During routine maintenance, pressurized gas flowed back into a compressor that had been taken out of service. Important isolation points along the path were missed resulting in a cover on the isolated compressor being blown off and release of substance.
 - During a facility maintenance outage, an indirect line was isolated, but not locked out causing it to automatically open during an unexpected power outage resulting in gas venting to the atmosphere.

Preventive Actions

Compliance with Regulatory Requirements

The CER requires that regulated pipeline companies have systems in place for energy isolation with all hazards identified and equipped with the appropriate controls.

An effective energy isolation program should:

- Identify all hazardous energy sources;
- Identify all types of energy isolating devices, such as a valve or electrical box; and
- Include proper labelling using a standard format that clearly identifies the equipment/energy isolation points as well as disclaimers indicating when it is not to be operated.

When the above steps are followed, the potential for error is significantly reduced.

Responsibilities for the various elements and procedural steps within the program must be clearly defined. Only those who are qualified, through their knowledge, training, and experience, can perform energy isolation or LOTO procedures. If contractors are being used, they must be made aware of all hazards of a particular site as well as any coinciding procedures for how to manage those hazards, including those related to LOTO.^{1,2}

Documented lockout procedures should be developed for each unique machine, piece of equipment, or process. These procedures should be readily available to anyone involved in the lockout and follow the LOCK, TAG, CLEAR, TRY (verification of zero energy state) sequence.

If lockout to a full zero energy state is not practicable, then other control methods shall be used. In these cases, a risk assessment must be performed to ensure that workers are provided with appropriate and effective protection.³

Procedures should be regularly reviewed for accuracy and completeness. In addition, companies should regularly verify that these procedures are being implemented as intended.

Continuous Development of a Positive Safety Culture

Personal attitudes towards safety in energy isolation and LOTO go hand-in-hand in creating strong defenses to incidents. A positive safety culture contributes to the timely and effective implementation of controls that are designed to mitigate hazards and manage risk.

An organization that has a positive safety culture with respect to energy isolation and LOTO practices is dedicated to maintaining and improving:

¹ CSA Group. (n.d.). CSA Z460:20 Control of hazardous energy – Lockout and other methods. Exposure of non-company personnel, 84. “Company and outside employers (contractors, etc.) must inform each other of their lockout procedures. Each facility must ensure that its employees understand and comply with the requirements of the outside employer’s or mutually agreed upon energy control procedures.”

² Government of Canada. (09, September 2020). *Canadian Energy Regulator Onshore Pipeline. s. 6.5.1(k)(m)*

³ CSA Group. (n.d.). CSA Z460:20 Control of hazardous energy – Lockout and other methods. Task and Hazard identification 20. “6.1.1 However, where hazards cannot be eliminated or totally controlled, an assessment of residual risk should be conducted...”

- A workforce:
 - that feels empowered to speak up when safe practices are not being followed or physical controls are inadequate; and
 - that participates in the investigation of failures related to energy isolation and LOTO practices with learnings shared across the organization.
- Leaders and supervisors who:
 - seek to exceed the minimum regulatory expectations;
 - are committed to identifying, understanding, and ensuring the adequate control of hazards; and
 - participate alongside their workforce and utilize staff expertise to inform hazard identification, risk management, and event reviews.

For more examples of what a positive safety culture looks like, please visit the [Safety Culture](#) page on the CER website.

Companies may wish to consult the references used in this Safety Advisory for assistance during their review and revision of energy isolation processes and procedures.

Further information

To view all Safety Advisories published by the CER please visit the [Information and Safety Advisories](#) page under [Industry Performance](#) on the CER website.

If you have any questions regarding this advisory, please contact the CER through the CER's toll-free number at 1-800-899-1265 or via email at cers&dp@cer-rec.gc.ca.

Resources

Advancing Safety in the Oil and Gas Industry: Statement on Safety Culture (2021). <https://www.cer-rec.gc.ca/sftnvrnmnt/sftycltr/sttmntsftcltr/index-eng.html>

Canadian Centre for Occupational Health and Safety (CCOHS). (3 January 2018). *Lockout/Tag out*. <https://www.ccohs.ca/oshanswers/hsprograms/lockout.html>

CSA Group. (n.d.). *CSA Z460:20 Control of hazardous energy – Lockout and other methods*

CSA Group. (n.d.). *CSA Z662 Oil and gas pipeline systems*

Government of Canada. (09, September 2020). *Canadian Energy Regulator Onshore Pipeline*. <https://laws-lois.justice.gc.ca/eng/regulations/SOR-99-294/index.html>

Government of Canada. (25, June 2019). *Canada Occupational Health and Safety Regulations s. 8.12 Isolation of Electrical Equipment*. <https://laws.justice.gc.ca/eng/regulations/sor-86-304/page-17.html#h-893920>

International Association of Oil & Gas Producers. (n.d.). *Life Saving Rules* <https://www.iogp.org/life-savingrules/>