

# Directive 071

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## Emergency Preparedness and Response

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## 1 Introduction

### 1.1 Purpose of This Directive

This directive sets out the requirements for **emergency** preparedness and response for sites regulated under the *Oil and Gas Conservation Act*, *Pipeline Act*, *Oil Sands Conservation Act*, and *Geothermal Resource Development Act*. It is intended for duty holders and those developing, implementing, and maintaining the duty holders' emergency preparedness and response program, which includes the following components:

- **hazard** identification and consequence analysis
- involvement of the **public** and **appropriate authority** in emergency preparedness and response
- **emergency response plan** (ERP) preparation and contents
- public protection measures
- responder competency and training
- emergency response exercises
- incident response
- learning from incidents and continuous improvement

[Manual 026: Emergency Preparedness and Response Guidance](#) provides information beneficial to the duty holder to develop, implement, and maintain emergency preparedness and response programs.

See the directive [landing page](#) for information on *Directive 071* forms.

Some terms are defined in text; other defined terms are set in **boldface** at first use, and the definitions are provided in appendix 1.

### 1.2 AER Requirements

Following AER requirements is mandatory for the responsible duty holder as specified in legislation (e.g., licensee, operator, company, applicant, approval holder, or permit holder).

In this directive, the term “must” indicates a requirement, while terms such as “should,” “recommends,” and “expects” indicate a recommended practice.

Each AER requirement that is unique to this directive is numbered.

Information on compliance and enforcement can be found on the AER website.

### 1.3 What's New in This Edition

The following changes have been made to this directive:

- Duplicate requirements and requirements that are no longer needed have been removed, including removing the First Call Communication form.
- The directive scope has been modified to include operations regulated under the [Geothermal Resource Development Act](#).
- Content relating to emergency preparedness and response guidance was removed from the directive and placed in *Manual 026*.
- The ERP application form has been moved from the directive to the directive [landing page](#).
- The directive has been restructured to improve its organization.

## 2 Emergency Management Overview

The AER has a rigorous regulatory framework aimed at protecting public safety and minimizing the effects on the environment through safe and responsible energy and resource development. The AER's regulatory instruments embody this aim and support the phases of the emergency management cycle: prevention and mitigation, preparedness, response, and recovery. *Directive 071* supports emergency preparedness and response by ensuring the following:

- Appropriate ERPs are in place to respond to **incidents** that present significant consequences to public safety and the environment.
- An adequate level of preparedness exists to implement ERPs, including sufficient numbers of suitably trained personnel and equipment to carry out an effective response during an emergency.

The AER recommends the duty holder use the most recent edition of the CSA Group standard *CSA-Z246.2: Emergency Preparedness and Response for Petroleum and Natural Gas Industry Systems* in conjunction with *Directive 071* to develop emergency preparedness and response programs.

### 2.1 Emergency Preparedness and Response

Emergency preparedness involves being ready to respond to an incident and having the capability to manage the consequences. The ERP is a comprehensive plan to protect the public and the environment and is a critical component of the duty holder's emergency preparedness and response program. It includes criteria for assessing an emergency and procedures for mobilizing response personnel and agencies and establishing communication and coordination among the parties.

Other important aspects of emergency preparedness and response include

- developing working relationships with other emergency responders,
- promoting public safety awareness, and
- developing emergency response capabilities.

## 2.2 Duty Holder Responsibility

Duty holders are responsible for ensuring they are fully prepared and capable of responding to any incident level quickly and appropriately. Emergency preparedness and response includes the activities occurring before and during an emergency, including

- identifying hazards and analyzing consequences,
- preparing and maintaining ERPs and response procedures,
- ensuring that the ERPs identify sufficient resources and equipment for use by response personnel during an emergency, and
- designating response personnel and ensuring they are suitably equipped and able to conduct their duties through training, drills, and exercises.

## 3 Hazard Identification and Consequence Analysis

Hazards are potential sources of harm to people, the environment, or property. Identifying hazards that could result in the activation of emergency response procedures and analyzing their effects (consequences) is necessary for establishing appropriate emergency preparedness and response strategies and procedures.

The AER recognizes **sour gas** is the predominant public safety hazard associated with AER-regulated sites. However, through its various regulatory instruments, the AER requires duty holders to be prepared to respond to emergencies for hazards requiring emergency preparedness to protect public safety and reduce the effects on the environment.

*Manual 026* provides guidance on identifying hazards, analyzing consequences, and determining the **emergency planning zone** (EPZ).

### 3.1 Emergency Planning Zone

An EPZ is a geographic area around wells, pipelines, or facilities where the presence of hazardous substances requires specific emergency preparedness by the duty holder. The EPZ is used for emergency preparedness planning and does not necessarily define the response area, nor is it assumed to be a dividing line between the duty holder's response and that provided by other emergency responders.

- 1) The duty holder must ensure that the size and shape of the EPZ reflect
  - a) information gathered during the public involvement program (see section 4) and
  - b) population density, topography, access and egress routes, and other features that may affect timely emergency response.

The hazard location is the reference point for EPZ distance measurements, as indicated in the following examples:

- The EPZ for a well is measured from the wellhead.
  - The EPZ for a pipeline is measured from the centreline of the pipeline.
  - The EPZ for a storage tank is measured from the centre of the storage tank.
  - The EPZ for a **facility** handling or processing sour fluids is the largest EPZ of any pipeline entering or leaving the facility measured outward in all directions from the facility lease boundary. However, if the facility has a sour gas well, sour water disposal well, or acid gas disposal well on site, the EPZ for the well may determine the size of the facility EPZ.
- 2) Before filing an ERP, the duty holder must use the [ERCBH2S model](#) to calculate the size of the EPZ for operations with a **hydrogen sulphide** (H<sub>2</sub>S) concentration of 0.1 moles per kilomole (mol/kmol) or more.
  - 3) The duty holder must upload a copy of the comma-separated values (CSV) batch export file from ERCBH2S to the Digital Data Submission (DDS) system in support of the ERP application.
  - 4) The duty holder must calculate the size of the EPZ for operations with high-vapour-pressure (HVP) products.
  - 5) During any operation involving H<sub>2</sub>S or HVP products, the duty holder must ensure on-site supervisory personnel are aware of the size of the EPZ.

### 3.2 Overlapping Emergency Planning Zones

Where two or more wells are close to one another such that their EPZs overlap, duty holders conducting sour drilling or completion operations, wellhead-off **workovers**, or **well servicing** operations in any formation containing H<sub>2</sub>S that is open to the wellbore are expected to

- jointly confirm whether the EPZs overlap and if sour operations are scheduled to occur simultaneously,
- review and modify ERPs as required (e.g., communication protocol changes),
- advise the appropriate AER field centre before conducting sour operations, and

- establish, maintain, and document communication among the duty holders.

Duty holders may ask the AER for a revised EPZ based on a technical evaluation of the potential release rate. The technical evaluation should consider sour zones isolated behind casing and a valid analysis of the H<sub>2</sub>S concentration from the zones open to the surface.

During drilling operations for **critical sour wells** with overlapping EPZs, once the first well penetrates about one metre into the critical sour zone porosity top, the second well may proceed to penetrate the critical zone, which could be a standalone zone or a combination of zones that makes the well a critical sour well.

### 3.3 Emergency Response Zones

There are two zones in which a duty holder's emergency response resources will be focused during an emergency: the **initial isolation zone (IIZ)** and the **protective action zone (PAZ)**. Collectively referred to as **response zones**.

The police may establish a different type and size of response zone.

#### 3.3.1 Initial Isolation Zone

The IIZ is the area near a continuous hazardous release where indoor sheltering may provide temporary protection due to the proximity of the release.

- 6) If safe to do so, the duty holder must attempt to evacuate the **residents** from the IIZ.

#### 3.3.2 Protective Action Zone

The PAZ is the area downwind of a hazardous release where outdoor pollutant concentrations may result in life-threatening or seriously irreversible health effects on the public.

Immediately following a release of H<sub>2</sub>S or HVP products, the approximate size and shape of the PAZ can be determined using the conditions at the time of the incident (see figure 1). Once monitoring equipment is deployed, the actual size and shape of the PAZ can be established based on the monitored conditions. The size and shape of the PAZ may change over time based on monitored conditions.



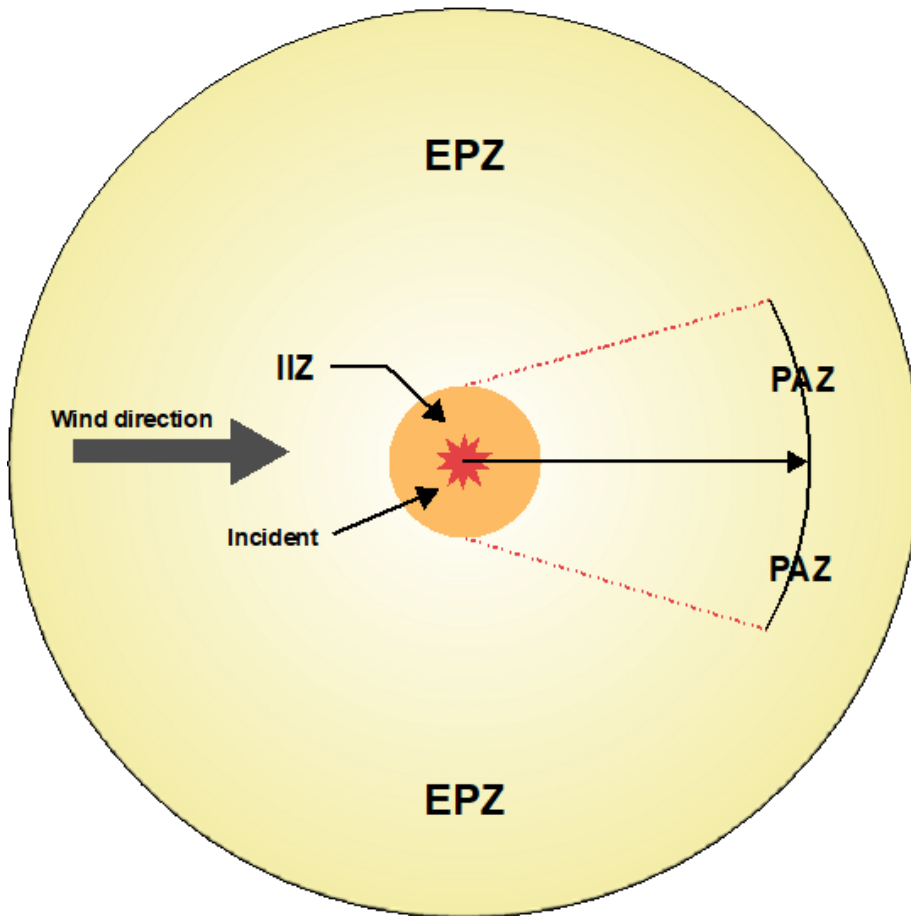


Figure 1. Example IIZ, PAZ, and EPZ

#### 4 Public and Appropriate Authority Involvement

##### 4.1 Notification and Consultation

- 7) The duty holder must notify and consult with the public and appropriate authority in the situations identified in table 1.
- 8) If changes to the ERP are necessary because of public consultation, the duty holder must inform and discuss the changes with the appropriate authority.

**Table 1. When to notify and consult with the public and appropriate authority**

<b>Situation</b>	<b>Notification and consultation actions</b>
Developing an ERP requiring AER approval	<p>Notify and consult with the public within the EPZ before submitting an application to the AER for approval.</p> <p>Consult with the appropriate authority and others listed in section 4.2 to confirm and coordinate each party's roles and responsibilities.</p>
Change in EPZ size	<p>Notification and consultation are required if an existing EPZ increases or decreases in size based on the following:</p> <ul style="list-style-type: none"> <li>• New EPZ is smaller than the current EPZ. Notify residents no longer within the EPZ and the appropriate authority of the change.</li> <li>• New EPZ is larger than the current EPZ. Notify and consult residents within the expanded portion of the EPZ of the change in accordance with section 4.3 and inform the appropriate authority.</li> </ul>
Before drilling the first sour zone and before nonconsecutive completion operations on a <b>sour well</b>	<p>Notify the public within the EPZ at least 24 hours before drilling the first sour zone for all sour well drilling operations and before nonconsecutive completion operations on a sour well to provide sufficient time for those who wish to leave before the start of operations.</p>
Cancellation of ERP	<p>Notify the public within the EPZ and appropriate authority that the ERP has been cancelled.</p>
Delayed completion operations	<p>Notify and consult with the public within the EPZ before conducting completion operations not performed within six months from the end of drilling operations.</p>
End of drilling or completion operations	<p>Notify the appropriate authority holding copies of the ERP, residents listed in the ERP, and the AER at the end of drilling or completion operations and advise them of the status of the plan.</p>
Modifications to an existing facility	<p>Notify and consult with the public within the EPZ and appropriate authority if modifications to existing facilities result in a size change to the EPZ or changes to facility procedures.</p>
Public awareness program	<p>Consult every two years with the public within the EPZ for a sour operation, <b>HVP pipeline</b>, or cavern storage facility using <b>consultative processes</b> to promote continued awareness of emergency response procedures and to address any concerns.</p>
Temporary surface pipeline	<p>Notify and consult with the public within the temporary surface pipeline EPZ.</p>
Transfer of ownership	<p>Notify the public and appropriate authority within the EPZ after finalizing a sales agreement but before the transfer from one duty holder to another of wells, facilities, and pipelines requiring an ERP.</p>
Workovers with the wellhead removed	<p>Notify those individuals who have indicated during the public involvement program that they wish to leave before the start of operations.</p>

## 4.2 Preparing for the Public Involvement Program

- 9) The duty holder must identify all residents and appropriate authority within the EPZ plus those within 25 metres (m) outward of the EPZ boundary.
- 10) If an EPZ intersects an **urban density development**, the duty holder must include the entire development within the EPZ to conduct the public involvement program.

- 11) If an EPZ intersects an **urban centre**, the duty holder is not required to identify each **residence** within the urban centre when conducting the public involvement program. However, contact must be made with the appropriate emergency management organizations to review key incident response information and confirm and coordinate each party’s roles and responsibilities.
- 12) Before starting the public involvement program, the duty holder must confirm and coordinate roles and responsibilities in accordance with the protocols established with the appropriate authority.
- 13) The duty holder must attempt to reach a mutual understanding with the appropriate authority on each party’s specific needs, roles, and responsibilities during an emergency and include a summary of the mutual understanding in the ERP.

The AER strongly encourages the duty holder to support and work with local **synergy groups** established in various areas throughout Alberta.

#### 4.3 Conducting the Public Involvement Program

- 14) The duty holder must either notify or notify and consult the public as indicated in table 2.

**Table 2. Who to notify or notify and consult within the EPZ**

Notify only	Notify and consult
Nonresident landowners and farmers renting land who do not reside on the property but whose lands are within the setback distance as outlined in <a href="#">Directive 056: Energy Development Applications and Schedules</a> . These persons must be considered in the development of the ERP and advised that their property lies within an EPZ through an information package sent by a trackable method (e.g., registered mail).	Permanent and part-time residents, including those residing on dead-end roads outside the EPZ but that egress through the EPZ.
Registered trappers, guides, outfitters, and registered grazing lease and allotment users.	Business owners and operators, including oil and gas operators with manned facilities.
Oil and gas operators with unmanned facilities (e.g., wells).	Private and public recreational property owners, operators, and occupants.
Nonresident owners of rented residences whose properties are within the EPZ. Notice is provided in the information package sent by a trackable method (e.g., registered mail).	Rural public facilities and <b>publicly used developments</b> , such as schools, community centres, registered campgrounds, and picnic areas.

- 15) The duty holder must take the following actions:
  - a) Conduct in-person consultation with all requisite individuals listed in table 2.
  - b) Offer to conduct the consultation by telephone if residents do not wish to meet in person.
  - c) Offer residents a public information package sent by a trackable method (e.g., registered mail) if they do not wish to directly participate in the consultation process; regular mail is acceptable if the resident agrees.
  - d) Review key incident response information with the public identified in the EPZ who wish to participate in the consultation process to familiarize them with potential emergencies and corresponding **public protection measures** for emergency response procedures. The duty holder's representative is expected to have the necessary knowledge to provide details of the emergency response procedures and address any questions and concerns.
  - e) Address any request for additional information or modifications of the ERP by the individual consulted.
- 16) The duty holder must notify residents of urban centres that they are within the EPZ and provide details of the public protection measures available in the event of an emergency.

Notification may be through a combination of notification methods, such as mailouts, open houses, and newspaper advertisements.

- 17) The duty holder must attempt to contact the persons listed in table 2 to arrange a suitable meeting place and time to address any questions and concerns regarding the ERP or provide a public information package sent by a trackable method (e.g., registered mail) with an offer to meet. It is the duty holder's responsibility to show they made reasonable efforts to meet.

When conducting the public involvement program, the AER recognizes that the duty holder may sometimes have difficulty establishing contact or meeting in person with

- residents who may be away for extended periods, have “no trespassing” signs posted on their property, or have unlisted telephone numbers; and
  - nonresidents, such as registered trappers, industrial operators, and recreational property owners, operators, and occupants.
- 18) If the duty holder is unable to contact these people, or if they are unwilling to provide emergency contact information, the duty holder is to account for them in the ERP.

#### 4.4 Public Information Package

The public information package is not required with the ERP submission. However, the AER may request the duty holder to provide it at any time (e.g., a hearing or audit).

- 19) The duty holder must
  - a) develop a public information package for distribution during the public involvement program and
  - b) provide all persons identified in table 2 with a copy of the public information package.
- 20) The duty holder must include the following in the public information package:
  - a) a brief overview of the operations
  - b) a map of the operations in the area
  - c) identification of the potential hazards associated with the wells, facilities, or pipelines
  - d) range of release rates, release volumes, H<sub>2</sub>S concentrations (if applicable), and EPZ determinations for all wells, pipelines, and facilities
  - e) a description of potential health effects that could result from exposure to H<sub>2</sub>S (see appendix 2) HVP product, or **sulphur dioxide** (SO<sub>2</sub>) if applicable (refer to documents such as the Alberta Health Services publication, *Alberta Health Acute Exposure Health Effects of Hydrogen Sulphide and Sulphur Dioxide*, PUB-0766-201206)
  - f) a 24-hour emergency contact telephone number for the duty holder, the AER's 24-hour Energy and Environmental Emergency and Operational Complaint Line number 1-800-222-6514, and telephone numbers for **local authority** contacts
  - g) procedures in place to respond to an emergency
  - h) information on special emergency procedures unique to the community, such as those used by hospitals and schools, which could affect emergency response
  - i) information on public protection measures for **evacuation** and **shelter in place**
  - j) applicable information for managing potential ignition sources during an HVP release
- 21) Before starting the public involvement program, the duty holder must provide a copy of the public information package to the local AER field centre so that AER staff can respond to questions and concerns from area residents.

#### 4.5 Information Required From the Public Involvement Program

- 22) The duty holder must attempt to obtain the following information for inclusion in the ERP:
- a) the exact location of the residence, place of business, or **public facility**, including egress route issues (legal description or address)
  - b) name of key contact and a 24-hour contact telephone number (home, business, cell phone, or other) and an alternate contact if possible
  - c) names of all family members in the residence
  - d) number of residents, specifying adults and children
  - e) names of those with **special needs** or specific requirements—the duty holder representative is expected to inform members of the public that they can be considered to have special needs and require early notification or evacuation without having to divulge personal health issues
  - f) any other information deemed necessary to allow for effective emergency response procedures to be developed
- 23) The duty holder must consider any resident unwilling to provide personal information as having special needs.

### 5 Preparation of Emergency Response Plans

Two types of ERPs may be used: an AER-approved ERP and a **corporate ERP**.

The duty holder will determine the type and amount of information in the ERP based on the potential hazards identified by the duty holder.

- 24) The duty holder must have an ERP with procedures that will aid in effective response to an emergency originating from its operations.
- 25) The duty holder must develop ERPs at a level of detail proportionate to its operations and address hazards and potential consequences of the emergency scenarios that its operations pose to the public and the environment.

See section 5.3 for the requirements for keeping ERPs up to date.

## 5.1 AER-Approved Emergency Response Plan

- 26) The duty holder must submit an ERP and the ERP Application form to the AER using the DDS system for approval if any of the following conditions apply:
- a) The EPZ includes **surface developments** or egress routes through the EPZ for residents of nearby residences.
  - b) The operation includes critical sour wells.
  - c) The operation includes a cavern storage facility storing HVP products.
- 27) For sour wells, until a hard copy or electronic copy of all applicable ERPs and the AER approval letter are available on site for the duration of the operations, the duty holder must not:
- a) spud the well, drill out the surface casing, remove any component of an existing wellhead;
  - b) conduct testing; or
  - c) perform workovers, completions, or well servicing.
- 28) Where an AER-approved ERP is required, the duty holder must ensure it is approved before starting operations.

Appendix 3 provides examples of when an ERP requires AER approval.

- 29) If the AER determines a hearing will be conducted to consider an application, the duty holder must provide its relevant ERP to the AER for review. Once the AER has determined that the duty holder's ERP is **technically complete**, a notice of hearing may be issued.

### 5.1.1 Supplements to an AER-Approved ERP

An ERP is not required for reapproval if supplements for new operations are added to an existing AER-approved ERP where the EPZ size remains unchanged or where no surface developments are present within the expanded portion of the EPZ.

A supplement to an AER-approved ERP may be required when wells or operations are added, such as

- new well or pipeline tie-ins or facilities,
- new operating areas,
- significant changes to the EPZ or new residences within the EPZ,
- drilling or completion operations, and
- sour well workovers, well servicing, and testing.

The examples in appendix 3 also apply to ERP supplements requiring AER approval.

- 30) Where a supplement to an AER-approved ERP requires AER approval, the duty holder must submit the supplement to the AER for approval via the DDS system before starting operations unless the added wells or operations are currently operating.
- 31) Where a supplement to an AER-approved ERP requires AER approval, the duty holder must
  - a) conduct a public involvement program for all surface developments within the proposed well's EPZ when the supplement is for drilling and completions for sour wells and,
  - b) for all other activities, conduct a public involvement program for all new surface developments in the portion of the EPZ extending beyond the existing EPZ boundary.

#### 5.1.2 Multiwell Programs

ERPs may be developed and submitted for multiwell programs if they include site-specific information for each well. The duty holder may develop common procedures and response infrastructure for the entire program as long the ERP remains current throughout the project and is maintained in accordance with this directive.

#### 5.1.3 Temporary Surface Pipelines

A duty holder may include a temporary surface pipeline in its ERP for sour well site-specific drilling or completion, provided that the pipeline EPZ is within the well EPZ.

- 32) The duty holder must develop and submit a separate ERP for approval where the temporary surface pipeline EPZ extends beyond the well EPZ boundary and includes surface developments.

#### 5.1.4 Sour Underbalanced Drilling

The duty holder may conduct underbalanced drilling operations before entering a sour zone with surface developments within the EPZ.

Before conducting underbalanced drilling operations, the duty holder is expected to

- file the sour well ERP as a nonroutine application in accordance with [Directive 056](#) and
- submit a letter to the AER providing the start and end dates for the underbalanced drilling operation and confirmation that no sour formation will be encountered while drilling underbalanced.

The AER will consider licensing sour underbalanced drilling operations if the public were to be relocated from the EPZ before the start of drilling operations.



## 5.2 Corporate Emergency Response Plans

Not every operation requires an AER-approved ERP. When an AER-approved ERP is not required, the duty holder may use its corporate ERP to manage incidents. Although corporate ERPs do not require AER approval, they are subject to AER review and audit.

- 33) The duty holder must develop and maintain its corporate ERP, which must include the common components set out in section 6.1.

## 5.3 Emergency Response Plan Management

The purpose of the ERP management process is to ensure ERPs are kept up to date and are provided to plan holders, the parties noted in table 3, and persons who have requested a copy (e.g., residents in the EPZ).

The AER does not approve annual ERP updates but will audit duty holders to verify the accuracy of their ERPs. Out-of-date ERPs that could result in ineffective emergency response will be subject to enforcement action.

- 34) The duty holder must demonstrate that its plan management process will keep its ERPs up to date and include the following activities:
  - a) Reviewing plans annually and updating them with necessary changes to ensure that information remains accurate.
  - b) Contacting residents within the EPZ to update their information.
  - c) Conducting ground truthing to verify changes, such as new residents, businesses, and renters, and verify the ERP maps. The duty holder may use any method for ground truthing.
- 35) The duty holder must conduct a public awareness program (table 1) every two years with residents within the EPZ through consultative processes.
- 36) Regardless of whether residents wish to meet with the duty holder, the duty holder must provide an updated public information package to each residence. The duty holder must
  - a) provide key emergency response information,
  - b) review public protection measures, and
  - c) answer any concerns or questions from residents.

Duty holders may choose to send an updated public information package every year, depending on changes in the area. If a resident does not wish to participate in the public awareness program, the duty holder is expected to note that in its records.

- 37) The duty holder must immediately correct errors in the ERP upon discovery or when reported to them by the AER or other parties.
- 38) The duty holder must notify those persons holding copies of the approved ERPs of the completion of an operation and that the ERP is no longer in effect. Notification includes the AER and all residents within the EPZ who asked to be notified of completion.

### 5.3.1 Distribution of AER-Approved ERPs

Once the AER approves an ERP, including approval of supplements, it becomes a public document subject to disclosure, except for confidential resident and personal information.

- 39) The duty holder must
  - a) distribute copies of approved ERPs to the parties listed in table 3 within ten business days of AER approval unless otherwise requested in writing by a party during the planning process;
  - b) provide a copy of the ERP, excluding confidential resident and personal information, to any resident within the EPZ who requests in writing to have a copy; and
  - c) ensure that all required plan holders have the AER-approved ERPs.

**Table 3. Distribution of AER-approved ERPs**

Entity	Number of copies	Comment
AER	Not applicable	Electronic copy via the DDS system. Only the AER copy should contain confidential resident information but not specific resident health information. Copies to other agencies and individuals must not contain any confidential resident information.
Local authority	1	An ERP is only sent to a town or city if its boundary falls within the EPZ or is nearby (i.e., within one kilometre of the EPZ). If this is not the case, the ERP should be sent to the appropriate municipal district or county.
Health authority	1	Send the ERP to the appropriate health authority, directed to the manager or director of environmental health. Send a copy to Health Canada if a First Nations reserve is within the EPZ.
Occupational Health and Safety	1	Send the ERP to the appropriate occupation health and safety office.
Royal Canadian Mounted Police	1	Consult with the local RCMP detachment to determine if a copy is required.

### 5.3.2 Updates and Amendments to AER-Approved ERPs

- 40) Until the AER-approved ERP is updated to capture the content of the supplement, the duty holder must keep the current AER-approved ERP and the supplements in place.

An update or amendment does not require AER approval. The duty holder may update or amend an existing AER-approved ERP for well or pipeline tie-ins, facilities, and operating areas, if

- the EPZ size is unchanged, or
- there are no surface developments within the area of a new EPZ extending beyond the boundary of the existing EPZ.

## 6 Emergency Response Plan Contents

### 6.1 Common Components

Regardless of whether an ERP is approved by the AER, all ERPs have the following common components:

- the assessment matrix for classifying incidents
- communications plan
- telephone lists
- **mutual aid understandings**
- duty holder's emergency response personnel responsibilities
- incident management procedures
- **reception centre** activation procedures
- equipment list
- ERP distribution list

The components specific to AER-approved ERPs are set out in section 6.2.

#### 6.1.1 Assessment Matrix for Classifying Incidents

The AER has developed an assessment matrix to classify incidents so the duty holder can consistently communicate with the appropriate authority and other industry operators. There are four levels of **incident classification** (in ascending order of risk and severity): **alert**, **level 1**, **level 2**, and **level 3**. For more information, see appendix 4.

- 41) The duty holder must include the AER's incident classification matrix in its ERP.
- 42) The duty holder must define and set out in the ERP the appropriate actions to be taken, including public protection measures, for each incident level.

### 6.1.2 Communications Plan

The development and implementation of an effective communications plan is essential to incident response.

- 43) The duty holder's ERP must include a communications plan that includes
- a) procedures for contacting and maintaining communication with key duty holder personnel, appropriate authorities, support services, emergency social services, the public, the media, and other affected duty holders;
  - b) clearly defined roles and responsibilities to contact the AER and other responders identified in the ERP in an emergency—the AER recommends a communications flowchart be included that identifies responsibilities by role;
  - c) procedures that will be implemented during an incident to contact and maintain communication with persons directly affected to keep them informed of the situation and actions being taken, including plans for communicating the implementation of public protection measures, such as evacuation and sheltering in place for residents within and beyond the EPZ if applicable;
  - d) procedures to inform and update the media and to distribute factual messages to the public in an expeditious manner; and
  - e) procedures to downgrade an incident or stand down an incident.

### 6.1.3 Telephone Lists

- 44) The duty holder's ERP must include the following:
- a) a telephone list of internal incident response personnel and the duty holder's 24-hour emergency phone number
  - b) a telephone list of external emergency support services that might be required during an incident, including government departments and agencies, First Nations and Métis contacts, communication services, air monitoring services, emergency support services, emergency social services, and **spill cooperatives**
  - c) the Energy and Environmental Emergency 24-Hour Response Line phone number (1-800-222-6514)

#### 6.1.4 Mutual Aid Understandings

- 45) The duty holder's ERP must include a summary of any mutual aid understandings with third parties.

The duty holder is encouraged to include copies of mutual aid understandings in the ERP.

- 46) Where duty holders have operations that are tied together (i.e., operations that are physically connected or assets operated by a third party), each duty holder's ERP for those operations must include a bridging statement summary that
- a) outlines the communications between the duty holders during an incident,
  - b) describes any shared emergency response procedures and support, and
  - c) lists all the related ERPs for the operations tied together.

A bridging statement references the AER-approved ERP of another duty holder operating an asset tied together or owning an asset tied together. A bridging statement also applies in cases where assets are transferred from one duty holder to another (i.e., temporarily until the duty holder can integrate the transferred assets into their ERP). A bridging statement may contain

- the terms of the agreement between the duty holders,
- emergency contacts,
- a 24-hr emergency number for each duty holder, and
- the communication and response protocol.

The AER strongly encourages the duty holder to support and work with local mutual aid groups in areas throughout Alberta.

#### 6.1.5 Duty Holder's Emergency Response Personnel Responsibilities

- 47) The duty holder's ERP must identify the roles and responsibilities of its emergency response personnel and the titles of those personnel.

#### 6.1.6 Incident Management Procedures

The AER strongly supports using the **incident command system** to ensure consistent command, control, and communication among all parties during an incident.

- 48) The duty holder's ERP must set out
- a) the procedures to manage and coordinate incident response and
  - b) the roles and responsibilities of personnel at its operational command and incident support facilities.

### 6.1.7 Reception Centre Activation Procedures

- 49) The duty holder's ERP must set out
- a) the procedures for activating a reception centre situated a safe distance from the release source and
  - b) procedures for meeting and registering evacuees at the reception centre.

### 6.1.8 Equipment List

- 50) The duty holder's ERP must include a list of equipment, including the location, number, and type of the equipment for use in incident response, including
- a) communications equipment for the public safety coordinator, rovers, roadblock and air monitoring personnel, and other personnel that require it (the duty holder is responsible for ensuring that communications equipment is made available to response personnel);
  - b) roadblock kits;
  - c) on-site ignition equipment (if applicable); and
  - d) gas monitoring equipment (if applicable).

### 6.1.9 ERP Distribution List

- 51) The duty holder's ERP must include a list of all plan holders and ERP recipients, including the entities listed in table 3.

## 6.2 Content Specific to an AER-Approved Emergency Response Plan

In addition to the information required in section 6.1, the following information is required for an ERP submitted to the AER for approval:

- overview and other high-level information
- operational information
- maps
- incident detection, notification, and confirmation procedures
- hazard monitoring procedures
- isolation procedures
- evacuation or shelter-in-place procedures
- ignition procedures

### 6.2.1 Overview and Other High-Level Information

- 52) The duty holder's AER-approved ERP must include the following information:
- a) an introduction and summary
  - b) a brief overview of the operations
  - c) the name of the operating area or system
  - d) a schedule (e.g., expected spud date, date of entry into the sour zone, and estimated time in the sour zone), if relevant to the ERP
  - e) general land use in the surrounding area, including population density, number of residents, level of transient usage, public facilities, and roads
  - f) the distance to the nearest urban centre and residence
  - g) information on residents in EPZ
  - h) any additional emergency response procedures specific to the operation
  - i) date of the latest revision

### 6.2.2 Operational Information

- 53) The duty holder's AER-approved ERP must include the following information on its operations:
- a) name and legal descriptions of the locations and type of operation
  - b) licence or approval numbers for wells, facilities, and pipelines and pipeline line numbers
  - c) operational status
  - d) identified hazards with the potential to result in high consequences to public safety and the environment
  - e) size and configuration of the EPZ with supporting information for EPZ modelling
  - f) if applicable, sour wells, **sour pipelines**, and facilities information, including
    - i) surface location of wells, emergency shutdown (ESD) valves, pipelines, and facilities
    - ii) name and legal description of wells (surface and bottomhole location), pipelines, and facilities
    - iii) maximum cumulative H<sub>2</sub>S release rate and concentrations
  - g) if applicable, HVP cavern storage facility and HVP pipeline information, including
    - i) name or legal description of facilities and pipelines

- ii) maximum cumulative HVP release volume or release rate for the facility
- iii) routing maps of the pipelines
- iv) maximum potential HVP release volumes for all pipeline segments within the system
- v) maximum licensed operating pressure, internal diameter, and minimum operating temperature of the pipelines
- vi) length of pipeline between ESD valves

### 6.2.3 Maps

- 54) The duty holder's AER-approved ERP must include clear maps sized to represent the entire mapped area with the following information:
- a) surface locations of the operations and access roads
  - b) the EPZ boundary
  - c) residences within the EPZ, residences within 25 m outward of the EPZ boundary, and residences on dead-end roads where residents would need to egress through the EPZ—include residence reference numbers
  - d) provincial, local, and access roadways and dead ends in the EPZ
  - e) lakes, rivers, streams, and any elevation feature that could affect incident response in the EPZ
  - f) **urban density developments**, campgrounds, recreation areas, public facilities (e.g., churches, schools, hospitals), and any other publicly used development within the EPZ
  - g) trapping areas, grazing leases, and range allotment boundaries and their reference numbers
  - h) other industrial operations, including oil and gas operations
  - i) railways and airports
  - j) municipal boundaries (e.g., hamlets, villages, towns)
  - k) health authority boundaries
  - l) a legend, scale, and north directional indicator
  - m) potential roadblocks for sour well site-specific drilling and completions



#### 6.2.4 Incident Detection, Notification, and Confirmation Procedures

- 55) The duty holder's AER-approved ERP must set out the following procedures for incident detection, notification, and confirmation:
- a) How incidents are detected.
  - b) How the duty holder is alerted of an incident.
  - c) How incidents are confirmed (e.g., a release).
- 56) The duty holder's AER-approved ERP must include specific procedures for how and when notification will occur within the EPZ.

#### 6.2.5 Hazard Monitoring Procedures

- 57) The duty holder's AER-approved ERP must
- a) provide details on the intended use and procedures to activate hazard monitoring equipment, such as stationary and **mobile air quality monitoring units** and personal handheld monitors, and
  - b) procedures for continuously monitoring the dispersion of hazardous substances during an incident.
- 58) The duty holder's AER-approved ERP must specify the type and number of hazard monitoring devices appropriate for addressing the following considerations:
- a) the type of hazard
  - b) entry and egress points
  - c) population density and distance to urban centres or rural subdivisions
  - d) local weather conditions and topographical features

#### 6.2.6 Isolation Procedures

- 59) To prevent potentially jeopardizing public safety, the duty holder's AER-approved ERP must include procedures to restrict unauthorized entry into the response zones during an incident. For example, isolation procedures to establish and manage manned access control points.
- 60) The duty holder's AER-approved ERP must identify any special procedures needed to address major highways and railways passing through the EPZ that could be affected by a hazard.

### 6.2.7 Evacuation or Shelter-in-Place Procedures

- 61) The duty holder's AER-approved ERP must address how evacuation from or shelter in place within the response zones will be accomplished during an incident, including how transients, such as hunters, trappers, recreational users, and nonresident landowners, will be found and evacuated.
- 62) The duty holder's AER-approved ERP must address any special procedures required for evacuating public facilities involving large numbers of people, including assistance with transportation (e.g., providing school buses) or changes in the normal notification procedures.
- 63) The duty holder's AER-approved ERP must include shelter-in-place instructions.
- 64) As part of its consultation with the appropriate authority, the duty holder must discuss how notification and evacuation will occur outside the EPZ and include a summary of that discussion in the ERP.

### 6.2.8 Ignition Procedures

- 65) The duty holder's AER-approved ERP must include the following information concerning the ignition of sour gas wells and HVP product releases:
  - a) The ignition decision procedures (e.g., ignition criteria flowchart), including a description of the equipment to be used in the event ignition criteria are met.
  - b) An acknowledgement that one of its on-site representatives has been designated as the ignition authority.
- 66) In addition to requirement 65, the duty holder's AER-approved ERP must address the following concerning releases from sour gas wells:
  - a) The approach to identifying the location of a plume.
  - b) The factors to consider when deciding whether to ignite a release, such as changing weather conditions.
  - c) The ignition decision procedures.
- 67) In addition to requirement 65, the duty holder's AER-approved ERP must address the following concerning HVP product releases from a pipeline or cavern storage facility:
  - a) The approach to identifying the location of a plume.
  - b) The factors to consider when deciding whether to ignite a release, such as changing weather conditions.
  - c) The ignition decision procedures, including a copy of figure 2.

- d) Protocols for supporting a decision to ignite a release, including emergency response procedures for immediate ignition and actions to be taken if a release occurs while personnel are on site.
- e) The actions required before attempting to ignite a dispersing HVP product plume, such as establishing the boundary of the dispersing vapour cloud.
- f) The names of personnel authorized to conduct the ignition and a description of the follow-up actions.

## 7 Emergency Response Training, Exercises, and Review Meetings

### 7.1 Training

- 68) The duty holder must train its response personnel to ensure they are competent in the emergency response procedures.
- 69) The duty holder must provide ERP training that includes the following topics:
  - a) all aspects of the plan
  - b) roles and responsibilities during an incident
  - c) public protection measures used during an incident
  - d) available communication methods

### 7.2 Exercises

- 70) To promote emergency response preparedness, the duty holder must conduct the following planned exercises to test all ERPs:
  - a) Conduct an annual tabletop or communications exercise for a corporate ERP.
  - b) Conduct an annual tabletop or communications exercise for each AER-approved ERP except in the year when holding a **major exercise**.
  - c) Conduct a major exercise once every three years for each AER-approved ERP.

Where duty holders have multiple AER-approved ERPs with the same field supervisory response personnel and infrastructure, the ERPs may be tested simultaneously through one exercise.

- 71) The duty holder must
  - a) notify the appropriate AER field centre 30 days in advance of a scheduled exercise via the DDS system and
  - b) invite appropriate authorities to participate in or observe a major exercise.

### 7.3 Review Meetings

- 72) For all critical sour well drilling and completion, workover, and well servicing operations, the duty holder must conduct a meeting within 96 hours before entering the first sour zone to identify hazards associated with the operation, review roles and responsibilities, and assess on-site personnel capabilities required to implement the ERP. Required personnel include
- a) field response personnel with assigned roles and responsibilities in the ERP and
  - b) key personnel involved in the supervision and management of the incident response.
- 73) If drilling, completion, workover, or well servicing operations include a critical sour zone or a combination of zones that makes the well a critical sour well, the duty holder must conduct a meeting concerning the critical sour zone work before entering the sour zone.
- 74) The duty holder must notify the AER through the DDS system at least four business days before the meeting for critical sour zone work so that schedules may be adjusted to facilitate the AER's attendance.
- 75) The duty holder must provide at least four business days' notice of the meeting for critical sour zone work to the appropriate authority so that they may participate.

All meetings concerning critical sour well drilling, completion, workover, and well servicing operations should include the following:

- verification of the assigned roles and responsibilities in the ERP
- identification of any revision to the ERP
- confirmation that the emergency contact numbers are correct
- communication of EPZ information to well-site personnel

### 7.4 Signage

- 76) The duty holder must post signage with its 24-hour emergency telephone number at the primary entrance to all wells and facilities.

## 8 Spill Preparedness and Response

Spill preparedness requirements apply to

- all wells (except those suspended in accordance with AER requirements and gas wells that produce less than two cubic metres per month [ $\text{m}^3/\text{month}$ ] of hydrocarbon liquids), facilities, and pipelines transporting liquids licensed by the AER; and
- hazardous product transport, other than by pipeline, from a well, pipeline, or facility over which the AER has jurisdiction to any other like facility.

### 8.1 Spill Contingency Planning

A spill response contingency plan can be a manual provided by a spill cooperative, a standalone manual created by the duty holder, a section within the duty holder's ERP, or any combination thereof.

- 77) The duty holder must have a spill response contingency plan to address the release of hazardous products onto land or water from any well, facility, pipeline, or mode of transport other than a pipeline.
- 78) The spill response contingency plan must include the following:
- a) a description of initial emergency response procedures and actions and information on all contacts and services
  - b) an inventory of wells, pipelines carrying liquids, and associated facilities
  - c) topographical maps showing designated spill control points (if applicable), access roads, urban centres, bodies of water (i.e., streams, rivers, lakes), and water supply intakes for municipal and industrial operations, pipelines, wells, and facilities within the operating area
  - d) roles, responsibilities, and resources to manage the environmental protection response
  - e) inventory and location of response equipment
  - f) containment and recovery procedures; and applicable to the type, volume, and nature of the production and time of year

A duty holder is exempt from purchasing spill cleanup equipment and developing its own spill response contingency plan and exercise if it is a member in good standing of a spill cooperative in Alberta for the area where its operations are located.

- 79) A duty holder that is not a member of a spill cooperative must
- a) purchase appropriate spill cleanup equipment, considering the type of operations and terrain in which the duty holder operates,
  - b) maintain the equipment in good working order, and
  - c) store the equipment where it may be required for immediate access.

## 8.2 Spill Response Exercise

### 8.2.1 Spill Cooperative Member

- 80) A duty holder that is a member of a spill cooperative must be a member in good standing, which means membership fees are fully paid, and the duty holder has met the obligations of the cooperative.
- 81) As part of its spill response training, a duty holder that is a member of a spill cooperative must either
- a) attend (and be appropriately represented by spill response personnel) at least one of the cooperative's annual deployment exercises in the area where its operations are located (attendance at an exercise outside the area in which the duty holder operates is acceptable) or
  - b) have an area representative complete a spill response course, self-study spill responder course, or on-scene spill commander course from a recognized training institution (this option cannot be used in consecutive years by the duty holder).

The spill cooperative may choose between conducting an annual deployment exercise or a **tabletop exercise**, depending on the training needs of each area.

### 8.2.2 Not a Spill Cooperative Member

- 82) A duty holder not affiliated with a spill cooperative must conduct an exercise in the area in which it operates.

The duty holder may choose between conducting an annual deployment exercise or a tabletop exercise, depending on the training needs of each area, but may not use a tabletop exercise in consecutive years.

- 83) The duty holder must notify the appropriate AER field centre in writing at least 30 days in advance of the spill deployment exercise or tabletop exercise and provide the following information:
- a) The nature of the training exercise, the exercise date, and the legal land description of the land on which it will be conducted.
  - b) A map showing the general topography, location of and access routes to the deployment area, and the location of any municipal water intakes within three kilometres of the deployment area.
  - c) The proposed spill material and planned volume. The permitted spill medium is either edible canola oil or mineral oil, dyed with an innocuous dye that neither harms water quality nor flora and fauna.
  - d) Comments on the public use of the area, the collection and disposal of garbage, and a statement indicating the extent, if any, of anticipated surface disturbance to stream banks or shorelines at the test site.
  - e) The name of the landowner on whose land the training exercise will occur and confirmation that the landowner agrees to the exercise proceeding at the proposed test site.

### 8.2.3 Training Exercise Report Summaries

- 84) The duty holder must complete a summary report on the spill deployment exercise within 30 days of the exercise completion and keep it for two years should the AER require it for review.

## 9 Incident Response Requirements

- 85) The duty holder must have up-to-date copies of the applicable corporate ERP and any AER-approved ERPs (hard copy or electronic) available at a response location.
- 86) The duty holder must review the ERP with the personnel who are assigned roles and responsibilities under the ERP to ensure its proper implementation.
- 87) The duty holder must follow and implement the procedures and response actions outlined in its corporate ERPs and any AER-approved ERPs.

### 9.1 Initial Response

- 88) The duty holder must ensure that a call to its 24-hour emergency telephone number initiates immediate action.
- 89) The duty holder must respond immediately if notified of an incident by an alarm or other type of incident notification.
- 90) Where sour operations are conducted at two or more sour wells with overlapping EPZs, and there are surface developments within any of the EPZs, if a duty holder declares an emergency, the other duty holders must also suspend operations until it is over.

### 9.2 Classifying an Actual Incident

- 91) The duty holder must use the assessment matrix in appendix 4 to classify the incident.

This assessment will ensure that incidents are classified by duty holders throughout Alberta in a consistent manner that reflects the nature of the hazard and the potential effects on the public and the environment. The matrix considers the risk, control, containment, and effects on safety and the environment in arriving at a classification. The duty holder will determine the initial level of the incident to communicate and immediately activate internal response resources.

- 92) The duty holder must take appropriate actions as described in appendix 4, including public protection measures, for each level of emergency.
- 93) The duty holder must contact the AER immediately after it has communicated with and activated internal response resources to confirm the incident level and convey the specifics of the incident.

### 9.3 Communication During an Incident

- 94) After contacting the AER, the duty holder must notify the appropriate authorities, stakeholders, and support services required to assist with the initial response if a hazardous release goes off site and has the potential to affect the public or environment or if the duty holder has contacted the public or the media.
- 95) The duty holder must make the information in appendix 5 available to the public as soon as possible during an incident.



#### 9.4 Hazard Monitoring

- 96) The duty holder must ensure hazard monitoring is in place in accordance with the ERP (see section 6.2.5) and meet the additional requirements in this section.
- 97) The duty holder must provide at least two mobile air quality monitors to monitor the EPZ for a critical sour well that includes a portion of an urban density development or urban centre. One mobile unit will monitor the boundary of the urban density development or urban centre, and the other will track the plume.
- 98) The duty holder must also
- a) ensure one mobile air quality monitoring unit is nearby during drilling, completion, testing, and workover operations in potentially critical sour zones,
  - b) ensure one monitoring unit is dispatched when loss of well control is evident and sour gas release likely, and
  - c) before conducting operations in a sour zone, determine the estimated travel time to the well site from the current location of the monitoring equipment.
- 99) Where the EPZ for a critical sour well does not include a portion of an urban density development or urban centre, and for all noncritical sour wells, the duty holder must
- a) dispatch a mobile air quality monitoring unit when loss of well control is evident and sour gas release likely, and
  - b) before conducting operations in a sour zone, determine the estimated travel time to the well site from the current location of the monitoring equipment.

#### 9.5 Access Control

- 100) The duty holder must ensure that manned access control points are in place to restrict unauthorized entry into the response zones during an incident.

The duty holder should be prepared to manage access to major highways and railways passing through the EPZ that could be affected by the hazard.

It may be necessary for the duty holder to obtain a **fire hazard order** from the AER or a local authority to declare a **state of local emergency** to restrict access to a designated area. The local authority may declare a state of local emergency if deemed prudent.

It may also be necessary for NAV CANADA to issue a Notice to Airmen (NOTAM) to advise pilots of restrictions in the airspace above the EPZ or to close the airspace for a certain radius from the release (a no-fly zone). The AER may request NOTAMs or airspace closure for a level 2 or 3 incident.

## 9.6 Public Protection Measures

101) The duty holder must initiate the public protection measures shown in figure 2 for incidents originating from its operations that may affect the public.

The type of public protection measures used depends on the severity of the incident and the monitored results in unevacuated areas.

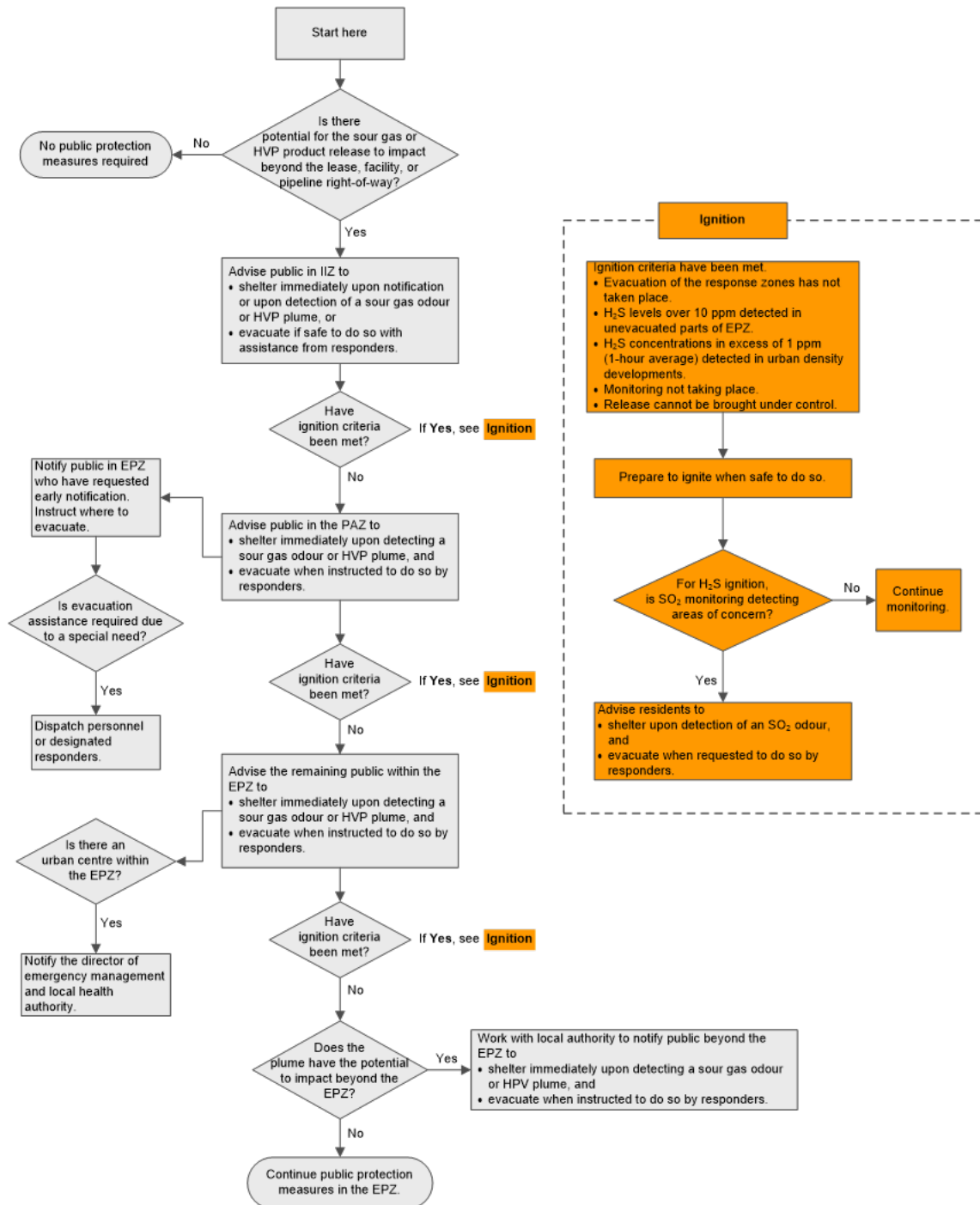


Figure 2. Public protection measures

### 9.6.1 Notification During an Accidental Release

- 102) If a sour gas or HVP product release has the potential to affect an area beyond the lease, facility boundary, or pipeline right-of-way, the duty holder must notify
- a) the public in the response zones that are within the EPZ,
  - b) the director of emergency management, if an urban centre is within the EPZ,
  - c) individuals within the EPZ that have requested early notification and wish to evacuate voluntarily, and
  - d) the appropriate authorities.

The duty holder's personnel or designated responders may be required to provide evacuation assistance to individuals identified as special needs.

- 103) The duty holder must notify the public in the EPZ once notification attempts are completed in the response zones.
- 104) The duty holder must advise the public within the EPZ of the public protection measures required.

The duty holder may use the notification mechanisms in the appropriate authority's emergency plan and program if agreed to by the appropriate authority.

### 9.6.2 Evacuation or Shelter in Place

- 105) The duty holder must assess the following before advising a resident to evacuate or shelter in place:
- a) the size and expected duration of the release
  - b) egress routes
  - c) current and expected meteorological conditions
  - d) the potential for unexpected ignition

Figure 2 (shown previously) is a decision tree of the public protection measures.

### 9.6.2.1 Sour Gas Releases

106) The duty holder must continuously assess and act on the need to expand the evacuation area based on the monitored levels of H<sub>2</sub>S and SO<sub>2</sub> and take the actions noted in table 4.

**Table 4. Duty holder actions for H<sub>2</sub>S and SO<sub>2</sub> concentrations**

Concentrations in unevacuated areas	Actions in the unevacuated areas
H <sub>2</sub> S of 1 to 10 ppm (3-minute average)	Notify persons who requested notification so they may voluntarily evacuate before exposure to H <sub>2</sub> S.
H <sub>2</sub> S above 10 ppm (3-minute average)*	Assess local conditions and notify all persons to evacuate or shelter in place.
SO <sub>2</sub> of:	Notify all persons to evacuate immediately.
<ul style="list-style-type: none"> <li>• 5 ppm (15-minute average)</li> <li>• 1 ppm (3-hour average)</li> <li>• 0.3 ppm (24-hour average)</li> </ul>	

\* If monitored levels over the 3-minute interval are declining (i.e., three readings show a decline from 15 ppm to 10 ppm to 8 ppm over 3 minutes), evacuation may not be necessary even though the average over the 3-minute interval would be 11 ppm. Duty holders should use proper judgement in determining if evacuation is required.

107) In the absence of monitored readings, responders must advise residents to shelter in place.

108) Depending on the volume, size, duration, or meteorological conditions, sheltering in place may not be a viable public protection measure within the IIZ during an H<sub>2</sub>S release. In such a situation, the public safety aspects of sheltering in place must be continuously evaluated during the incident and assisted evacuation may be necessary to protect public safety.

109) The duty holder must advise residents to evacuate if required.

A duty holder can advise residents to evacuate; however, the local authority must declare a state of local emergency before mandatory evacuation can occur.

### 9.6.2.2 HVP Product Releases

Sheltering in place is the primary public protection measure for an HVP product release. Evacuation of the public should only proceed when it is safe to do so and after an assessment in accordance with requirement 105.

### 9.6.3 Notification and Evacuation Outside the EPZ

110) If public protection measures are required beyond the EPZ, the duty holder must conduct them in accordance with the arrangement with the local authority.

The Government of Alberta will activate the [Energy Resources Industry Emergency Support Plan](#) for level 2 and level 3 incidents (emergencies) to support the incident response. The notification mechanisms will be based on monitored air quality and other situations that might arise during the incident. Evacuation of the area outside the EPZ is coordinated through the duty holder’s ERP and the response framework in the local authority’s emergency plans and programs. The health authorities also have a role in evacuation in accordance with section 52.2 of the [Public Health Act](#).

#### 9.6.4 Activating the Reception Centre

111) When the evacuation of residents is required, the duty holder must

- a) activate a reception centre situated a safe distance from the release source and
- b) meet and register evacuees at the reception centre.

#### 9.6.5 Ignition

112) The duty holder must ensure the ignition team is trained and competent in sour gas or HVP product ignition and has the proper equipment to ignite the release within the time limits for which the EPZ was designed.

Ignition criteria are provided in appendix 6, and the decision process is shown previously in figure 2. The AER may decide to ignite a release if the duty holder does not agree to ignite the release or is not prepared to take the necessary steps.

##### 9.6.5.1 Sour Well Release Ignition

113) The duty holder must ensure

- a) all sour wells have an ignition system, such as a flare gun, on site during drilling, completion, well testing, or workover operations in sour zones and
- b) all critical sour wells have a dual-ignition system on site during drilling operations in critical sour zones and during completion, well testing, or workover operations when the wellhead is removed.

114) The duty holder must

- a) keep the local AER field centre informed about the ignition situation and ignite a sour gas flow to the atmosphere in accordance with the ignition assessment criteria in appendix 6 unless the AER determines that ignition may be delayed, and
- b) assign the decision-making authority to an on-site representative to ignite the release.

The primary ignition system at a critical sour well should be installed to enable remote activation from a safe location through a triggering device. The secondary system may be a manual system, such as a flare gun.

Ignition does not negate the need for continuing with evacuation, as there may be residual pockets of H<sub>2</sub>S or SO<sub>2</sub> in the area.

##### 9.6.5.2 Pipeline or Cavern Storage Facility HVP Product Releases and Ignition

Following an incident, the hazard associated with an HVP product release may be controlled or minimized by deliberately igniting the release.

- 115) When deciding to ignite HVP releases, the duty holder must consider the following:
- a) the increased risks of a delayed ignition
  - b) whether the perimeter of the hazard area has been established
  - c) whether the public has been evacuated from the area
  - d) whether ignition will worsen the situation by endangering the public or the environment or damage the equipment used to control the product
  - e) whether wind direction has been established and continuously monitored
  - f) whether the possibility of an explosion has been assessed (i.e., obstructions or regions of congestion within the perimeter of the dispersing vapour cloud)
- 116) The duty holder must assign the decision-making authority to an on-site representative to ignite an HVP product release.

### 9.7 Equipment Requirements

- 117) The duty holder must ensure that the equipment identified in the ERP is available and at the location specified in the ERP before conducting the operation. Except for drilling and completion operations for critical sour wells, this equipment must be available at the location specified in the ERP before entering the critical sour zone.
- 118) The duty holder must ensure that equipment is operational and the necessary documentation is available to verify testing and calibration requirements.

The duty holder's approved vendor program should ensure that contracted equipment meets industry standards for calibration. If the equipment is from a third party, information regarding its location and estimated time to the site is required.

For critical sour wells, the equipment identified in the ERP may be released from a location when

- the rig has been released,
- the wellbore is isolated with casing and cement and is not perforated, or
- the wellhead is installed.

### 9.8 Downgrading an Incident Level or Standing Down an Incident

- 119) Once the incident improves, the duty holder must decide in consultation with the AER to downgrade the incident level or stand down the incident.

The AER will consult with other applicable agencies and confirm with the duty holder that the incident downgrade or stand down is appropriate.

120) The duty holder must keep all notified persons, evacuated persons, and the media informed of the incident status.

## 10 Record Keeping

121) As part of public and local authority notification and consultation (see section 4.1), the duty holder must have a process for recording the following:

- a) local authority and other government discussions
- b) type of notification provided to the residents in an urban centre
- c) the number of attempts and the method made to contact an individual if the duty holder was unable to make contact
- d) record of consultation with the public, including unsuccessful attempts to consult or obtain the cooperation of any required persons and any outstanding issues yet to be resolved

122) The duty holder must have a process for recording the following activities:

- a) incident records: information gathered during and following an incident. These records provide documentation to be used for assessment, historical, and analytical purposes.
- b) keeping ERPs current: efforts to keep the ERP current, including attempts to contact or obtain the cooperation of any required persons and any outstanding issues yet to be resolved
- c) training, meeting, and exercise records:
  - i) records of staff training
  - ii) within 60 days of an exercise, a report of exercise results is to be retained for assessment purposes that includes
    - the type of exercise held
    - the exercise scope and objectives
    - the persons involved
    - the outcome of the exercise (i.e., whether objectives were achieved)
    - lessons learned
    - an action plan with timelines
    - documentation of all critical sour meetings, such as meeting sign-in sheets, invitations, and minutes for possible review by the AER

The duty holder is expected to keep all records for three years.

## **11 Licence Transfer**

- 123) If a well, facility, or pipeline with an AER-approved ERP is sold, the new duty holder must contact the AER within 30 days of the transfer of licence to discuss a timeframe for submitting a new ERP.
- 124) The new duty holder must provide notification to the AER at [EPAShelpline@aer.ca](mailto:EPAShelpline@aer.ca) within seven business days from the date of transfer of licence and include an itemized summary of changes, including
  - a) corporate structure change,
  - b) contact numbers,
  - c) internal communication changes, and
  - d) signing authority changes.
- 125) The new duty holder must ensure that the emergency response procedures in place will not be compromised before approval of the new ERP.

Residents within the EPZ and the appropriate authorities should be notified of the change in ownership and advised that the new duty holder will be conducting a public involvement program and developing a new ERP.



## Appendix 1 Definitions

<b>alert</b>	See appendix 4.
<b>appropriate authority</b>	The authority(ies) with jurisdiction, including local authorities as defined in the <a href="#">Emergency Management Act</a> , health authorities, governments and agencies, police, and others with a role in providing effective incident response.
<b>cavern</b>	As defined in the <a href="#">Oil and Gas Conservation Rules</a> .
<b>consultative processes</b>	Communication methods in which a two-way conversation occurs such that the participants understand the discussions that took place.
<b>corporate ERP</b>	The plans prepared by a duty holder under the <i>Oil and Gas Conservation Act</i> , <i>Pipeline Act</i> , <i>Geothermal Resource Development Act</i> , or any other regulation, statute, or condition imposed by the AER. A corporate ERP is used when planned procedures allow for effective incident response, and a specific AER-approved ERP is not required.
<b>critical sour well</b>	A well with an H <sub>2</sub> S release rate greater than two cubic metres per second or wells with lower H <sub>2</sub> S release rates near an urban centre as defined in <a href="#">Directive 056: Energy Development Applications and Schedules</a> .
<b>emergency</b>	As defined in the <a href="#">Oil and Gas Conservation Rules</a> , <a href="#">Pipeline Rules</a> , and <a href="#">Geothermal Resource Development Rules</a> .
<b>emergency planning zone (EPZ)</b>	An EPZ is a geographic area around wells, pipelines, or facilities where the presence of hazardous substances requires specific emergency preparedness by the duty holder.
<b>emergency response plan</b>	A comprehensive plan to protect the public that includes criteria for assessing an incident (emergency) and procedures for mobilizing response personnel and agencies and establishing communication and coordination among the parties.
<b>evacuation</b>	An organized, phased, and supervised withdrawal of persons from dangerous or potentially dangerous areas to safe areas.
<b>facility</b>	As defined in the <a href="#">Oil and Gas Conservation Act</a> , <a href="#">Oil Sands Conservation Act</a> , and <a href="#">Geothermal Resource Development Act</a> .
<b>fire hazard order</b>	An order issued by the AER during an emergency to restrict public access to a specified area.
<b>hazard</b>	A potential source of harm to people, the environment, or property.
<b>HVP pipeline</b>	A pipeline system to convey hydrocarbons or hydrocarbon mixtures in a liquid or quasi-liquid state with a vapour pressure greater than 110 kilopascals absolute at 38°C using the Reid method (see ASTM D 323).

<b>hydrogen sulphide</b>	<p>A naturally occurring gas found in geological formations or formed by the natural decomposition of organic matter in the absence of oxygen. It is colourless, has a molecular weight heavier than air and is highly toxic. In small concentrations, it smells like rotten eggs and causes eye and throat irritation. Depending on the particular mix of gases, gas properties, and ambient conditions, a sour gas release may</p> <ul style="list-style-type: none"> <li>• be heavier than air (dense), so it will tend to drop towards the ground with time,</li> <li>• be lighter than air (buoyant), so it will tend to rise with time, or</li> <li>• be about the same weight as air (neutrally buoyant), so it will tend to neither rise nor drop but will disperse with time.</li> </ul>
<b>incident</b>	<p>A situation that might be, or could lead to, a disruption, loss, emergency, or crisis.</p>
<b>incident classification</b>	<p>A system that examines the risk level to the public of an incident and assigns an incident level based on the consequence of the incident and the likelihood of escalation.</p>
<b>initial isolation zone (IIZ)</b>	<p>The area in close proximity to a continuous hazardous release where indoor sheltering may provide temporary protection due to the proximity of the release.</p>
<b>incident command system</b>	<p>A system used to coordinate preparedness and incident management.</p>
<b>level 1 (incident)</b>	<p>See appendix 4.</p>
<b>level 2 (incident)</b>	<p>See appendix 4.</p>
<b>level 3 (incident)</b>	<p>See appendix 4.</p>
<b>local authority</b>	<p>As defined in the <a href="#"><i>Emergency Management Act</i></a>.</p>
<b>major exercise</b>	<p>An exercise involving duty holders and emergency response agencies involving the deployment of response resources to test the duty holder's ERP. The exercise intends to provide a realistic simulation of incident response.</p>
<b>mobile air quality monitoring unit</b>	<p>Portable equipment to measure hazardous substances (e.g., H<sub>2</sub>S or SO<sub>2</sub>) at very low atmospheric concentrations of parts per billion.</p>
<b>mutual aid understanding</b>	<p>An understanding between two or more public or private parties (e.g., oil and gas companies, service companies, and local authorities) that defines each party's commitment to providing aid and support during an incident.</p>
<b>protective action zone (PAZ)</b>	<p>An area downwind of a hazardous release where outdoor pollutant concentrations may result in life-threatening or serious irreversible health effects on people.</p>
<b>public</b>	<p>The people who are or may experience the effects of an emergency.</p>

<b>public facility</b>	A building, such as a hospital, rural school, or major recreational facility, situated outside of an urban centre that can accommodate more than 50 individuals or where additional transportation may be required during an evacuation.
<b>public protection measures</b>	Sheltering, evacuation, ignition, and isolation procedures to mitigate the effects of a hazardous release on the public.
<b>publicly used development</b>	Places where 50 individuals or less may be expected (e.g., businesses, cottages, campgrounds, churches, and other locations created for use by the nonresident public).
<b>reception centre</b>	A place set up to register evacuees for emergency shelter, assess their needs, and ascertain where they can be contacted if not at the reception centre.
<b>residence/resident</b>	An occupied dwelling/persons in the residence. These terms are used in relation to occupants and dwellings within an EPZ.
<b>response zones</b>	The IIZ and PAZ collectively.
<b>shelter in place</b>	To remain indoors for short-term protection from exposure to toxic gas releases.
<b>sour gas</b>	Natural gas, including solution gas, with H <sub>2</sub> S.
<b>sour pipeline</b>	A pipeline to convey gas or liquid or both that contains sour gas.
<b>sour well</b>	An oil or gas well where formations bearing sour gas may be encountered during drilling or an oil or gas well capable of producing sour gas.
<b>special needs</b>	Persons for whom early response actions must be taken because they require evacuation assistance, require early notification, do not have telephones, require transportation assistance, have a language or comprehension barrier, or have specific medical needs. Special needs also include those who decline to give information during the public consultation process and any residences or businesses where contact cannot be made.
<b>spill cooperative</b>	A member-funded organization that provides spill response services, including equipment and personnel. Members may contribute equipment or personnel for use by other members. In the event of a spill, a member can draw on the cooperative's resources to supplement their own.
<b>state of local emergency</b>	A declaration by a local authority under the <a href="#">Emergency Management Act</a> or by the medical officer of health under the <a href="#">Public Health Act</a> to enable resources and procedures at the municipal level to effectively and efficiently resolve an emergency.

<b>sulphur dioxide</b>	A colourless, water-soluble, suffocating gas formed by burning sulphur in air and is also used to manufacture sulphuric acid. SO <sub>2</sub> has a pungent smell, like a burning match. SO <sub>2</sub> is extremely toxic at higher concentrations. The molecular weight of SO <sub>2</sub> is heavier than air; however, typical releases are related to combustion, which makes the gaseous mixture lighter than air (buoyant).
<b>surface development</b>	Residences that are occupied full time or part time, publicly used developments, public facilities (including campgrounds and places of business), and any other surface development where the public may gather regularly. Surface development includes residences within 25 m outward of the EPZ boundary and those from which residents are required to egress through the EPZ.
<b>synergy group</b>	<p>Community-based, multistakeholder groups that work collaboratively in addressing the pressures of resource development in ways that support the social, environmental, and economic well-being of their communities and the province.</p> <p>Synergy groups provide forums for people to share information, discuss local issues, gain understanding, build relationships, and disseminate credible, relevant information into their communities. This creates the opportunity for communities to have meaningful, ongoing participation in decisions that directly affect them and helps support responsible and sustainable energy development and minimize conflicts.</p>
<b>tabletop exercise</b>	An exercise to review resource allocations and the roles and responsibilities of response personnel. This exercise enables new personnel to familiarize themselves with emergency operations without stress and time constraints of a major exercise.
<b>technically complete</b>	An ERP that meets all applicable requirements of this directive.
<b>urban centre</b>	A city, town, village, summer village, or hamlet with 50 or more separate buildings, each of which must be an occupied dwelling or any similar development the AER designates as an urban centre.
<b>urban density developments</b>	Any incorporated urban centre, unincorporated rural subdivision, or group of subdivisions with 50 or more separate buildings (which must be occupied dwellings) or any other similar development the AER designates as an urban density development.
<b>well servicing</b>	Maintenance procedures performed on a producing or injecting well after it has been completed and operations started. Well servicing activities are conducted to maintain or enhance well productivity or injectivity.
<b>workover</b>	The act of re-entering an existing well to perform remedial action to restore or improve productivity or injectivity of the target formation.

## Appendix 2 Information on Exposure to Hydrogen Sulphide for the Public in the EPZ

- If you are indoors and can smell hydrogen sulphide (H<sub>2</sub>S; a pungent rotten egg smell), close all the doors and windows and turn down the furnace thermostat immediately. In the summer, turn off all air conditioners.
- Contact the nearest Alberta Energy Regulator (AER) field centre (see below) and report the H<sub>2</sub>S odour. The AER will immediately act to determine the source of the odour.
- Monitor the radio or television for explanation and instruction. You may also receive a call from the duty holder (company/operator) responsible for the H<sub>2</sub>S odour, the authority with jurisdiction in your area, or the AER providing further instruction or explanation.
- If you are considering moving away from the area, contact the duty holder's representative, the authority with jurisdiction in your area, or the AER for evacuation instructions. For major incidents, a special number may be provided and, if so, should be called.
- If environmental monitoring indicates that the H<sub>2</sub>S release may affect the public, an evacuation will be carried out under the direction of authorized emergency personnel. Individuals previously identified with special needs will be given priority.
- If you are directed to evacuate, follow the instructions to safely move you away from the H<sub>2</sub>S source and out of harm's way. You will also be provided with instructions to check in and register at a reception centre situated in a secure and safe area.
- All other individuals should consider leaving the area and seek medical advice if health symptoms develop.

### **AER Energy and Environmental Emergency 24-Hour Response Line: 1-800-222-6514**

#### **Field Operations, Central**

Edmonton Regional Office 780-642-9310

Slave Lake Regional Office 780-843-2050

#### **Field Operations, Northeast**

Fort McMurray Regional Office 780-743-7214

#### **Field Operations, East**

Bonnyville Field Centre 780-826-5352

#### **Field Operations, West**

Red Deer Field Centre 403-340-5454

Drayton Valley Field Centre 780-542-5182

#### **Field Operations, Northwest**

Grande Prairie Field Centre 780-538-5138

#### **Field Operations, South**

Medicine Hat Field Centre 403-527-3385



### Appendix 3 Examples of When an ERP Requires AER Approval

The following table provides approval cases for an ERP for a new operation (i.e., no existing ERP).

Type of operation	Surface development in the EPZ or residents outside the EPZ egress through the EPZ	No surface development in the EPZ but residents outside the EPZ egress through the EPZ	No surface development in the EPZ nor do residents egress through the EPZ
<b>Site specific</b>			
Drilling or completion of critical sour well	Yes	Yes	Yes
Drilling or completion of noncritical sour well	Yes	Yes	No
<b>Operational</b>			
Producing, shut-in, or injecting noncritical sour well	Yes	Yes	No
Producing, shut-in, or injecting critical sour well	Yes	Yes	Yes
Sour pipeline gathering system and associated facilities	Yes	Yes	No
Sour facility	Yes	Yes	No
HVP pipeline operation	Yes	Yes	No
HVP pipeline maintenance and repair	Yes	Yes	No
Cavern storage facility storing HVP product	Yes	Yes	Yes

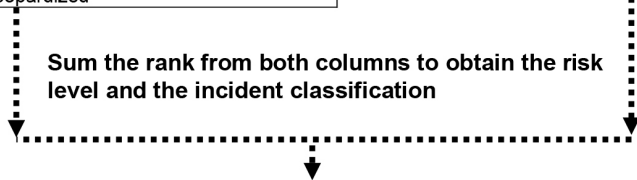
The following table provides approval cases where new operations are added to an existing ERP.

<b>Type of added operation</b>	<b>All or a part of the new EPZ for the added operation is outside the existing EPZ</b>		
	<b>No change to existing EPZ size</b>	<b>No surface development in the part of the new EPZ extending beyond the existing EPZ</b>	<b>Surface development in the part of the new EPZ extending beyond the existing EPZ</b>
Critical sour well	Yes	Yes	Yes
Noncritical sour well (wellhead on)	No	No	No
Noncritical sour well (wellhead off)	No	No	Yes
Sour pipeline tie-ins	No	No	No
Sour operating area tie-ins	No	No	Yes
HVP pipeline tie-ins	Yes	Yes	No
Cavern storage facility storing HVP product	Yes	Yes	Yes



## Appendix 4 Assessment Matrix for Classifying Incidents

1. Consequence of incident			2. Likelihood of incident escalating*		
Rank	Category	Example of consequence in category	Rank	Descriptor	Description
1	Minor	<ul style="list-style-type: none"> <li>No worker injuries</li> <li>Nil or low media interest</li> <li>Liquid release contained on lease</li> <li>Gas release impact on lease only</li> </ul>	1	Unlikely	The incident is contained or controlled, and is unlikely to escalate. There is no chance of additional hazards. Ongoing monitoring is required.
2	Moderate	<ul style="list-style-type: none"> <li>First aid treatment required for on-site worker(s)</li> <li>Local and possible regional media interest</li> <li>Liquid release not contained on lease</li> <li>Gas release impact has potential to extend beyond lease</li> </ul>	2	Moderate	Control of the incident may have deteriorated but imminent control of the hazard by the duty holder is probable. It is unlikely that the incident will escalate.
3	Major	<ul style="list-style-type: none"> <li>Worker(s) requires hospitalization</li> <li>Regional and national media interest</li> <li>Liquid release extends beyond lease—not contained</li> <li>Gas release impact extends beyond lease—public health/safety could be jeopardized</li> </ul>	3	Likely	Imminent or intermittent control of the incident is possible. The duty holder has the capability of using internal and external resources to manage and bring the hazard under control in the near term.
4	Catastrophic	<ul style="list-style-type: none"> <li>Fatality</li> <li>National and international media interest</li> <li>Liquid release off lease not contained – potential for or is affecting water or sensitive terrain</li> <li>Gas release impact extends beyond lease – public health/safety jeopardized</li> </ul>	4	Almost certain or currently occurring	The incident is uncontrolled and there is little chance that the duty holder will be able to bring the hazard under control in the near term. The duty holder will require assistance from outside parties to remedy the situation.



Assessment results	
Very low 2–3	<b>Alert:</b> An incident that can be handled on site by the duty holder through normal operating procedures and is deemed a very low risk to the public.
Low 4–5	<b>Level 1:</b> The incident presents no danger outside the duty holder’s property or threat to the public and has a minimal environmental impact. Duty-holder personnel can manage the incident themselves with immediate control of the hazard. There is little or no media interest.
Medium 6	<b>Level 2:</b> The incident presents no immediate danger outside the duty holder’s property but could potentially extend beyond the duty holder’s property. Outside agencies must be notified. Imminent control of the hazard is probable, but there is a moderate threat to the public or the environment or both. There may be local and regional media interest in the event.
High 7–8	<b>Level 3:</b> The safety of the public is in jeopardy from a major uncontrolled hazard. There are likely significant and ongoing environmental impacts. Immediate multiagency municipal and provincial government involvement is required.

<b>Responses by incident level</b>				
<b>Response</b>	<b>Alert</b>	<b>Level 1</b>	<b>Level 2</b>	<b>Level 3</b>
<b>Communications</b>				
Internal	Discretionary, depending on duty holder's policy.	Notification of off-site management.	Notification of off-site management.	Notification of off-site management.
Public	Courtesy, at duty holder's discretion.	Mandatory for individuals in the EPZ who have requested notification.	Planned and instructive in accordance with the specific ERP.	Planned and instructive in accordance with the specific ERP.
Media	Reactive.	Reactive, as required.	Proactive media management to local or regional interest.	Proactive media management to national interest.
Government	Reactive. Notify AER if public or media is contacted.	Notify local AER field centre. Call local authority and health authority if public or media is contacted.	Notify local AER field centre, local authority, and health authority.	Notify local AER field centre, local authority, and health authority.
<b>Actions</b>				
Internal	On site as required by the duty holder.	On site as required by the duty holder. Initial response is in accordance with the AER-approved ERP or corporate ERP.	Predetermined public safety actions are under way. Corporate management team alerted and may be engaged to support on-scene responders.	Full implementation of the incident command system.
External	On site as required by the duty holder.	On site as required by the duty holder.	Potential multiagency response (i.e., operator, municipal, provincial, federal).	Immediate multiagency response (i.e., operator, municipal, provincial, federal).
<b>Resources</b>				
Internal	Immediate and local. No additional personnel required.	Establish what resources are required.	Limited supplemental resources or personnel are required.	Significant resources are required.
External	None.	Begin to establish resources that may be required.	Possible assistance from government agencies and external support services.	Assistance from government agencies and external support services are required.

## **Appendix 5 Information Distributed to the Public at the Onset and During an Incident**

### **To persons evacuated or sheltered at the onset of the incident:**

- type and status of the incident
- location and proximity of the incident to people in the vicinity
- public protection measures to follow, evacuation instructions, and any other emergency response measures to consider
- actions being taken to respond to the situation, including anticipated time

### **To persons evacuated or sheltered during the incident**

- description of the products involved and their short-term and long-term effects
- effects the incident may have on people in the vicinity
- areas affected by the incident
- actions the affected public should take if they experience adverse effects

### **To the public during the incident**

- type and status of the incident
- location of the incident
- areas affected by the incident
- description of the products involved
- contacts for additional information
- actions being taken to respond to the situation, including anticipated time



## Appendix 6 Assessment and Ignition Criteria Flowchart

