

Emergency Response Preparedness in the Energy Industry

The Energy Resources Conservation Board (ERCB) has a stringent regulatory framework that is governed by principles aimed at protecting the public and environment from harm through responsible petroleum operations. This EnerFAQs outlines how the ERCB ensures that oil and gas companies meet requirements that provide this protection through emergency planning, preparedness, and response.

What is emergency planning, preparedness, and response?

Emergency planning, preparedness, and response is a comprehensive system of managing an incident, should one occur. The activities in this system are grouped into categories that usually include mitigation, preparedness, response, and recovery. The major components are

- planning and preparedness, which includes an emergency response plan (ERP)—a regularly updated document that records critical information and emergency response procedures necessary in the event of an emergency—and training and exercises;
- response activities, which focus on addressing an incident already under way and can include such measures as notifying the public, evacuating residents, and well-control activities.

Many response measures are detailed in ERPs and are coordinated with government agencies, such as the ERCB, the RCMP, Alberta Environment, and local authorities.

Does the ERCB ensure that companies can respond to emergencies?

Yes. *Directive 071: Emergency Preparedness and Response Requirements for the Petroleum Industry* is the ERCB document that directs licensees to have an appropriate level of emergency preparedness measures in place. It defines

- when ERPs are needed,
- ERP content and maintenance schedules,
- public and government agency involvement,
- consultation and notification requirements,
- frequency of ERP exercises, and
- direction on calculating response zones.

What is an incident and how is it classified?

An “incident” is an unexpected event that requires action by the company to prevent or minimize the impact on people, property, and the environment. The ERCB classifies incidents as an Alert or as a Level 1, 2, or 3 Emergency. Minor incidents that can be handled on site through normal operating procedures are typically defined as Alerts, while situations that require more complex solutions are classified as Emergencies. During an incident, prompt

coordination of emergency responders and resources is required to protect the health, safety, and welfare of people and to limit damage to property.

The following are examples of incidents:

- any sour gas release
- major oil spills and spills that are a threat to the public, property, or the environment or that affect water
- major sweet gas releases
- fires

What is an emergency planning zone?

An emergency planning zone (EPZ) is the area surrounding a well, pipeline, or facility that requires specific emergency response planning by the operator. The EPZ is the area where response measures are initially focused during an incident. Depending on the nature of the incident, this zone may be modified. The EPZ may be irregular in shape to account for features such as water bodies and egress issues that could complicate emergency response.

How is an EPZ calculated?

All companies must use ERCBH2S, a software modelling program developed by the ERCB to calculate the size of an EPZ. Companies must calculate an EPZ for any well or pipeline that has a hydrogen sulphide (H₂S) concentration of 0.1 moles per kilomole (the equivalent of 100 parts per million, or 0.01 per cent) or greater.

ERCBH2S takes into account site-specific information such as the H₂S concentration, well release rates, and pipeline operating data in the calculation. ERCBH2S has many components that use worst-case scenarios to calculate appropriate highly conservative planning zone distances. ERCBH2S is an effective planning tool because it can easily be applied province-wide. Nevertheless, licensees are required to consider features, such as roads and river valleys, that could impact emergency response when setting actual EPZs.

Why do EPZ sizes sometimes change?

EPZs can change as a result of new wells or pipelines being added to a gathering system, changes to operating parameters on existing pipelines, changes in well-release rates, and changes in H₂S concentrations. ERCBH2S enables licensees to investigate how changing operating conditions or procedures can impact the EPZ of an entire gathering system. Licensees are required to evaluate their EPZs every year to make appropriate changes when required. Whenever EPZ sizes change, licensees are required to consult residents within the expanded portion of the EPZ.

What other types of zones are there?

The ERCB stipulates two additional zones that licensees must be aware of:

- The initial isolation zone (IIZ) is found within the EPZ and represents an area in close proximity to a release where the public may be at most risk. People living within or adjacent to the IIZ are seen as a priority and will be notified and evacuated immediately in case of an incident.

- The protective action zone (PAZ) is also found within the EPZ and represents an area immediately downwind of a release where public protection measures may be required. The PAZ is determined at the time of the release and is used to prioritize response efforts. People within the PAZ will be notified to shelter or evacuate.

For more information, please see [Directive 071](#).

Why is an ERP necessary?

An ERP defines the actions a company must take during an emergency. In addition, it details the emergency response resources available to the company, outlines roles and responsibilities of all responders, and describes how the company will work with various government agencies during an incident. The ERCB holds licensees responsible for responses to incidents. A response may include assistance from a number of other sources, such as government agencies or other licensees operating in the region.

In Alberta, each company licensed by the ERCB must, as a minimum, have a corporate-level ERP to cover all of its operations in the province. In certain circumstances, as detailed in [Directive 071](#), ERPs specific to an operation must be developed and submitted to the ERCB for review. These ERPs contain details relevant to the specific operations and area in which the operations are conducted, and they must be approved prior to commencement of operations.

How am I protected if an emergency occurs?

There are several ways the ERCB ensures that your safety is protected. First, the ERCB has many regulations designed to prevent incidents from occurring. If an incident does occur, protection measures include notifying people in the EPZ, sheltering in place, evacuation of the EPZ, and ignition of the release. The actions taken during an emergency depend on several factors, including the type of oil and gas operation, current weather conditions, and proximity to residents. In general, the following steps occur if there is an incident:

- The licensee initiates its ERP, and the severity of the incident is determined in consultation with the ERCB.
- Communication with area residents is initiated as outlined in the ERP. The company or its representative telephone area residents to inform them of the emergency and direct the residents to either shelter in place or evacuate.
- If residents are asked to evacuate, they receive instructions on the evacuation route to the designated reception (evacuation) centre, which is located outside the EPZ. All residents should report to the reception centre, where they are provided with details of the emergency.
- The company contacts other government agencies as required to assist with the emergency response.
- Once the incident is brought under control, the emergency is downgraded and any evacuees can return home.

How am I protected during an emergency?

The two main public protection measures are sheltering in place and evacuation.

Sheltering in place limits exposure to H₂S and provides time for properly equipped emergency responders to arrive or for the hazard to disperse. Sheltering indoors also allows responders know the whereabouts of residents within an EPZ.

Sheltering in place is preferred when

- there is insufficient time or warning to safely evacuate the public,
- residents are waiting for evacuation assistance,
- the hazard released is of limited size and/or duration,
- the location of a release has not been identified, or
- the public would be at greater risk if evacuated.

Evacuation is necessary when serious long-term impacts on public health and safety are possible. Nonresidents, or “transients,” such as those working in the EPZ or just passing through, are located by “rovers,” who use on-road and off-road vehicles to patrol the area. Sometimes an aircraft is used to search wilderness areas or other difficult terrain.

For more information, please see *Emergency Response Planning: Shelter-In-Place Instructions*, which can be found on the Canadian Association of Petroleum Producers Web site at www.capp.ca.

Why is ignition of a sour well release important?

Ignition removes H₂S from an incident location, which reduces the hazard. Ignition of gas is an effective method of preventing exposure to H₂S during a release. The combustion converts H₂S into sulphur dioxide, which lowers concentrations at ground level, making it safer for the public. A licensee must be prepared to ignite a sour gas release at the earliest signs of a well control problem, and a company representative with the authority to ignite the well must be on site at all times during drilling operations. If a company is unwilling to ignite a release, the ERCB has the authority to order ignition. If ignition occurs, the company must continue to conduct air monitoring and evacuate or shelter residents as required.

How does a company involve the public in ERPs?

A company must directly consult with all people residing within an EPZ when it creates the ERP. The company must provide an information package to residents and seek their input. As a result of this process, an EPZ may be modified. The public must be given enough information to understand a proposed or existing operation, the impact a potential emergency may have on them, the procedures in place to respond to an emergency, and public protection measures. ERPs are primarily designed to address potential public safety concerns, although concerns about pets or livestock may be discussed with the company at this time. Residents are not obligated to provide any personal information to the company; licensees may only gather information that is directly relevant to emergency response. People who do not wish to

provide information are automatically considered as having “special needs” and incorporated into the ERP as such.

An application cannot proceed until the consultation process is complete. Once a well or pipeline begins operations, the ERCB requires that ERPs be regularly maintained. Public involvement must continue throughout the life of a project to ensure that ERPs are current and residents are notified about ongoing operations.

How are EPZs and setbacks related?

EPZs are not directly related to setbacks. A setback is the minimum distance allowed between a surface development (a house, school, church, etc.) and a well or pipeline. Setback distances limit population densities in proximity to wells and pipelines. Surface developments such as residences and schools are allowed within an EPZ but NOT within the prescribed minimum setback for various development types.

For more information on setbacks, see [EnerFAQs 5: Explaining ERCB Setbacks](#).

What if I own land in an EPZ but I am not a resident?

A person who owns land within an EPZ but resides elsewhere is defined as a nonresident landowner. The ERCB does not require companies to contact nonresident landowners unless their land falls within the setback of the well or pipeline.

Nonresidents may be landowners, members of the public passing through an area, or recreational users. These area users are referred to as “transients” in an ERP who must be located and evacuated during an emergency. Companies most often use rovers and helicopters to search for transients. If there is frequent or well-known transient activity in an area, such as by snowmobiling or hiking clubs, companies should communicate with these groups when preparing their ERPs.

How does the ERCB ensure that ERPs work?

The ERCB requires licensees test their ERPs regularly. This can be done through major exercises or tabletop exercises. Major exercises are larger in scale and are practice runs of real emergency response, whereas tabletop exercises test communication between key responders. The ERCB, local authorities, regional health officials, and other agencies must be invited to observe or participate in major exercises.

In addition, certain activities, such as drilling into a sour zone, are prohibited until all relevant emergency responders, including the ERCB, meet to review the ERP.

The ERCB uses the Emergency Response Assessment program, an audit process that involves interviews with the licensee’s key responders and field verification of the ERP. This program assesses the knowledge that key emergency responders have about the ERP and tests the overall capability of the licensee to implement it. Through this process, the ERCB can identify deficiencies and ensure that they are addressed.

What happens if a company is incapable of implementing its ERP?

The ERCB and provincial and local authorities are mandated to respond to incidents. In situations where a licensee is unable or unwilling to take the necessary actions during an incident, the ERCB has the authority and expertise to do so.

If a company is incapable of implementing the ERP, the ERCB can deny a licence application, shut in wells or pipelines, or suspend licences until the company demonstrates that it is capable of implementing the ERP. The ERCB may require the company to immediately train its staff. The company also may have to redo its exercise or be reassessed.

Why are some ERPs still developed using older requirements?

On April 8, 2008, the ERCB released the ERCBH2S model as the new standard for EPZ calculation for wells and pipelines in Alberta. At that time, the ERCB realized that making the transition from old EPZ sizes to new ones calculated by ERCBH2S would be a large and time-consuming project. Therefore, existing wells and pipelines were granted a temporary exemption from using ERCBH2S to recalculate their EPZs. ERCBH2S requires much more information to accurately predict an EPZ than the old method did; therefore, companies must spend more time and effort gathering the data and recalculating their EPZs.

Why am I now in an EPZ when I wasn't before? Why am I no longer in an EPZ when I had been for years?

The changes the ERCB has made to requirements for calculating EPZs have resulted in changes to EPZ sizes throughout the province. ERCBH2S is a new program used to calculate EPZ sizes that has been developed over several years using cutting-edge technology. This program replaces a system of EPZ calculation that was developed about 30 years ago. Factors such as meteorology and operating conditions are now taken into account, which makes for more accurate EPZ calculations. Because we can now better predict how far an H₂S plume will travel, we have found that EPZ sizes predicted by ERCBH2S differ from the EPZ sizes calculated using the old method. It is important to note that nothing has changed operationally; all wells and pipelines in your area operate the way they always have. Industry is now better able to predict what would happen in the event of a release. In some cases, the predicted EPZ is smaller than before, while in other cases it has expanded. Because of this, you may now find yourself residing in an EPZ when you were not before. Conversely, you may no longer fall within an EPZ, even though you did before.

All ERCB requirements are in place to protect the public. The change in requirements does not mean that residents are more or less safe than before. The updated EPZ sizes allow companies to better prioritize their response to an emergency and focus their resources on those residents who may be at greater risk. This change also ensures that residents are given the most accurate information possible.

I still have questions. Is there someone I can talk to?

A help line staffed by ERCB Emergency Planning and Assessment staff is available to all Alberta residents who have questions regarding emergency response. To contact us, call 403-297-2625 or send an e-mail to EPAssessment@ercb.ca.

Additional Information

For additional information on the ERCB or its processes or if you have general questions about oil and gas in the province of Alberta, contact the ERCB's Customer Contact Centre: Monday to Friday (8:00 a.m. - 4:30 p.m.) at 1-855-297-8311 (toll free) or 403-297-8311.

This EnerFAQs is one in a series.

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- [No. 3: Inspections and Enforcement of Energy Developments in Alberta](#)
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- [No. 7: Proposed Oil and Gas Development: A Landowner's Guide](#)
- [No. 8: Coalbed Methane](#)
- [No. 9: The ERCB and You: Agreements, Commitments, and Conditions](#)
- [No. 10: Public Health and Safety: Roles and Responsibilities of Agencies That Regulate Upstream Oil and Gas](#)
- [No. 11: All About Appropriate Dispute Resolution \(ADR\)](#)
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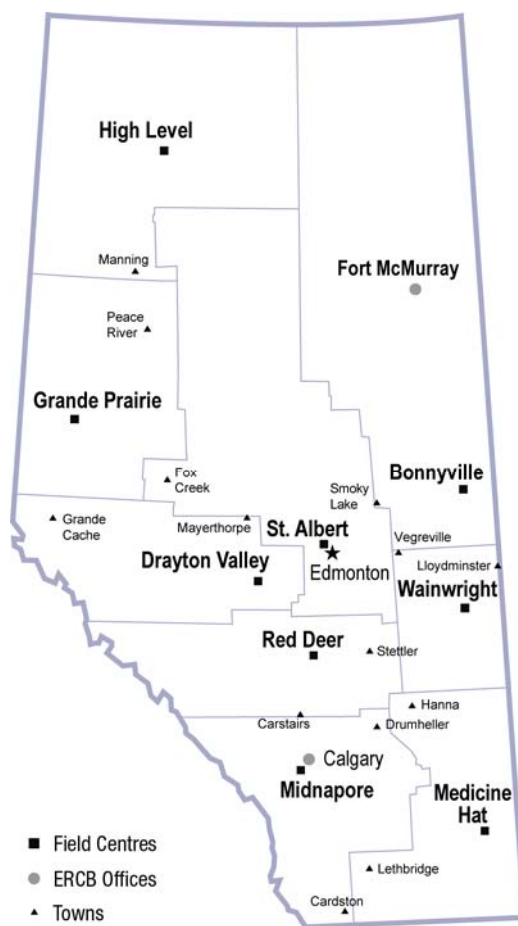
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Publications may either be viewed at the ERCB library or obtained from Information Services. Both are housed on the main floor of the ERCB head office in Calgary. Publications may also be downloaded free of charge from the ERCB Web site www.ercb.ca.

To obtain a print or CD copy of a specific publication, contact ERCB Information Services (telephone: 403-297-8190; fax: 403-297-7040; or e-mail: infoservices@ercb.ca).

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