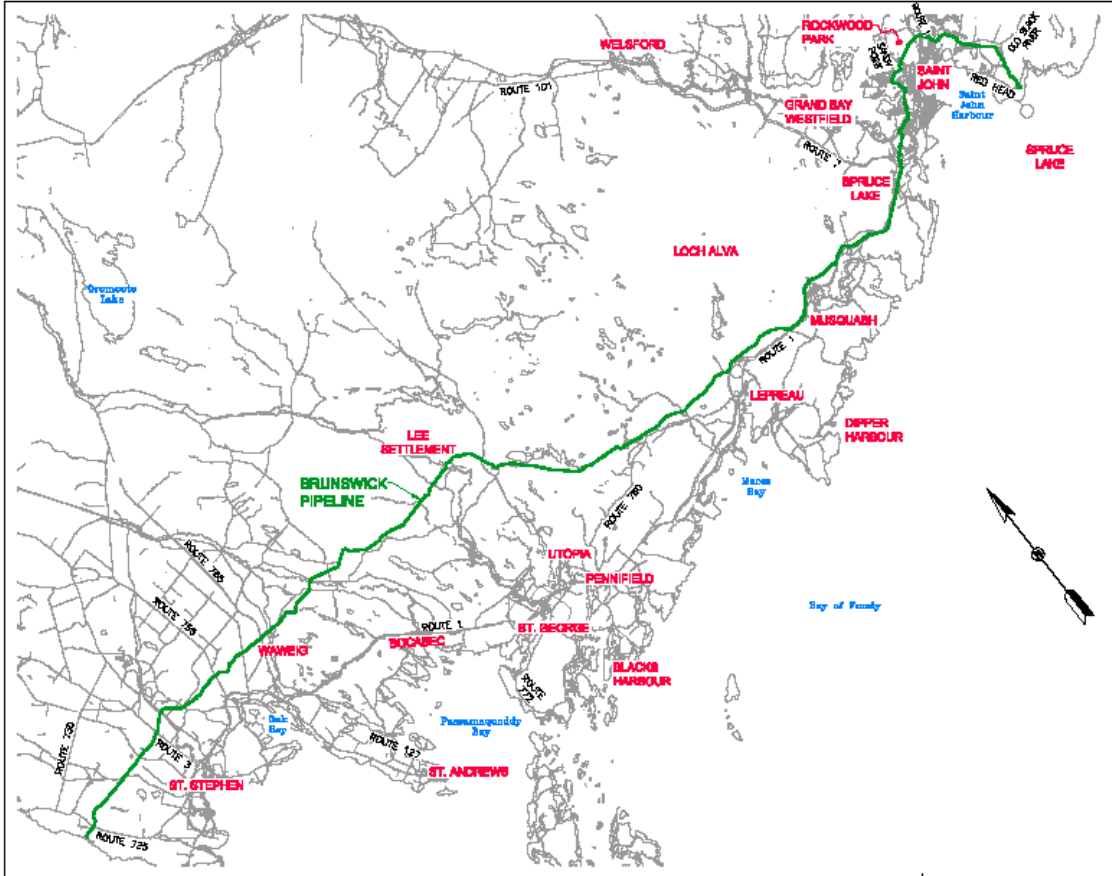




Emergency Response Plan



Effective April 30, 2019

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Emergency Response Plan

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

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Doc No.	EMP-PDR-01
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REVISION HISTORY

Rev No.	Issue Date	Brief Description of the Change
01	2017-01-01	New Document
02	2017-03-31	Complete Document Review and reorganization along with removal of Annex for ease of document review. Annexes were renumbered and an addition of support services was added.
03	2018-04-30	Revisions for better alignment to ICS.
04	2019-04-30	Revisions for better alignment to revised Emergency Management Program.

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

Table of Contents

Distribution List	8
1. Purpose.....	9
2. Scope	9
3. Definitions	10
4. Leadership Accountability and Commitment.....	15
5. Brunswick Pipeline Operations, Assets, and Potential Emergency Scenarios	16
5.1 Operations	16
5.2 Assets	16
5.3 Potential Emergency Scenarios	17
6. Emergency Levels.....	18
7. Emergency Response Team Structures	18
7.1 The Emergency Response Team (ERT).....	18
7.2 The Crisis Management Team (CMT).....	19
7.3 Unified Command.....	19
8. Emergency Response Roles and Responsibilities	20
8.1 Incident Commander	20
8.2 Safety Officer	21
8.3 Liaison Officer.....	21
8.4 Information Officer.....	22
8.5 Operations Section Chief.....	22
8.6 Logistics Section Chief	23
8.7 Planning Section Chief	23
9. Emergency Response	24
9.1 Notifications	24
9.1.1 Initial Emergency Notifications and EBPC Response	24
9.1.2 Incident Reporting and Notifications to Government Departments and Agencies	29
9.2 Incident Command Post (ICP).....	29
9.3 Emergency Operations Centre (EOC)	29

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

- 9.4 On-Site Communication Systems 30
- 9.5 Safety During Emergency Response 30
 - 9.5.1 Hazard Monitoring 30
 - 9.5.2 On-Site Emergency Areas Division 30
 - 9.5.3 ERT Obligations 31
- 9.6 Site Security 32
 - 9.6.1 Roadblocks 32
- 9.7 Specific Response Procedures for Potential Emergency Scenarios 33
 - 9.7.1 Facility Fire: Fire Near or Involving a Pipeline Facility 33
 - 9.7.2 Facility Explosion: Explosion Near or Involving Pipeline Facilities 34
 - 9.7.3 Person-Down Rescue and Medical Situation 36
 - 9.7.4 Natural Disasters 37
 - 9.7.5 Threat of Aggressive Action/Bomb Threat 40
 - 9.7.6 Odourant Spill 42
- 10. Post Incident 44
 - 10.1 Call-Down 44
 - 10.2 Post-Incident Documentation/Company Records 44
 - 10.3 Cleanup and Repair 45

List of Tables

Table 1: Mainline Block Valves 16

Table 2: Initial Emergency Response Notifications and EBPC Response Flowcharts 25

List of Flowcharts

Flowchart 1: Initial Notification from an Outside Source to EBPC Emergency Number 26

Flowchart 2: Initial Notification from an Outside Source to 911 27

Flowchart 3: Initial Notification from Gas Control detecting Abnormal Operating Conditions 28

Flowchart 4: Facility Fire or Explosion - Response Actions 35

Flowchart 5: Person Down Rescue and Medical Situation – Response Actions 37

Flowchart 6: Natural Disasters – Response Actions 39

Flowchart 7: Aggressive Actions/Bomb Threat - Response Actions 41

Flowchart 8: Odourant Spills - Response Actions 43

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

ANNEXES

ERP Annex A	ERP Emergency Levels and Response Table
ERP Annex B	Roles and Responsibilities Checklist
ERP Annex C	Forms
ERP Annex D	Emergency Contacts
ERP Annex E	Support Services
ERP Annex F	Emergency Equipment List
ERP Annex G	Environmental Considerations
ERP Annex H	Natural Gas MSDS
ERP Annex I	Odorant MSDS
ERP Annex J	Maps, Drawings and Alignment Sheets
ERP Annex K	Incident Reporting and Notification Requirements

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

Distribution List

Emera Brunswick Pipeline Company Ltd (EBPC or the Company) provides controlled access to Emergency Response Plan (ERP) documents on its intranet site. Registered hard copies are assigned to relevant positions as per the list below.

This document is accessible for all outside agencies on the Emera New Brunswick website at: www.emeranewbrunswick.com.

Registered Manual #	Assigned To
01	Accountable Officer (General Manager)
02	Quality Assurance Specialist
03	Pool Vehicle
04	Manager, Operations and Engineering
05	Director, Legal and Regulatory
06	New Mexico Gas Control
07	Sr. Manager, HSSE
08	Manager, Regulatory Compliance
09	EHS Specialist
10	Maintenance Technician – E&I
11	Maintenance Technician – Corrosion
12	Maintenance Technician – Pipeline
13	Pipeline Coordinator
14	Spare for EBPC Office
15	Bayside Power ERP Support
16	Secretary of the Board, National Energy Board
17	Manager, Stakeholder Relations

Any non-registered printout of the ERP will be considered uncontrolled. Each ERP controlled document will bear a registered control number on the front cover and in its footer.

The ERP shall remain on EBPC’s SharePoint site which is directly accessible to EBPC employees when emergencies arise.

Document control and distribution of the ERP is managed in accordance with the Document Control Process (OMS-PRO-09). All distributed copies of the ERP are signed by the individual receiving a controlled hard copy. Any errors, omissions or requests for revisions are documented through the Management of Change Process (OMS-PRO-06).

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

1. Purpose

The ERP provides the emergency response procedures that must be followed by EBPC Personnel to effectively respond to an emergency that may affect operations involving the Brunswick Pipeline System. The ERP is governed by the Emergency Management Program (EMP).

EBPC utilizes the internationally recognized Incident Command System (ICS) for emergency planning and response.

This ERP establishes roles and responsibilities, and provides guidance to safely, efficiently and effectively respond to an emergency by setting and managing the following objectives:

- Ensuring life safety of responders and the public;
- Stabilizing the incident by establishing command, setting objectives, strategies and tactics;
- Minimizing impact to the environment and property;
- Preserving records and evidence for post-emergency investigations; and
- Resuming normal operations as quickly as possible in a safe and efficient manner.

2. Scope

The ERP outlines the approach taken by EBPC Personnel in responding to an emergency that originates from or has the potential to impact the Brunswick Pipeline. The ERP does not outline the tactical response to an emergency; it outlines the approach taken to establishing incident response objectives and strategies.

3. Definitions

Term	Definition
Abnormal Operating Conditions (AOC)	A condition that may indicate a malfunction of a component or deviation from normal operations that may: <ol style="list-style-type: none"> 1) indicate a condition exceeding design limits, or 2) result in a hazard(s) to persons, property or the environment.
Accountable Officer (AO)	A person appointed who has authority for the financial and human resources of the Company required to meet its obligations for safety, security and protection of the environment. This person is responsible on the Company's behalf for the Company's Management System and related Programs. The AO provides the focus, direction, influence and leadership, which is required to create a robust safety culture, and implement and continually improve a well-functioning Management System within the organization.
Brunswick Pipeline System	The Brunswick Pipeline System is a natural gas transmission pipeline that extends from Saint John to St. Stephen, New Brunswick. The pipeline has a maximum allowable operating pressure of 9930 kPag (1440 psig), is 145km long, and 762mm (30-inch) in diameter.
Call-Down	The deactivation of an emergency response that is initiated by the Incident Commander when all emergency response objectives have been met and the emergency no longer poses a threat to people, property or the environment.
Cold Zone	The area designated as the safe area in an on-site emergency area division.
Command Staff	Consists of Information Officer, Safety Officer, Liaison Officer, and other positions as required, who report directly to the Incident Commander. They may have an assistant or assistants, as needed.
Continuing Education and Liaison Activities	Activities that EBPC has identified in its Communication Requirements Register (OMS-REG-08) and undertakes to: <ul style="list-style-type: none"> • establish and maintain liaison with agencies that may be involved in an emergency response on the pipeline and are consulted when EBPC makes material changes to its Emergency Management Program or related procedures; • inform all persons who may be associated with an emergency response activity on the pipeline of the

	<p>practices and procedures to be followed and make available to them the relevant information that is consistent with this Emergency Management Program and related procedures;</p> <ul style="list-style-type: none"> • inform the police, fire departments, medical facilities, other appropriate organizations and agencies and the public residing adjacent to the pipeline of the location of the pipeline, potential emergency situations involving the pipeline and the safety procedures to be followed in the case of an emergency.
Crisis Management Team (CMT)	<p>This team is responsible for legal and regulatory notifications, and administrative duties in support of the Incident Commander.</p> <p>The CMT is mandatory for Level Two and Level Three emergencies. The CMT may also be initiated for Level One emergencies at the discretion of the Accountable Officer.</p> <p>The Accountable Officer or Director of Legal and Regulatory Affairs may serve as CMT Lead.</p>
Crisis Management Team Lead	<p>At the Incident Commander’s direction, the Crisis Management Team Lead is responsible for initiating the Crisis Management Plan and leading the Crisis Management Team.</p>
Demobilization	<p>The orderly, safe, and efficient return of an incident resource to its original location and status.</p>
Duty Manager	<p>Person responsible to be on call in case of emergency and could activate the Emergency Response Plan (EMP-PDR-01). The following positions may fill the Duty Manager role:</p> <ul style="list-style-type: none"> • Accountable Officer; • Director, Legal and Regulatory Affairs; • Manager, Operations and Engineering; • Sr. Manager, Health, Safety, Security and Environment; • Regulatory Compliance Manager; and • Lead Maintenance Technician.
EBPC Personnel or Personnel	<p>All persons who respond to an emergency on the Company’s behalf, including EBPC employees, EBPC Gas Control employees, and Bayside Power employees who serve as mutual aid partners.</p>
Emergency Planning Zone (EPZ)	<p>The zone 800 metres from center of pipeline in which adverse health effects could occur in the instance of a pipeline emergency if appropriate emergency response is not taken. EBPC’s Continuing Education and Liaison Activities focus on stakeholders who reside or work in the Emergency Planning Zone.</p>

Emergency Response Team (ERT)	EBPC’s field response team led by the Incident Commander.
Gas Control Centre or Gas Control	EBPC’s Gas Control Centre for the monitoring of its pipeline Supervisory Control and Data Acquisition (SCADA) system, located in New Mexico, United States of America.
General Staff or General Staff Chiefs	A group of emergency management Personnel organized according to function and reporting to the Incident Commander. The General Staff normally consists of the Operations Section Chief, Planning Section Chief, Logistics Section Chief, and Finance/Administration Section Chief. An Intelligence/ Investigations Chief may be established, if required, to meet incident management needs.
Hot Zone	The area designated as the hazard area in an on-site emergency area division.
Incident Command System (ICS)	<p>EBPC utilizes the ICS structure in responding to and managing emergencies. This structure is supported by two teams or groups:</p> <ul style="list-style-type: none"> • Emergency Response Team (ERT) • Crisis Management Team (CMT) <p>The ERT consists of all relevant Personnel who will respond to an emergency when an emergency situation is declared by the Incident Commander. Depending on the scale of the emergency, the ERT may include the following response roles:</p> <ul style="list-style-type: none"> • Incident Commander • Safety Officer • Liaison Officer • Information Officer • Operations Section Chief • Logistics Section Chief • Planning Section Chief
Incident Command Post	The field location where the primary emergency response functions are performed.
Incident Commander (IC)	The Incident Commander is responsible for all emergency activities, including the development of strategies and tactics and the ordering and the release of resources during an emergency. The IC has overall authority and responsibility for conducting emergency operations and is responsible for the management of

	all operations at the emergency site.
Information Officer	A member of the Command Staff responsible for interfacing with media, the public, external stakeholders with emergency-related information requirements, and the EBPC Crisis Management Team.
Liaison Officer	The Liaison Officer is a member of the Command Staff responsible for coordinating with representatives from external agencies associated with the ERT responding to the emergency.
Operational Period	The time scheduled for executing a given set of operation actions, as specified in EBPC’s Incident Briefing Form. Operational periods can be of various lengths, although usually they last 12 to 24 hours.
Planning Meeting	A meeting held as needed before and throughout the duration of an emergency to select specific strategies and tactics for emergency control operations and for service and support planning. For larger emergencies, the Planning Meeting is a major element in the development of the plan, objectives, strategies and tactics.
Safety Officer	The Safety Officer is a member of the Command Staff responsible for monitoring emergency operations and advising the Incident Commander on all matters relating to operational safety, including the health and safety of emergency responder Personnel.
Senior Leadership	Senior organizational leaders made up of the Accountable Officer and his/her direct reports. Senior Leadership provides oversight of the Management System, its Processes, the Management Programs, and related work, and participates in the Management System Governance Committee.
Staging Area	Established for the temporary location of available resources. A Staging Area can be any location in which Personnel, supplies, and equipment can be temporarily housed or parked while awaiting operational assignment.
Unified Command	An ICS response team structure whereby responding agencies and/or jurisdictions that have responsibility for the emergency share the management of the emergency. The Incident Commanders, representing various agencies or jurisdictions, manage and direct the emergency response and activities from a single Incident Command Post (ICP).

Emergency Response Plan

Doc No.	EMP-PDR-01
Rev Status	04
Issue Date	2019-04-30

Warm Zone	The area designated as the decontamination area in an on-site emergency area division.
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	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

4. Leadership Accountability and Commitment

An Accountable Officer has been appointed who has authority over EBPC’s human and financial resources required to establish, implement and maintain the ERP, and to ensure that EBPC meets its obligations for safety, security and protection of the environment.

EBPC is committed to effective emergency response by ensuring that all ERP activities conducted by EBPC employees are done in a manner that ensures the safety and security of the public, responders and Personnel, and the protection of property and the environment.

The Accountable Officer has designated the responsibility for the ERP to the Manager, Operations and Engineering. The Manager, Operations and Engineering is responsible for implementation and continual improvement of the ERP, including providing feedback as necessary to the Accountable Officer. Any issue or concern with respect to the ERP which cannot be addressed or resolved by the Manager, Operations and Engineering will be brought to the Accountable Officer’s attention for final resolution without compromising the requirements of the applicable Acts, Regulations, Codes, Standards, good engineering practices and the requirements of this ERP.

EBPC’s Senior Leadership acknowledges the importance of the Emergency Response Plan in achieving the goals of EBPC’s objective of ‘zero incidents’, and as such, are dedicated to providing the leadership and resources necessary to foster a successful Emergency Response Plan.

5. Brunswick Pipeline Operations, Assets, and Potential Emergency Scenarios

5.1 Operations

The Brunswick Pipeline System is a natural gas transmission pipeline that extends from Saint John to St. Stephen, New Brunswick. The pipeline has a maximum allowable operating pressure of 9930 kPag (1440 psig), is 145km long, and 762mm (30-inch) in diameter.

The Brunswick Pipeline receives natural gas from the Canaport LNG Terminal at EBPC's Red Head Meter Station in Saint John. The Brunswick Pipeline delivers the natural gas to the Maritimes & Northeast Pipeline (MNP) US Interconnect at the New Brunswick/Maine border.

5.2 Assets

The following is a description of the Brunswick Pipeline System assets and their location:

- Red Head Meter Station at kilometre post (KP) 0+0, a multi-functional site that meters and odourizes (using Methyl Mercaptan UN1064) the natural gas received from the Canaport LNG Terminal. The Meter Station includes:
 - Pig Launcher (tool for in-line inspection and cleaning)
 - Odourant storage and injection facilities
- Class 3 pipeline in the City of Saint John from KP 0+0 to KP 29+066
- Class 1 pipeline in rural New Brunswick from KP 29+066 to KP 143+903
- Pig receiver and launcher pair at KP 52+610 (alignment sheet 57, see Annex J - Maps, Drawings and Alignment Sheets)
- Supervisory Control and Data Acquisition (SCADA) system and telecommunications remotely operated from New Mexico, United States of America.
- There are 7 mainline block valves located on the Brunswick Pipeline System. The SCADA system, monitored by EBPC's Gas Control Centre in New Mexico, can close these valves remotely. The following is a list of EBPC's 7 mainline block valves and their location:

Table 1: Mainline Block Valves

Mainline Valve (MLV) Number	Civic Address and Coordinates
BP-MLV-001 at Red Head Meter Station	(KP 0+0)
BP-MLV-01-009	(KP 8 +651)
BP-MLV-01-020	(KP 20+166)
BP-MLV-01-028	(KP 27+455)

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

BP-MLV-01-053	(KP 52+610)
BP-MLV-01-078	(KP 77+290)
BP-MLV-01-109	(KP 109+048)

**Note: Portions of this table have been redacted. This section contains security sensitive information to be used in the case of an emergency. It is protected from publication under Clause 1(a) of Order AO-001-MO-006-2016 because there is a real and substantial risk that its disclosure will impair the security of EBPC pipeline facilities.*

Additional information with respect to Brunswick Pipeline System assets can be found in Annex J (maps, drawings and alignment sheets) and Annex F (emergency equipment assets).

5.3 Potential Emergency Scenarios

Based on an assessment using its Hazard Identification, Risk Assessment and Control Process (OMS-PRO-01) and its Hazard and Risk Register (OMS-REG-01), EBPC has identified the following potential emergency scenarios that can disrupt or impact normal Brunswick Pipeline System operations and that are addressed in this ERP:

- Facility/Pipeline Fire
- Facility/Pipeline Explosion
- Person Down, Rescue and Medical Situation
- Natural Disasters
- Threat of Aggressive Action/Bomb Threats
- Odourant Spill

Section 9 of this ERP provides response procedures for these specific emergency scenarios.

In addition, the Hazard and Risk Register (OMS-REG-01) lists all the hazards, potential hazards, risks, and control measures addressed by the Programs within the OMS.

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

6. Emergency Levels

An emergency which is identified by EBPC Personnel can be classified as a Level One, Level Two or Level Three Emergency. EBPC has established the ERP Emergency Levels and Response Table (Annex A) for determining the appropriate emergency level during an emergency.

By assigning the emergency level and initiating the ERP, EBPC Personnel are able to communicate the severity of the emergency quickly and clearly to other responders and regulatory agencies and can take appropriate actions.

The following key issues must be considered when assessing the level of emergency:

- Is the situation likely to escalate?
- Are members of the public likely to be affected?
- What are the environmental impacts?
- Can the situation be handled entirely by EBPC Personnel?
- Does the danger (or potential danger) justify alerting outside agencies (fire department, RCMP, etc.)?
- Is there a security risk?
- Is the situation likely to attract media or social media attention?

7. Emergency Response Team Structures

As mentioned in Section 1, EBPC’s ERP uses the Incident Command System (ICS) structure in responding to and managing emergencies. This structure is supported by two EBPC teams:

- Emergency Response Team (ERT) for all levels of emergency; and
- Crisis Management Team (CMT), mandatory for Level Two and Level Three emergencies. The CMT may also be initiated for Level One emergencies at the discretion of the Accountable Officer.

Depending on the Emergency scenario, EBPC may need to share the management of the emergency and participate in a Unified Command response structure.

The ERT, CMT and Unified Command response team structures are described in more detail as follows.

7.1 The Emergency Response Team (ERT)

The ERT includes EBPC Personnel who will respond to an emergency when this Emergency Response Plan is initiated. The ERT is led by the Incident Commander who initiates the Emergency Response Plan and assigns the emergency level. The Incident

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

Commander assigns emergency response roles and resources, and oversees the field response for the emergency.

The individual roles and responsibilities are further discussed in Section 8 of this ERP.

The Incident Commander also obtains support as necessary, from municipal/local emergency responders, the CMT, mutual aid partners and assisting agencies. See ERP Annex E (Support Services) for a list of support services the Incident Commander may utilize.

When required, in conjunction with government and response agencies, the Incident Commander has the authority to elevate or downgrade the level of emergency, or to initiate a Call-Down.

7.2 The Crisis Management Team (CMT)

This CMT is responsible for legal and corporate notifications, and other administrative duties in support of the Incident Commander. The roles and responsibilities, and the organizational structure of the CMT are defined in EBPC’s Crisis Management Plan (CMP) (EMP-PDR-02).

7.3 Unified Command

In Unified Command, the responding agencies and/or jurisdictions that have responsibility for the emergency share the management of the emergency. The Incident Commanders, representing various agencies or jurisdictions, manage and direct the emergency response and activities from a single Incident Command Post (ICP). The ICP is described in more detail in Section 9.2.

A Unified Command allows agencies with different legal, geographic, and functional authorities and responsibilities to work together effectively without affecting individual agency authority, responsibility, or accountability.

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

8. Emergency Response Roles and Responsibilities

The ERP defines the specific roles and responsibilities that the Emergency Response Team (ERT) will have to follow to ensure that the emergency situation is managed effectively. In addition, EBPC has established a Roles and Responsibilities Checklist (Annex B) for ERT members' use in emergency situations. Any Forms that ERT members may be required to use in carrying out their roles and responsibilities during an emergency are listed and available in Annex C.

The first EBPC Personnel at the site of the emergency will assume the role of the Incident Commander and will initiate the response to the emergency. Command may change to meet the priorities set for the emergency.

The Incident Commander assumes all ERT roles until they are delegated and established in the Emergency Organization Chart (ERP-FRM-03).

All ERT members are responsible for maintaining the Time and Event Log (ERP-FRM-01) to document actions and associated times until the completion of demobilization.

8.1 Incident Commander

The Incident Commander (IC) is responsible for all emergency activities, including the development of strategies and tactics, and the ordering and the release of resources during an emergency. The IC has overall authority and responsibility for conducting emergency operations and is responsible for the management of all operations at the emergency site.

The Incident Commander will manage all field aspects of the emergency for EBPC. The Incident Commander will ensure that issues relating to responder safety, public safety, control and containment are addressed and the objectives set in the Incident Briefing Form (EMP-FRM-02) are successfully executed.

In cases when a Unified Command is implemented involving outside agencies or organizations, the EBPC Incident Commander will work in coordination with the Incident Commanders of other organizations or agencies to provide management direction through a common set of objectives and strategies to respond to the emergency. In Unified Command, the Incident Commander will still maintain their authority, responsibility and accountability.

The primary functions of the **Incident Commander** are to:

- Have clear authority for the emergency response
- Ensure safety of the ERT during emergency response
- Establish the Incident Command Post

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

- Set priorities, and determine incident objectives and strategies to be followed (EMP-FRM-02)
- Establish ICS organization needed to manage the emergency
- Approve the Incident Briefing Form (ERP-FRM-02)
- Coordinate ERT activities
- Approve resource requests
- Order demobilization as needed and ensure completion of Demobilization Check-Out Form (ERP-FRM-05)
- Authorize information release to the media

See Annex B for the Incident Commander roles and responsibilities checklist.

8.2 Safety Officer

The Safety Officer is a member of the Command Staff responsible for monitoring emergency operations and advising the Incident Commander on all matters relating to operational safety, including the health and safety of emergency responder Personnel.

The Safety Officer has the authority to monitor and suspend any operation which threatens the health and safety of responders.

The primary functions of the **Safety Officer** are to:

- Identify and mitigate hazardous situations
- Create a safety message and plan using the Safety Message/Plan Form (ERP-FRM-06)
- Continue to monitor, assess and mitigate safety hazards or unsafe conditions by using the Incident Action Plan Safety Analysis Form (ERP-FRM-07)
- Participate in or review the Incident Briefing Form (ERP-FRM-02) for safety implications
- Assign assistants qualified to evaluate special hazards
- If warranted, develop a medical plan using the Medical Plan Form (ERP-FRM-08), specifying the location of medical aid stations, ambulance services and hospitals
- Participate in Planning Meetings to address anticipated hazards associated with future operations

See Annex B for the Safety Officer roles and responsibilities checklist.

8.3 Liaison Officer

The Liaison Officer is a member of the Command Staff responsible for coordinating with representatives from external agencies associated with the ERT responding to the emergency.

The primary functions of the Liaison Officer are to:

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

- Act as a point of contact for external agency representatives
- Maintain a list of external agencies and representatives using the Check-In Form (ERP-FRM-04)
- Assist in setting up and coordinating interagency contacts
- Monitor emergency operations to identify current or potential inter-organizational issues
- Participate in Planning Meetings, providing current resource status, including limitations and capabilities of agency resources
- Provide agency-specific demobilization information and requirements

See Annex B for the Liaison Officer roles and responsibilities checklist.

8.4 Information Officer

The Information Officer is a member of the Command Staff responsible for interfacing with media, the public, external stakeholders with emergency-related information requirements, and the EBPC Crisis Management Team.

The primary functions of the Information Officer are to:

- Determine, according to direction from IC, any limits on information release
- Develop accurate, accessible, and timely information for use in press/media briefings using the General Message Form (ERP-FRM-09)
- Obtain the IC's approval of news releases
- Conduct periodic media briefings
- Monitor and forward media information that may be useful to emergency planning
- Provide appropriate updates on the status of the emergency to the Crisis Management Team
- Participate in Planning Meetings
- Assists Incident Commander in communicating the Call-Down notification, as required

See Annex B for the Information Officer roles and responsibilities checklist.

8.5 Operations Section Chief

The Operations Section Chief directly manages all emergency tactical activities and implements the plan, objectives, strategies and tactics developed in the Incident Briefing Form (ERP-FRM-02). The Operations Section Chief may have one or more deputies, preferably from other agencies in multijurisdictional incidents. An Operations Section Chief should be designated for each Operational Period and will have direct involvement in the development of the plan, objectives, strategies and tactics for the next Operational Period of responsibility.

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

The Operations Section is responsible for all tactical incident operations and implementation of the plan, objectives, strategies and tactics developed in the Incident Briefing Form (ERP-FRM-02).

The primary functions of the Operations Section Chief are to:

- Ensure safety of tactical operations
- Manage tactical operations
- Participate in or review the Incident Briefing Form (ERP-FRM-02), contributing, in particular, to the development of response strategies and tactics, and resourcing requirements
- Supervise execution of the operations portions of the Incident Briefing Form (ERP-FRM-02)

See Annex B for the Operations Section Chief roles and responsibilities checklist.

8.6 Logistics Section Chief

The Logistics Section Chief is responsible for all the services and support needs of an emergency, including obtaining and maintaining essential Personnel, facilities, equipment and supplies.

The Logistics Section is responsible for providing facilities, services, and material support for the incident.

The primary functions of the Logistics Section Chief are to:

- Provide all facilities, transportation, communications, supplies, equipment maintenance and fuelling, food, and medical services for the ERT
- Manage all emergency response logistics
- Participate in or review the Incident Briefing Form (ERP-FRM-02) to be informed of the essential resources that need to be sourced
- Oversee demobilization of Logistics Section and associated resources
- Provide field communications as required

See Annex B for the Logistics Section Chief roles and responsibilities checklist.

8.7 Planning Section Chief

The Planning Section Chief oversees all emergency-related data gathering and analysis regarding emergency operations and assigned resources, conducts Planning Meetings, and prepares the plan, objectives, strategies and tactics for each Operational Period.

The Planning Section is responsible for the collection, evaluation, and dissemination of operational information related to the incident, and for the preparation and documentation of the plan, objectives, strategies and tactics. This Section also maintains

 BRUNSWICK PIPELINE <small>An Emera Company</small>	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

information on the current and forecasted situation and on the status of resources assigned to the incident.

The primary functions of the Planning Section Chief are to:

- Collect and manage all emergency-relevant operational data
- Based on the data collected, provide direction in the Incident Briefing Form (ERP-FRM-02) so that the plan, objective, strategies and tactics can be developed
- Conduct and facilitate Planning Meetings, continually assessing new data and emergency status
- Compile and display relevant emergency status information so that it is available to the Command Staff
- Assess any environmental impacts during the emergency response in accordance with Annex G (Environmental Considerations)
- Report significant changes in emergency status

See Annex B for the Planning Section Chief roles and responsibilities checklist.

9. Emergency Response

9.1 Notifications

9.1.1 Initial Emergency Notifications and EBPC Response

EBPC Personnel may initially become aware of an emergency by receiving a notification from an outside source, such as a member of the public, media, a third-party company or a government agency, or an internal source, such as its Gas Control or employees.

The ERP is not automatically initiated when information related to a potential emergency is received.

However, the ERP *is* initiated if the following conditions are met:

- EBPC is notified by a reputable source, such as a third-party company or agency that an emergency exists; or
- Information is received from several different sources about the same incident; or
- EBPC responding Personnel has verified that the conditions associated with the initial notification meet the conditions for a Level One, Level Two or Level Three emergency, as the case may be.

As soon as it has been established that an emergency situation has occurred, EBPC Personnel shall initiate the Emergency Response Plan. Telephone numbers for EBPC Personnel are included in Annex D – Emergency Contacts.

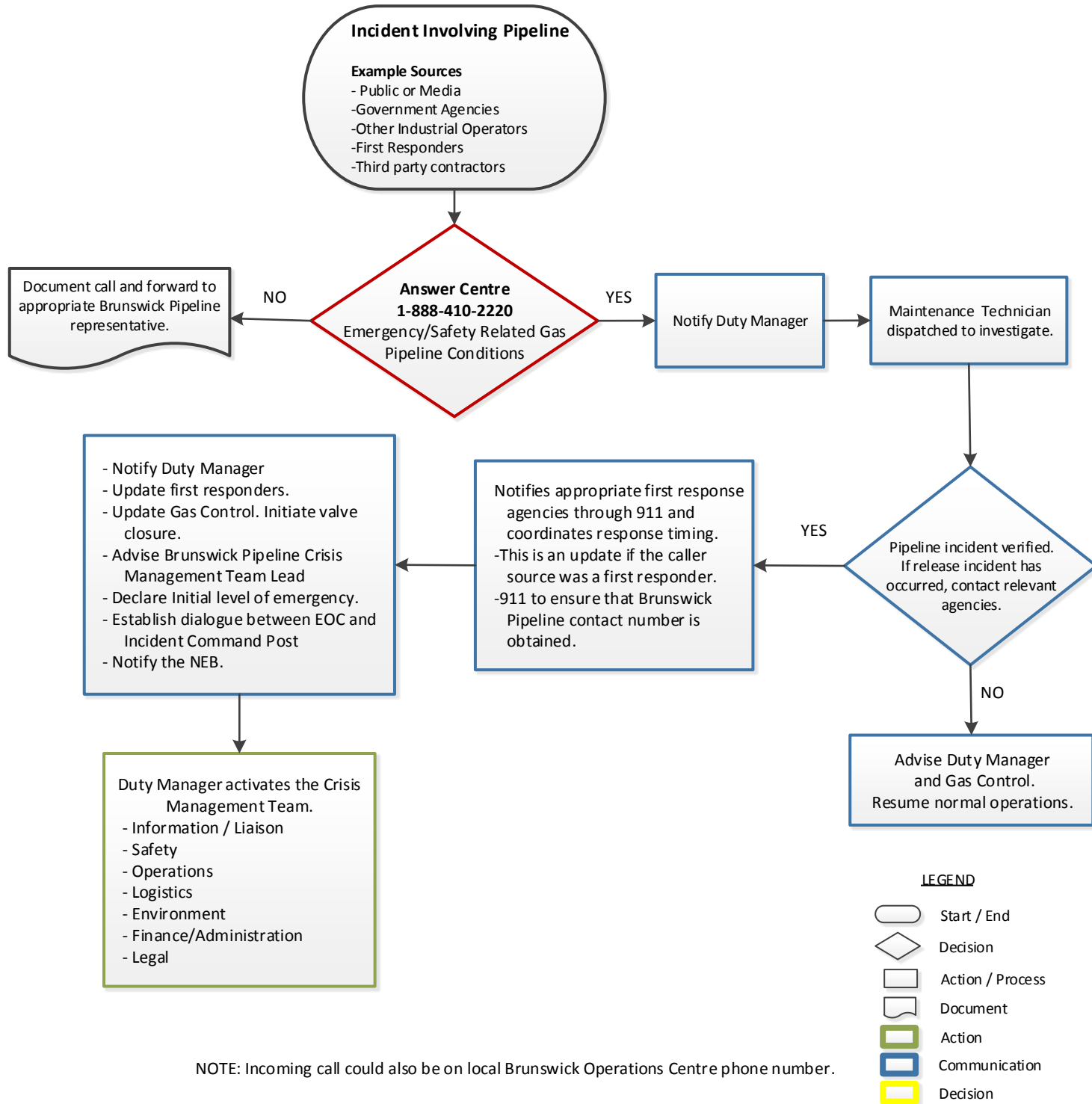
The following flowcharts set out the immediate actions EBPC will take based on the manner in which the emergency notification is received:

 BRUNSWICK PIPELINE <small>An Emera Company</small>	Emergency Response Plan	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

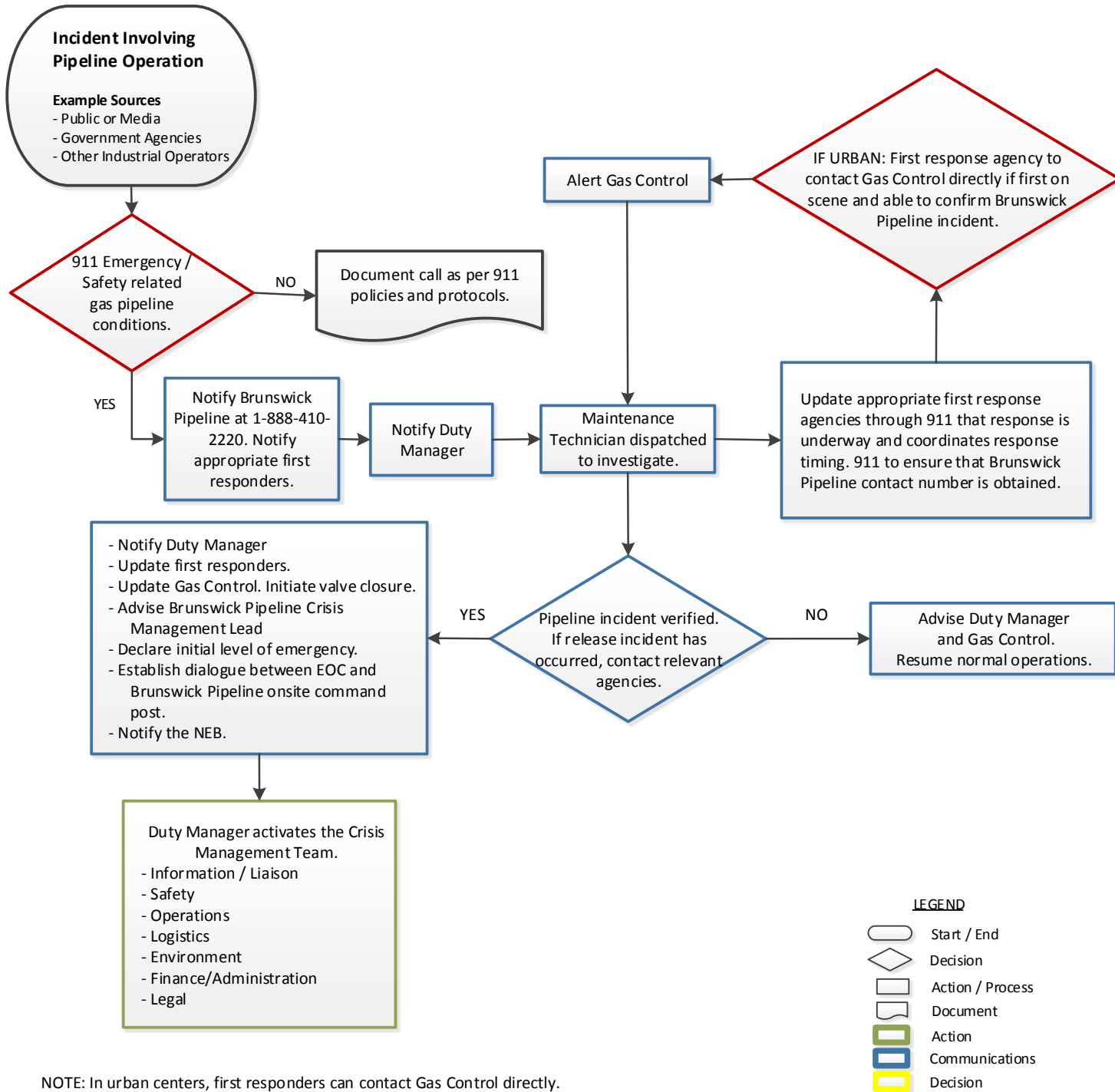
Table 2: Initial Emergency Response Notifications and EBPC Response Flowcharts

Flowchart 1	<p>Initial Notification from an outside source to EBPC emergency number involving the pipeline</p> <p>(call to Emergency Number 1-888-410-2220)</p>
Flowchart 2	<p>Initial Notification from an outside source to 911 involving a pipeline emergency</p> <p>(call to one of six public safety answering points in New Brunswick (PSAPs) through 911)</p>
Flowchart 3	<p>Initial Notification from Gas Control detecting Abnormal Operating Conditions</p> <p>(Gas Control detects the Abnormal Operating Condition on SCADA)</p>

Flowchart 1: Initial Notification from an Outside Source to EBPC Emergency Number

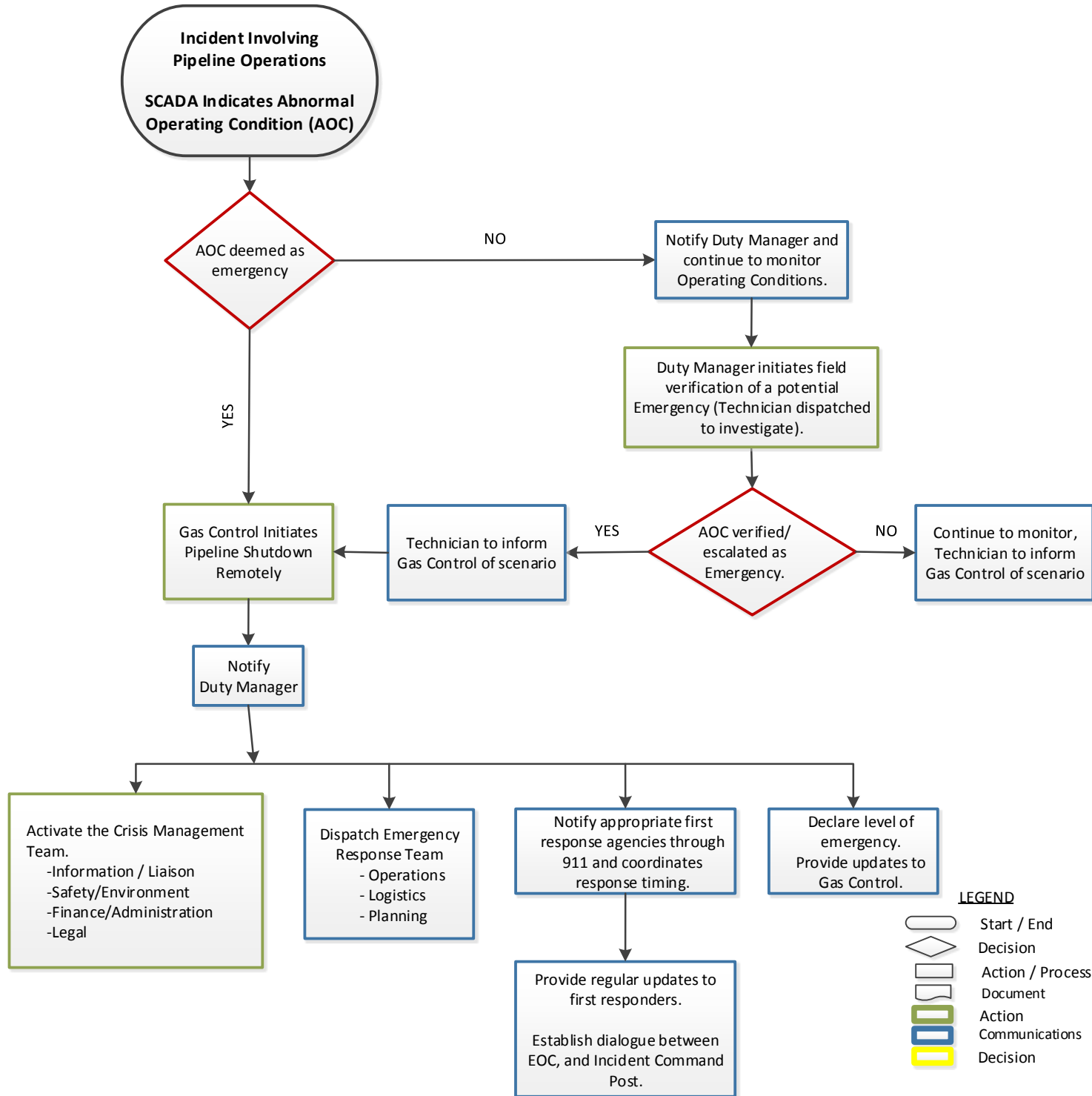


Flowchart 2: Initial Notification from an Outside Source to 911



NOTE: In urban centers, first responders can contact Gas Control directly.

Flowchart 3: Initial Notification from Gas Control detecting Abnormal Operating Conditions



 BRUNSWICK PIPELINE <small>An Emera Company</small>	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

9.1.2 Incident Reporting and Notifications to Government Departments and Agencies

In accordance with Annex A, the Incident Commander is responsible for making the following notifications to responding and regulatory agencies:

- **911**
- **Transportation Safety Board (TSB)** (TSB will contact the National Energy Board) 1-819-997-7887, as soon as possible, and no later than 3 hours after the incident has been discovered
- **Local Authorities**
- **Emergency Measures Organisation**

Telephone numbers for the respective agencies are included in Annex D – Emergency Contacts.

The Crisis Management Team will determine whether any additional notifications are required, in consultation with the IC, and in accordance with Annex K (Incident Reporting and Notification Requirements).

9.2 Incident Command Post (ICP)

The Incident Commander will establish and announce to responders the location of the Incident Command Post (ICP) where the primary emergency response functions are performed. The ICP will be established at a safe location or facility. The ICP will be clearly designated through the use of a green flashing light or green flag.

The Incident Commander will direct all on-site emergency response activities and the ERT from this Incident Command Post.

The Incident Commander will be located at the ICP at all times. Only authorized Personnel will be permitted to access the ICP.

9.3 Emergency Operations Centre (EOC)

The Emergency Operations Centre (EOC) is the physical location for EBPC’s Crisis Management Team. The EOC is established by the Crisis Management Team Lead and may be located at a temporary facility or in a more central or permanently established facility. The Incident Commander or Information Officer will communicate with the CMT Lead on a scheduled basis to ensure the CMT is aware of the status of the emergency, operational planning as well as any resources or support that is required.

(See the Crisis Management Plan (EMP-PDR-02) for detailed Crisis Management Team and Crisis Management Team Lead roles and responsibilities.)

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

9.4 On-Site Communication Systems

EBPC will use necessary communication systems and equipment to ensure effective communication between the ICP and responding parties. This equipment may include:

- Trunked Mobile Radio System (TMR), landline and cellular phones
- Mobile radios
- Laptops

9.5 Safety During Emergency Response

9.5.1 Hazard Monitoring

During an emergency, hazards will be continually monitored by all ERT members for severity so that the emergency response can be tailored to the specific needs of the emergency and other hazards as they arise. Any new hazards need to be reported to the Incident Commander immediately.

The Incident Commander, in coordination with the Command Staff and General Staff (Section Chiefs), will assess and identify the hazard response equipment and devices appropriate for addressing site-specific emergency situations.

9.5.2 On-Site Emergency Areas Division

The Incident Commander, Command Staff and applicable first responders may divide the site into three areas to clearly identify high-risk areas and to reduce the hazards to responders. The three areas are defined as the Cold Zone (safe area), the Hot Zone (hazard area) and the Warm Zone (decontamination area).

1. Cold Zone (Safe Area)

The Incident Briefing Form (ERP-FRM-02) will indicate where the Cold Zone (Safe Area) is located. The ICP will be located in the safe area. The Cold Zone is continually monitored and evaluated to confirm its safety.

2. Hot Zone (Hazard Area)

The Hot Zone is the hazardous area. Extreme caution and planning must be undertaken when entering this area. The Hot Zone may only be accessed at the Incident Commander's direction.

An area is considered hot, if any of the following conditions exist:

- Combustible gas readings of 20% of Lower Explosive Limit (LEL) or greater (i.e., 4% to 15% methane to air mixture)
- Oxygen content less than 19.5% or greater than 22%

The following conditions must be considered in the Incident Briefing Form (ERP-FRM-02) when determining the size of the Hot Zone:

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

- the location of access routes, power lines, pipelines, fire and explosion hazards
- areas where vapors are likely to accumulate, e.g. downwind, confined spaces
- site instability, e.g., steep slopes, overhanging banks, unstable soil, ice, and weather conditions
- safety data for the substance involved (refer to Material Safety Data Sheet (MSDS) - Annex H & I)

3. Warm Zone (Decontamination Area)

The Warm Zone is usually set up in response to a hazardous material spill and when decontamination of Personnel and equipment is required. For EBPC, a Warm Zone would be setup for an incident involving Methyl Mercaptan release as Mercaptan is a hazardous material. The decontamination area buffers the designated Hot and Cold Zones. Warm Zones should be set up in areas that are not affected by the hazard.

Contaminated EBPC Personnel and equipment must be decontaminated in the Warm Zone before continuing on into the Cold Zone.

Decontamination is the complete removal or neutralization of the harmful contaminating substances. The Safety Message/Plan Form (ERP-FRM-06) will identify the required PPE, decontamination measures and waste management.

Note: The Hot, Warm, and Cold Zones must not be confused with EBPC's Emergency Planning Zone (EPZ). The EPZ is the zone 800 metres from center of pipeline that is the focus of EBPC's Continuing Education and Liaison Activities with respect to emergency preparedness.

9.5.3 ERT Obligations

EBPC Personnel must follow safe-work procedures to ensure their own safety as well as safety of anyone impacted by the emergency. The ERT is to stay out of the Hot Zone until hazards are identified and assessed.

The nature of a hazard(s) influences the response that is implemented by the Incident Commander or the Operations Section Chief. The following characteristics about the hazard must be considered before responding:

- The potential for the situation to escalate
- The location of the emergency, the time of day and the weather conditions
- Actual and perceived impact to responders, the public or the environment
- The number of responders and their training
- The availability of response equipment

 BRUNSWICK PIPELINE <small>An Emera Company</small>	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

- The availability of external support, e.g., ambulances, police, fire fighters and mutual aid partners

When responders approach a site that could have explosive vapors, they must approach the site from an upwind or crosswind direction and inspect the site from a distance to assess the potential of fire or explosion.

When on the site, responders should address the following precautions:

- Identify a safe escape route
- Continue to assess the hazards, e.g., vapors, fire hazards, electrical hazards
- Protect themselves and others (responders and public) before initiating on-site operations
- Avoid extinguishing an ignited release if the leak or supply cannot be stopped
- Attempt to control only small fires. EBPC Personnel should not attempt to battle a fire without adequate firefighting equipment, training and backup Personnel.

EBPC Personnel inform first responders (fire, police, and ambulance) about the hazards, as appropriate, and advise of the precautions that need to be taken prior to entering the Hot Zone.

9.6 Site Security

During an emergency response, the ERT will ensure their own safety before securing the emergency site. The security of the emergency site should address the following issues:

- a) Securing the site perimeters and site controls to restrict access to authorized Personnel only
- b) Methods for keeping track of location and roles of responders (Check-in Form ERP-FRM-04)
- c) Security hazard identification and monitoring
- d) Monitoring of individuals and the environment
- e) Communications and warning protocols (Incident Briefing Form ERP-FRM-02)

9.6.1 Roadblocks

Roadblocks, if deemed necessary, will be established to prevent unauthorized entry to the emergency site. These roadblocks are authorized by local police or RCMP Personnel.

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

9.7 Specific Response Procedures for Potential Emergency Scenarios

EBPC has identified the following potential emergency scenarios that can disrupt or impact normal Brunswick Pipeline operations and that could lead to a possible emergency for EBPC’s Brunswick Pipeline System:

- Facility/Pipeline Fire
- Facility/Pipeline Explosion
- Person Down, Rescue and Medical Situation
- Natural Disasters
- Threat of Aggressive Actions/Bomb Threat
- Odourant Spill

This section provides a brief description of specific response procedures for the above potential emergency scenarios to ensure all responders have an understanding of the immediate actions that are required.

Response steps outlined in this section are guidelines and may not meet the specific needs for all response situations.

Depending on the scope of emergency, more than one specific response procedure may need to be utilized.

Note: In some cases, it may be necessary to shut-in the pipeline. The Incident Commander would make this decision.

9.7.1 Facility Fire: Fire Near or Involving a Pipeline Facility

For gas fires or fires involving gas-containing facilities, EBPC Personnel should assess the situation and coordinate with outside firefighting Personnel as required. General procedures for responding to this type of emergency are as follows (see also Flowchart 4: Facility Fire or Explosion - Response Actions):

- Remain at a safe distance. Protect people first, then property and environment. Seek assistance from first responders to secure the area and restrict access to trained Personnel only
- Establish an Incident Command Post and Staging Area
- If safe to do so, request first responders to evacuate any adjacent facilities or buildings that may be endangered
- If necessary, wait for assistance to arrive before attempting control measures
- If the fire is being fueled by escaping gas or some similar flammable material, company Personnel will attempt to eliminate the flammable fuel source. Normally, natural gas fires should not be extinguished unless the fuel source can be safely eliminated. If the fire is not from a fuel source and, if it is safe to do so, firefighting Personnel should extinguish the fire. Use available firefighting equipment and proper firefighting techniques.

	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

- Emergency responders should not enter the hazard area unless they are properly trained, equipped and informed of the hazards

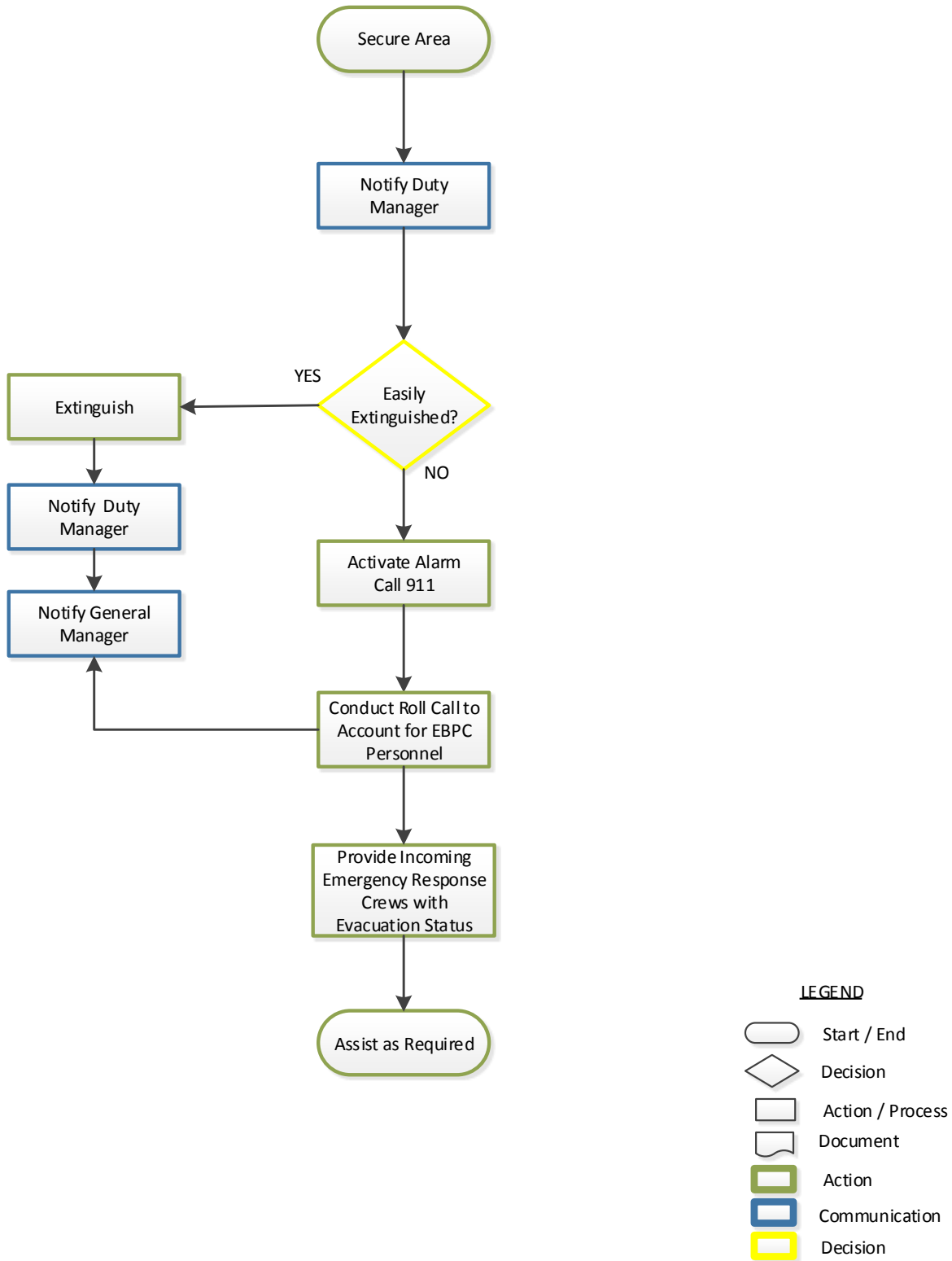
9.7.2 Facility Explosion: Explosion Near or Involving Pipeline Facilities

If an explosion has occurred, particularly where no fire is burning, be alert to the possibility of additional explosions and fire ignition.

General procedures for responding to this type of emergency are as follows (see also Flowchart 4: Facility Fire or Explosion –Response Actions):

- Remain at a safe distance. Seek assistance from first responders to secure the area and restrict access to trained Personnel only
- Establish an Incident Command Post and Staging Area
- If safe to do so, request first responders to evacuate any adjacent facilities or buildings that may be endangered
- If necessary, wait for assistance to arrive before attempting control measures

Flowchart 4: Facility Fire or Explosion - Response Actions



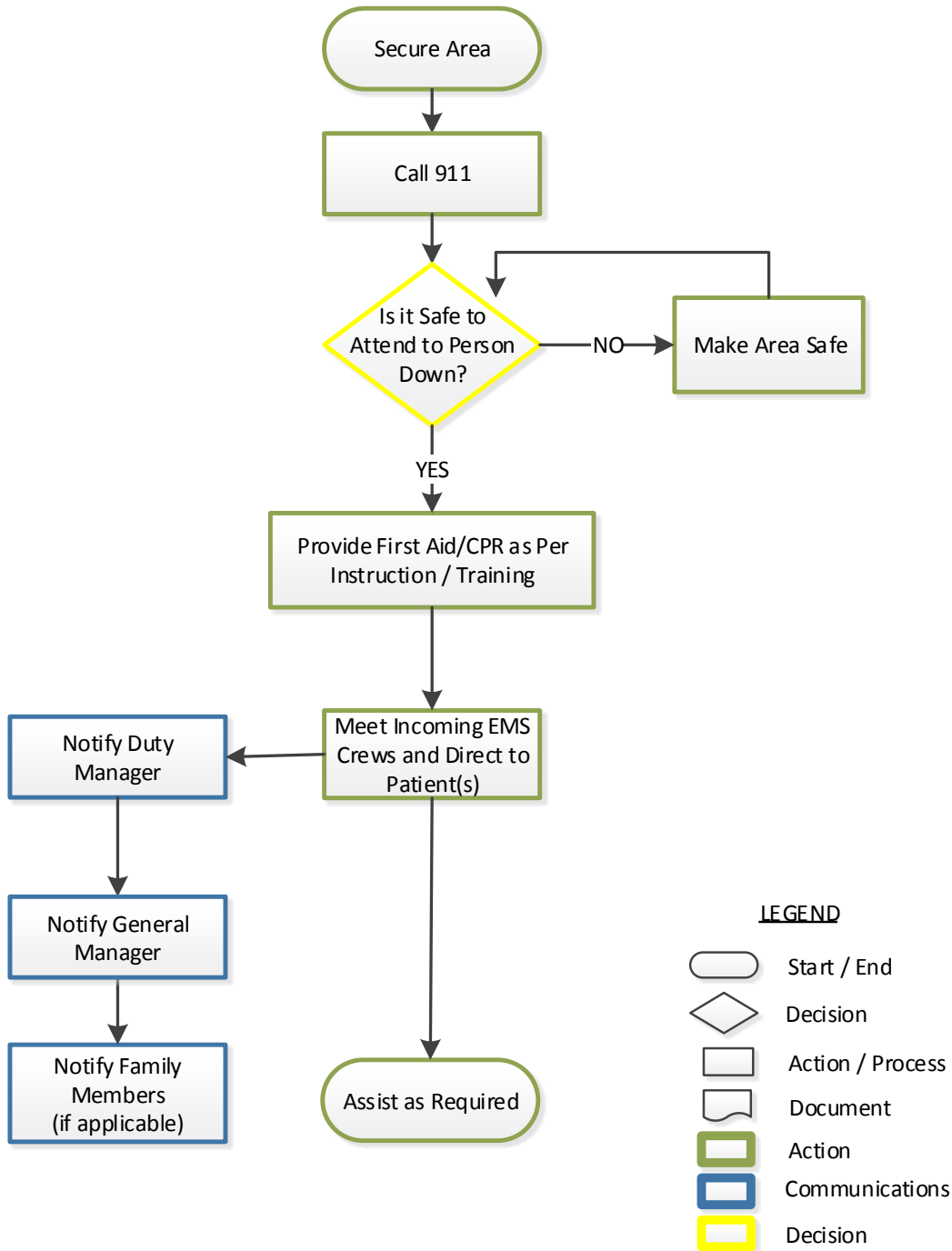
	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

9.7.3 Person-Down Rescue and Medical Situation

During an emergency, whenever a person is noticed to be lying on the ground, EBPC must be prepared to respond to the injured party effectively. Precautions must be taken to protect responders first, then assess why the injured person became injured and, if safe to do so, attempt to rescue the injured person. General procedures for responding to a “person-down” are as follows (See Flowchart 5: Person Down Rescue and Medical Situation – Response Actions):

- Protect yourself by retreating to a safe area
- Call 911
- If safe to do so, recover the injured person and remove to safe area (Cold Zone)
- Start first aid and CPR (cardiopulmonary resuscitation), if trained
- Hand over the injured person to EMS and brief them about actions taken so far
- Upon arrival of ERT (if mobilized), provide all information to the incoming ERT Incident Commander so that they can assume control of the emergency

Flowchart 5: Person Down Rescue and Medical Situation – Response Actions



	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

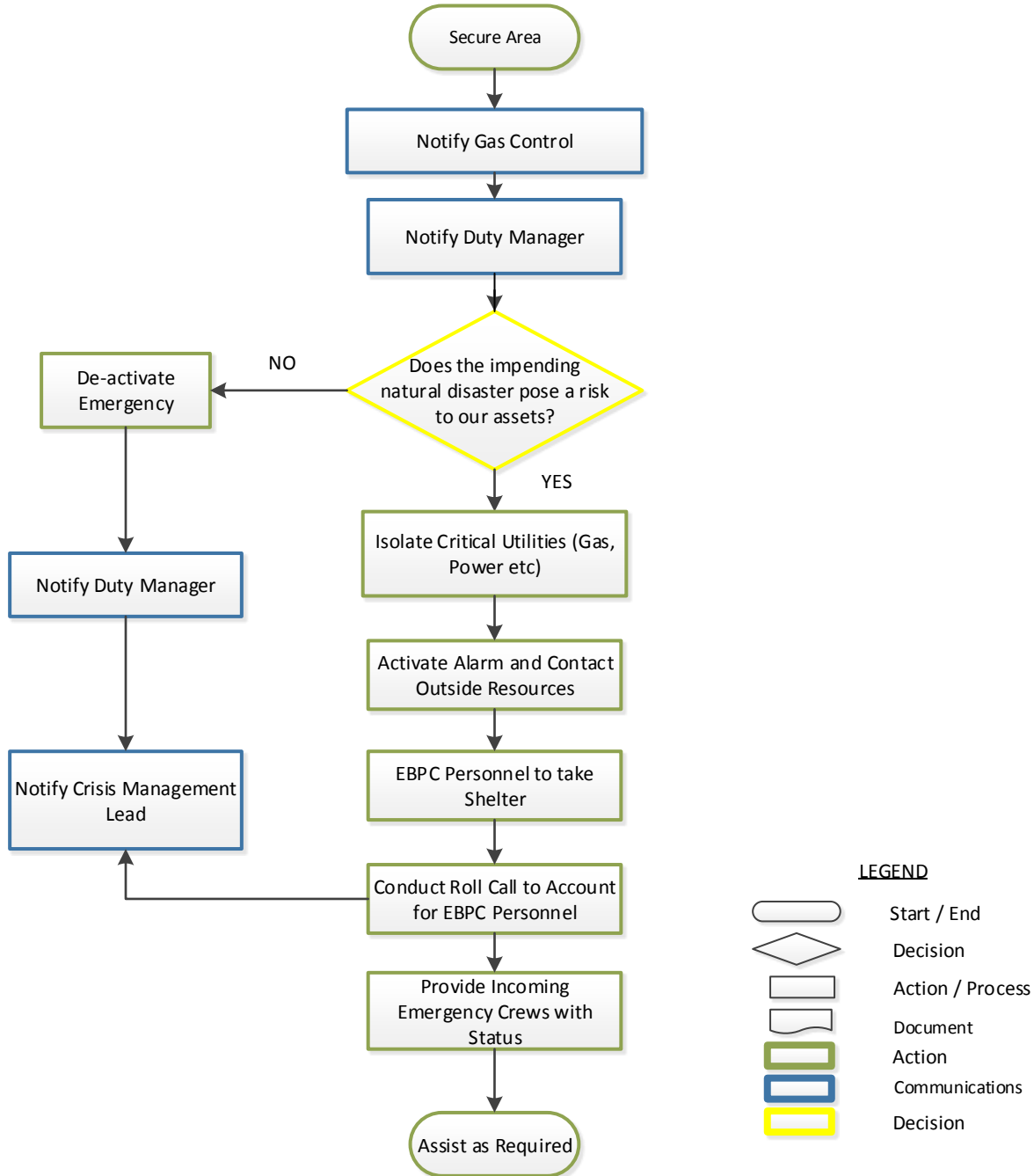
9.7.4 Natural Disasters

Whenever a disaster such as an earthquake, flood, blizzard, ice storm, or hurricane occur, the affected EBPC facilities will be monitored during the disaster by Gas Control and EBPC. Precautions will be taken to protect life first and then property and environment. If sufficient danger exists during the natural disaster, the affected facilities may be shut in and possibly blown down. Once the natural disaster has passed and it is safe to do so, facilities will be inspected for damage.

The following general procedures can be followed to respond to an emergency of this type (see also Flowchart 6: Natural Disasters – Response Actions):

- If applicable, confirm that the mitigation measures and monitoring equipment/activities which were put in place in anticipation of a natural disaster or in planning for a forecasted natural disaster are in place and are functioning properly
- Monitor weather information
- If a natural disaster warning is issued by the appropriate authority, the Duty Manager shall monitor conditions.
- Take appropriate actions as time permits (remember to protect life first and then property):
 - Notify the EBPC 24-hour emergency number at 1-888-410-2220 and the local area office and other affected facilities. Advise Gas Control that your facility may be out of communication.
- After the natural disaster event has passed:
 - Survey for damage and isolate portions of facilities that have been damaged.
 - Notify EBPC's 24-hour emergency number at 1-888-410-2220 and the local area office and other affected facilities that the storm has passed and what damage has occurred
 - Proceed with any repairs or other remedial actions

Flowchart 6: Natural Disasters – Response Actions



	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

9.7.5 Threat of Aggressive Action/Bomb Threat

Threats of aggressive action against EBPC or bomb threats will be managed in accordance with this ERP and with the appropriate Levels of Emergency described above.

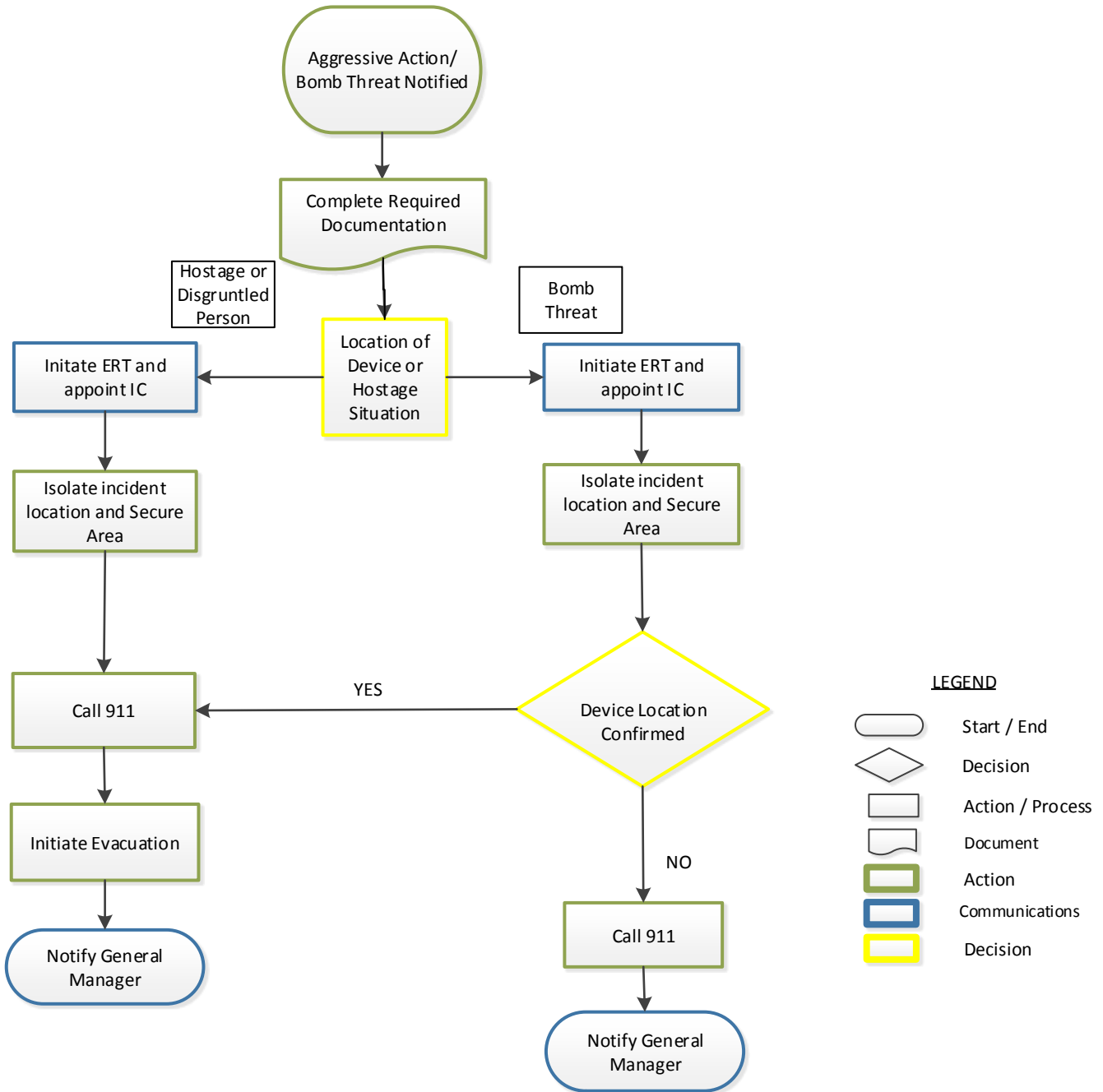
The likeliest types of threats that EBPC may encounter are:

- Disgruntled employee
- Disgruntled visitor to EBPC office or sites
- Suspicious packages left at one of EBPC's facilities

The following general procedures are to be followed when responding to a threat of Aggressive Action/Bomb Threat (see also Flowchart 7: Aggressive Actions/Bomb Threat - Response Actions):

- Call 911 in all cases
- Do not investigate/touch or move suspicious packages
- If threat received by phone, complete the Bomb Threat Form (SMP-FRM-06), capturing as much relevant information as possible. This information will be relayed to police or RCMP.

Flowchart 7: Aggressive Actions/Bomb Threat - Response Actions



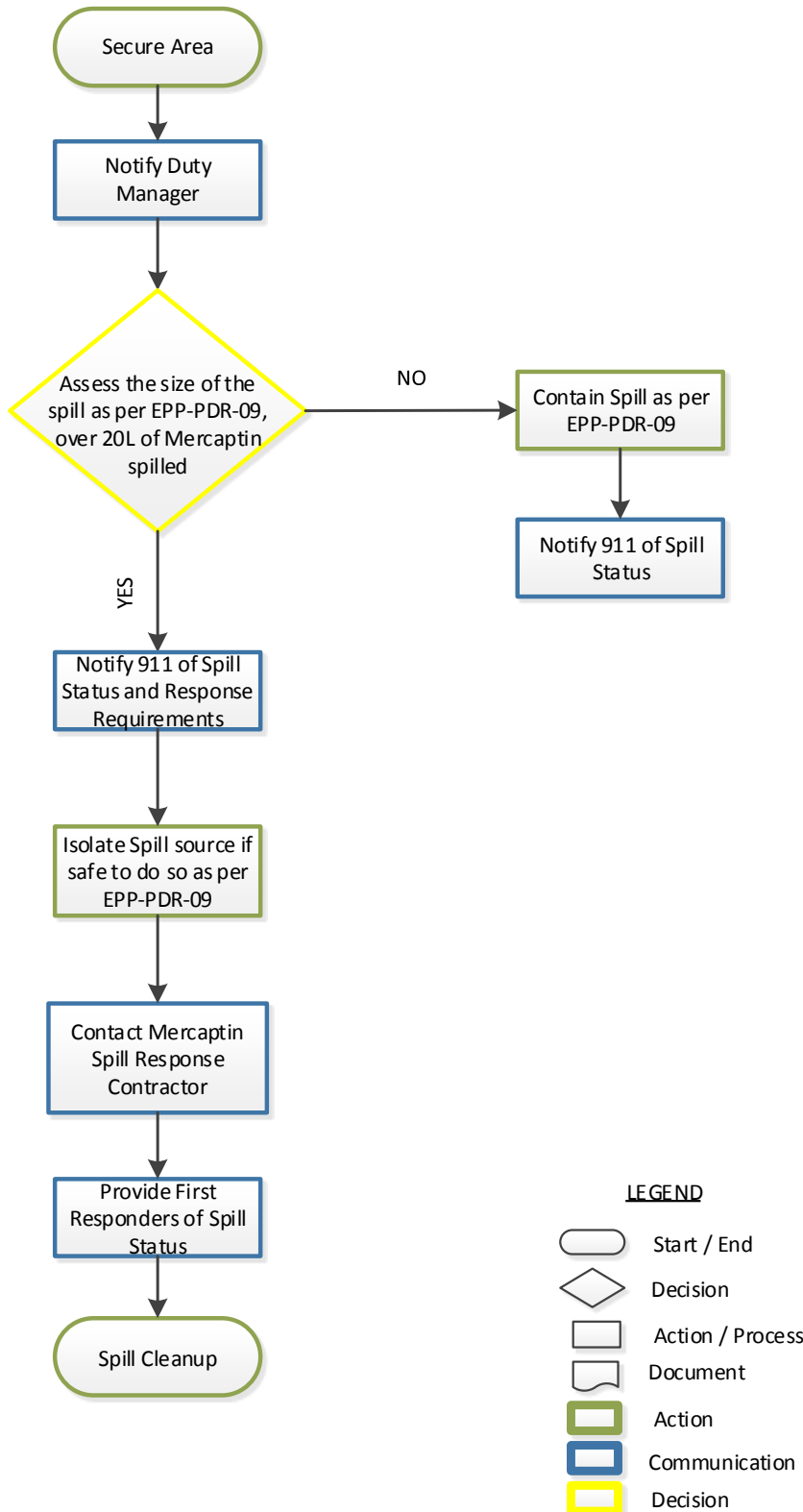
 BRUNSWICK PIPELINE <small>An Emera Company</small>	<h2>Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

9.7.6 Odourant Spill

For odourant spills, EBPC Personnel should assess the situation and coordinate with emergency responders as required. General procedures for responding to this type of emergency are as follows (see also Flowchart 8: Odourant Spills - Response Actions):

- Remain at a safe distance. Protect people first, then property and environment. Seek assistance from first responders to secure the area and restrict access to trained Personnel only
- Establish an Incident Command Post and Staging Area
- If safe to do so, request first responders to evacuate any adjacent facilities or buildings that may be endangered
- If necessary, wait for assistance to arrive before attempting control measures
- If safe to do so, shut off the spill source
- Emergency responders should not enter the hazard area unless they are properly trained, equipped and informed of the hazards

Flowchart 8: Odourant Spills - Response Actions



	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

10. Post Incident

10.1 Call-Down

The Incident Commander will be responsible for the Call-Down of any pipeline emergency. For any other emergencies, the Call-Down will be made in conjunction with Incident Commanders (under Unified Command) of other organizations or agencies which are part of the emergency response.

The Incident Commander will notify the Crisis Management Team Lead, Command Staff, and General Staff Chiefs so that the Call-Down can be communicated effectively. The Information Officer will also assist with the fan out of the Call-Down.

The deactivation will be completed when there is no longer a danger to people, the environment or assets.

The Incident Commander initiates and manages the following post-incident activities:

- Calling down the emergency status, after consulting with Command Staff, the Crisis Management Team Lead, and the appropriate regulatory authorities
- Coordinating the deactivation of emergency response operations, ensuring that all previous contacts, including ERT members, third party companies and government agencies are notified about the emergency Call-Down
- Advising all response team members to document their Call-Down notifications
- Conducting debriefing meeting with all ERT members
- Establishing goals and delegating responsibility for the completion of post-incident tasks in consultation with Manager, Operations & Engineering.

10.2 Post-Incident Documentation/Company Records

The Incident Commander shall gather notes, statements, ICS forms, logs and any other incident documentation from all persons who responded to the emergency so that they may be reviewed for:

- Incident investigations
- Required follow-ups
- Submission to regulatory agencies
- Capturing lessons learned

The Incident Commander shall also obtain all photographs and videos of the incident site and response.

NOTE: All photographs and videos of the incident site which have been taken at EBPC's request, whether by a professional photographer or a company representative, are considered EBPC material and are to be turned over to EBPC. EBPC Company records must be reviewed by Legal Counsel before they are released.

 BRUNSWICK PIPELINE <small>An Emera Company</small>	<h2 style="margin: 0;">Emergency Response Plan</h2>	Doc No.	EMP-PDR-01
		Rev Status	03
		Issue Date	2018-04-30

10.3 Cleanup and Repair

Once the emergency is over and there is a Call-Down, EBPC will work towards business resumption. The Manager, Operations & Engineering oversees the following actions:

- Ensures the site(s) are not disturbed if there has been a pipeline failure, a fatality or a serious injury, until police, regulatory officials, and EBPC complete necessary investigations
- Oversees site cleanup once it is appropriate to commence cleanup activities
- Ensures that the correct procedures are implemented for the decontamination of equipment
- Ensures that all hazardous waste is disposed of according to applicable regulations (confer with the Sr. Manager, Health, Safety, Security & Environment)
- Ensures that priority is given to clearing debris and restoring the site to normal operating conditions after the government and company investigations are complete
- Ensures that all safety equipment is demobilized, cleaned and inspected for contamination
- Ensures that all cleanup and repair actions follow EBPC safety and environment procedures and safe-work procedures

Doc No.	ERP Annex A
Rev Status	02
Issue Date	2019-04-30

Levels of Emergencies


An emergency which is identified by EBPC personnel can be classified as a Level One, Level Two or Level Three Emergency.

By categorizing and declaring an emergency, EBPC personnel are able to communicate the severity of the emergency quickly and clearly to other responders and regulatory agencies and can take appropriate actions.

The following key issues must be considered when assessing the level of emergency:

- Is the situation likely to escalate?
- Are members of the public likely to be affected?
- What are the environmental impacts?
- Can the situation be handled entirely by EBPC personnel?
- Does the danger (or potential danger) justify alerting outside agencies (fire department, RCMP, etc.)?
- Is there a security risk?
- Is the situation likely to attract media or social media attention?

Emergency Levels	Evaluation Criteria	Required Response	Notifications* <i>Depending on the emergency, additional notifications may be required.</i>	Forms
Level 1	<p>An emergency which has occurred and meets any of the following conditions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> No immediate threat to the public <input type="checkbox"/> Incident is contained to company property <input type="checkbox"/> Can be handled entirely by company personnel <input type="checkbox"/> Environmental impact is minimal and contained to company right-of-way <input type="checkbox"/> No immediate threat to workers; however, personal protective equipment may be required 	<ul style="list-style-type: none"> • Refer to Checklists (Annex B) • Situation is continually assessed, monitored and documented regarding potential impacts or the possibility of escalation • Notification may not be required to regulatory authorities • If requested by the Accountable Officer, engage the Crisis Management Team (EMP-PDR-02) 	<ul style="list-style-type: none"> • Gas Control • On-Call Technician • Duty Manager • Manager, Operations & Engineering • Accountable Officer 	<ul style="list-style-type: none"> • Time and Event Log (ERP-FRM-01) • Incident Briefing Form (ERP-FRM-02) • Safety Message/Plan Form (ERP-FRM-06)
Level 2	<p>An emergency which has occurred and meets any of the following conditions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> No immediate threat outside company property, but potential exists to extend beyond property boundaries <input type="checkbox"/> Requires involvement of external emergency services such as first responders, federal/provincial/ local agencies or mutual aid partners <input type="checkbox"/> Environmental impact is moderate and extends or could extend beyond company right-of-way 	<ul style="list-style-type: none"> • Refer to Checklists (Annex B) • Refer to Flowcharts (ERP Section 9.7) • Situation is continually assessed, monitored and documented regarding potential impacts or the possibility of escalation • Engage the Crisis Management Team (EMP-PDR-02) 	<ul style="list-style-type: none"> • Gas Control • On-Call Technician • Duty Manager • Manager, Operations & Engineering • Accountable Officer • 911 • Transportation Safety Board (TSB – TSB will contact the National Energy Board) 1-819-997-7887 • Local Authorities • Emergency Measures Organisation • Crisis Management Team must contact: <ul style="list-style-type: none"> - Emera Health & Safety & Security Representatives - Communications - Legal Representatives 	<ul style="list-style-type: none"> • Time and Event Log (ERP-FRM-01) • Incident Briefing Form (ERP-FRM-02) • Emergency Organization Chart (ERP-FRM-03) • Check-In Form (ERP-FRM-04) • Demobilization Check-Out Form (ERP-FRM-05) • Safety Message/Plan Form (ERP-FRM-06) • Incident Action Plan Safety Analysis Form (ERP-FRM-07) • General Message Form (ERP-FRM-09) • SMP-FRM-06 Bomb Threat Checklist
Level 3	<p>An emergency which has occurred and meets any of the following conditions:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Threat of violence to the public or EBPC personnel <input type="checkbox"/> Serious injury to the public or EBPC personnel <input type="checkbox"/> Threat of damage to property <input type="checkbox"/> Extensive involvement of external emergency services such as first responders, federal/ provincial/local agencies or mutual aid partners <input type="checkbox"/> Ongoing uncontrolled release of gas <input type="checkbox"/> Significant and ongoing environment effects 	<ul style="list-style-type: none"> • Refer to Checklists (Annex B) • Refer to Flowcharts (ERP Section 9.7) • Work with external emergency services to respond to the emergency. 	<ul style="list-style-type: none"> • Gas Control • On-Call Technician • Duty Manager • Manager, Operations & Engineering • Accountable Officer • 911 • Transportation Safety Board (TSB – TSB will contact the National Energy Board) 1-819-997-7887 • Local Authorities • Emergency Measures Organisation • Crisis Management Team must contact: <ul style="list-style-type: none"> - Emera Legal Counsel - Emera COO and CEO - Emera Communications - Emera Health, Safety & Security Representatives 	<ul style="list-style-type: none"> • Time and Event Log (ERP-FRM-01) • Incident Briefing Form (ERP-FRM-02) • Emergency Organization Chart (ERP-FRM-03) • Check-In Form (ERP-FRM-04) • Demobilization Check-Out Form (ERP-FRM-05) • Safety Message/Plan Form (ERP-FRM-06) • Incident Action Plan Safety Analysis Form (ERP-FRM-07) • Medical Plan Form (ERP-FRM-08) • General Message Form (ERP-FRM-09) • SMP-FRM-06 Bomb Threat Checklist

 BRUNSWICK PIPELINE <small>An Emera Company</small>	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30

1.0 EBPC Personnel First On-Scene

Initially assume the role of Incident Commander and utilize the Incident Commander Checklist. Command may change to meet the priorities set for the emergency.

2.0 Incident Commander Checklist

Incident Commander (IC) is responsible for all emergency activities, including the development of strategies and tactics and the ordering and the release of resources during an emergency. The IC has overall authority and responsibility for conducting emergency operations and is responsible for the management of all operations at the emergency site.

- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Determine the Emergency Level and make the required notifications (see Annex A).
 - If required and based on emergency levels, contact the Transportation Safety Board (TSB). The TSB is a direct link to the National Energy Board.
 - TSB will require the following information at a minimum:
 - Name of the caller/Incident Commander and contact number
 - Injuries or fatalities
 - Description of the emergency
 - Cause of the emergency
 - Time and location of the emergency (nearest highway/city/town)
 - Pipeline details (name, size, pressure rating)
 - Environmental impact
- Don the green Incident Command vest.
- Designate the location of the Incident Command Post (ICP) and mark the location (for example using a green flag, green light or other visible green marking).
- Use the **Incident Briefing Form (ERP-FRM-02)** to document the current situation and response objectives. **The priority is to secure the site. Establish emergency site boundaries to ensure the safety of individuals.**
- Assess the resourcing needs and determine ICS positions to be activated, using the **Emergency Organization Chart (ERP-FRM-03)**, based upon the current situation and anticipated likelihood of escalation.
 - Ensure the following Command Staff positions have been assigned: Safety Officer, Liaison Officer, and Information Officer. If these positions are not assigned, the Incident Commander assumes these positions.
 - Appoint Scribe.
- Establish check-in procedures using **Check-In Form (ERP-FRM-04)**.


Annex B Roles and Responsibilities Checklist

Doc No.	ERP Annex B
Rev Status	04
Issue Date	2019-04-30

- Hold initial Briefing to communicate plan, objectives, strategies and tactics developed in the **Incident Briefing Form (ERP-FRM-02)** to on-site personnel.
- If required, the IC will also determine if the Crisis Management Team (CMT) is required and will assign the Crisis Management Team Lead.
- If required, the IC will establish the location of a Staging Area.
- Respond to the emergency in accordance with the **Incident Briefing Form (ERP-FRM-02)** and reassess and update the Incident Briefing Form and on-site personnel as required.
- Upon resolution of the emergency and the orderly, safe, and efficient return of an incident resource to its original location and status, the IC will collapse the scene.
- Order Demobilization using **Demobilization Check-Out Form (ERP-FRM-05)**.
- Collect all relevant emergency response forms.
- Hold debrief.

Transfer of Command

- If the emergency requires, a Transfer of Command will be conducted and the following communicated to the new Incident Commander:
 - Situation status
 - Plan, objectives, strategies and tactics
 - Current organizational structure
 - Resource assignment
 - Facilities established
 - Communications plan
 - Introduction of Command Staff
- Hand over the **Incident Briefing Form (ERP-FRM-02)** and other supporting documents to the new Incident Commander.
- Document the Transfer of Command using the **Incident Briefing Form (ERP-FRM-02)**.
- The outgoing Incident Commander must communicate the Transfer of Command, including the effective time and date of the Transfer, to all personnel involved in the emergency as soon as practical.

	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30


3.0 Safety Officer Checklist

The Safety Officer is a member of the Command Staff responsible for monitoring emergency operations and advising the Incident Commander on all matters relating to operational safety, including the health and safety of emergency responder personnel.

- Report to **Incident Commander**.
- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Don red Safety Officer vest.
- Participate in or review the **Incident Briefing Form (ERP-FRM-02)** for safety implications.
- Prepare a safety message and develop an initial safety plan for the personnel involved in responding to the emergency using the **Safety Message/Plan Form (ERP-FRM-06)**.
- Advise the Command Staff of any safety hazards or unsafe conditions as developed in the **Safety Message/Plan Form (ERP-FRM-06)**.
- Brief on-site personnel on the Safety Message/Plan.
- Continue to monitor, assess and mitigate safety hazards or unsafe conditions by using the **Incident Action Plan Safety Analysis Form (ERP-FRM-07)**.
- Continue to update Command Staff and on-site personnel on new hazards and mitigations.
- Once the scene has collapsed, complete the **Demobilization Check-Out Form (ERP-FRM-05)**.
- Submit all relevant emergency response forms to the Incident Commander.
- Attend debrief.

If the emergency warrants:


- Exercise authority to stop and prevent unsafe acts.
- Assign assistants qualified to evaluate special hazards.
- Initiate preliminary investigation of accidents within the incident area.
- Develop a **Medical Plan Form (ERP-FRM-08)**, specifying the location of medical aid stations, ambulance services and hospitals.

	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30

4.0 Liaison Officer Checklist

The Liaison Officer is a member of the Command Staff responsible for coordinating with representatives from external agencies associated with the ERT responding to the emergency.


- Report to **Incident Commander**.
- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Don red Liaison Officer vest.
- Participate in or review the **Incident Briefing Form (ERP-FRM-02)** to be informed of any external agencies that need to be notified and liaised with.
- Maintain a list of external agencies, agency representatives and their contact information using the **Check-In Form (ERP-FRM-04)**.
- In consultation with the Incident Commander, and where appropriate:
 - Assist in setting up and coordinating interagency contact.
 - Act as a point of contact for external agencies.
 - Ensure notifications and briefings to the applicable agencies are completed and current.
- Advise the Command Staff of, and continue to monitor for, any current or potential issues, including limitations and capabilities of agency resources.
- In consultation with the IC, notify external agencies of the planned demobilization and any requirements.
- Once the scene has collapsed, complete the **Demobilization Check-Out Form (ERP-FRM-05)**.
- Submit all relevant emergency response forms to the Incident Commander.
- Attend debrief.

	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30

5.0 Information Officer Checklist

The Information Officer is a member of the Command Staff responsible for interfacing with media, the public, external stakeholders with emergency-related information requirements, and the EBPC Crisis Management Team.

- Report to **Incident Commander**.
- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Don red Information Officer vest.
- Participate in or review the **Incident Briefing Form (ERP-FRM-02)** for information related to the emergency, including a description of what has occurred and what is being done to respond to the emergency.
- Based on information provided in the Incident Briefing Form and from the IC, prepare message for release to the public, and develop an initial communications plan (frequency and format of information releases) using the **General Message Form (ERP-FRM-09)**.
- If applicable, revise key messaging for alignment with other agencies involved.
- Keep a list of media outlets requesting information and request the timing of deadlines from traditional media outlets using the **Time and Event Log (ERP-FRM-01)**.
- Obtain **Incident Commander's** approval of prepared messages and communications plan.
- Advise the Command Staff of the approved key messages and communications plan.
- Release information and coordinate media briefings per communications plan.
- Monitor all appropriate traditional and social media for accurate coverage of the emergency.
- Attend the initial and any subsequent operational Briefings.
- Assists Incident Commander in communicating the Call Down notification, as required.
- Once the scene has collapsed, complete the **Demobilization Check-Out Form (ERP-FRM-05)**.
- Submit all relevant emergency response forms to the Incident Commander.
- Attend debrief.


	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30

6.0 Operations Section Chief Checklist

The Operations Section Chief directly manages all emergency tactical activities and implements the plan, objectives, strategies and tactics developed in the **Incident Briefing Form (ERP-FRM-02)**. The Operations Section Chief may have one or more deputies, preferably from other agencies in multijurisdictional incidents. An Operations Section Chief should be designated for each Operational Period and will have direct involvement in the development of the plan, objectives, strategies and tactics for the next Operational Period of responsibility.

The Operations Section responsible for all tactical incident operations and implementation of the plan, objectives, strategies and tactics. In the Incident Command System, it normally includes subordinate Branches, Divisions, and/or Groups.

- Report to **Incident Commander**.
- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Don orange Operations Section Chief vest.
- Participate in or review the **Incident Briefing Form (ERP-FRM-02)**, contributing, in particular, to the development of response strategies and tactics, and resourcing requirements.
- In accordance with the Incident Briefing Form, manage and implement the response tactics and manage related resources, including:
 - Determine the Operational Period;
 - If required, establish a Staging Area and assign a Manager for the Staging Area.
 - If required, establish and assign work assignments for Divisions, Groups and/or Branches if the emergency calls for a functional or multijurisdictional branch structure or to maintain recommended Span of Control;
 - Identify required resources and specify the required resources available and those that are needed;
- Attend all Briefings.
- Advise Command Staff on the progress of executing emergency response tactics. In consultation with Command Staff, reassess and update the Incident Briefing Form and on-site personnel as required.
- Once the scene has collapsed, complete the **Demobilization Check-Out Form (ERP-FRM-05)**.
- Submit all relevant emergency response forms to the Incident Commander.
- Attend debrief.


 BRUNSWICK PIPELINE <small>An Emera Company</small>	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30

7.0 Logistics Section Chief Checklist

The Logistics Section Chief is responsible for all the services and support needs of an emergency, including obtaining and maintaining essential personnel, facilities, equipment and supplies.

The Logistics Section is responsible for providing facilities, services, and material support for the incident.

- Report to **Incident Commander**.
- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Don yellow Logistics Section Chief vest.
- Participate in or review the **Incident Briefing Form (ERP-FRM-02)**, to be informed of the essential resources that need to be sourced.
- In accordance with the Incident Briefing Form, manage and implement the response tactics and manage related resources, including:
 - Source anticipated and known emergency service and support requirements.
 - Coordinate approval and costing of resource requests with Finance Section Chief.
 - Develop a traffic plan to coordinate best routes of delivery for essential resources to the emergency.
 - Source all facilities, radio communications, supplies, fueling, food, and medical services for emergency response.
- Attend all Briefings.
- Advise Command Staff on the progress of executing emergency response tactics. In consultation with Command Staff, reassess and update the Incident Briefing Form and on-site personnel as required.
- Once the scene has collapsed, manage the demobilization of resources and complete the **Demobilization Check-Out Form (ERP-FRM-05)**.
- Submit all relevant emergency response forms to the Incident Commander.
- Attend debrief.

	Annex B Roles and Responsibilities Checklist	Doc No.	ERP Annex B
		Rev Status	04
		Issue Date	2019-04-30

8.0 Planning Section Chief Checklist

The Planning Section Chief oversees all emergency-related data gathering and analysis regarding emergency operations and assigned resources, conducts Planning Meetings, and prepares the plan, objectives, strategies and tactics for each operational period.

The Section responsible for the collection, evaluation, and dissemination of operational information related to the incident, and for the preparation and documentation of the plan, objectives, strategies and tactics. This Section also maintains information on the current and forecasted situation and on the status of resources assigned to the incident.

- Report to **Incident Commander**.
- Open the **Time and Event Log (ERP-FRM-01)** and commence documenting actions. Continue documenting events and associated times until the completion of demobilization.
- Don blue Planning Section Chief vest.
- Gather data related to the emergency to develop an accurate assessment of the emergency.
- Based on the data collected, provide direction in the **Incident Briefing Form (ERP-FRM-02)** so that the plan, objective, strategies and tactics can be developed.
- Conduct and facilitate Planning Meetings, continually assessing new data and emergency status.
- Compile and display relevant emergency status information so that it is available to the Command Staff.
- If required, establish and assign work assignments and reporting schedules for Divisions, Groups and/or Branches if the emergency calls for a functional or multijurisdictional branch structure or to maintain recommended Span of Control;
 - If required, establishes the Environment Unit to continually assess any environmental impacts of the emergency
- Attend all Briefings.
- Advise Command Staff on the progress of executing emergency response tactics. In consultation with Command Staff, reassess and update the Incident Briefing Form and on-site personnel as required.
- Once the scene has collapsed, complete the **Demobilization Check-Out Form (ERP-FRM-05)**.
- Submit all relevant emergency response forms to the Incident Commander.
- Attend debrief.

**ERP Annex C
Forms**

Doc No.	ERP Annex C
Rev Status	04
Issue Date	2019-04-30

- ERP-FRM-01 Time and Event Log
- ERP-FRM-02 ICS 201 Incident Briefing
- ERP-FRM-03 Emergency Organization Chart
- ERP-FRM-04 ICS 211 Check-In
- ERP-FRM-05 ICS 221 Demobilization Check-Out Form
- ERP-FRM-06 ICS 208 Safety Message/Plan
- ERP-FRM-07 ICS 215A Incident Action Plan Safety Analysis Form
- ERP-FRM-08 ICS 206 Medical Plan
- ERP-FRM-09 ICS 213 General Message
- SMP-FRM-06 Bomb Threat Checklist

Telephone Directory – Emergency Response

Ambulances	Location	24-hour Telephone Number
All Counties/Municipalities	New Brunswick-wide – Ambulance	911 or 506-444-7320
Fire Departments	Location	24-hour Telephone Number
Provincial Fire Marshal	Fredericton, NB	506-460-2540
Charlotte County	Oak Bay, NB	506-466-7777
	Rollingdam, NB	506-466-7777
	Lawrence Station, NB	911 or 506-466-7777
	Bonny River (Second Falls), NB	911 or 506-466-7777
	St. George, NB	911 or 506-466-7777
	St. Stephen, NB	911 or 506-466-7777
	Oak Hill/Moores Mills, NB	911 or 506-466-7777
Saint John County	Saint John, NB	911 or 506-649-6030
	Musquash, NB	911 or 506-635-3473
Police Departments	Location	24-hr Telephone Number
City of Saint John	Saint John, NB	911 or 506-648-3333
Charlotte County RCMP	Oromocto, NB (West District Headquarters)	911 or 506-357-4300
	St. George, NB (West District)	911 or 506-755-1130
Saint John County		911 or 1-888-506-RCMP (1-888-506-7267)
Security Organizations	Location	24-hr Telephone Number
RCMP – Officer-In-Charge of the National Security RCMP Enforcement Section	Fredericton, NB	506-452-2402

Brunswick Pipeline Office
24 hour Emergency number: 1-888-410-2220
Telephone Directory - Area Office

Mailing and Courier Address	Main Telephone Number	Fax Number
Brunswick Pipeline Operations 1 Germain Street, Suite 1102 Saint John, NB E2L4V1	506-693-4214	506-658-0199

**ERP Annex D
Emergency Contacts**

Doc No.	ERP Annex D
Rev Status	03
Issue Date	2018-04-30

***Note: Redacted. The contents of this table have been redacted. This section contains security sensitive information to be used in the case of an emergency. It is protected from publication under Clause 1(a) of Order AO-001-MO-006-2016 because there is a real and substantial risk that its disclosure will impair the security of EBPC pipeline facilities.**

Position	Name	Work	Residence	Cellular
Accountable Officer				
Director, Legal and Regulatory				
Sr. Manager, HSSE				
Manager, Operations & Engineering				
Regulatory Compliance Manager				
Quality Assurance Specialist				
Administrative Assistant				
EHS Specialist				
Lead Maintenance Technician				
Maintenance Technician				
Maintenance Technician				
Pipeline Coordinator				
Manager, Stakeholder Relations				
Gas Control		1-888-410-2220		

**ERP Annex D
Emergency Contacts**

Doc No.	ERP Annex D
Rev Status	03
Issue Date	2018-04-30

Federal – Lead Contacts

Telephone Directory - Federal - Lead Agency and Priority Contacts

Organization	Location	Telephone Number
Transportation Safety Board of Canada		1-819-997-7887
"Hotline" – Occurrence Reporting	Available	24/7
Occurrence Coordinator Place du centre, 4 th Floor 200 Promenade du Portage Gatineau, QC K1A 1K8	Gatineau, QC	819-997-7887
Fax		819-953-7876
Email		PipelineNotifications@neb.gc.ca
Regional Office: 150 Thorne Avenue Dartmouth, Nova Scotia B3B 1Z2	Dartmouth, NS	902-426-2348
Fax		902-426-5143
National Energy Board		
Non-emergency	Calgary, AB	403-292-4800
Toll-free non-emergency	Calgary, AB	1-800-899-1265
Non-emergency Fax	Calgary, AB	403-292-5503
24/7 Dedicated Line	Calgary, AB	403-807-9473
Online Event Reporting System		https://apps.neb-one.gc.ca/ers

Federal Supporting Contacts

Organization	Location	Telephone Number
NAV Canada - Flight Service Station		
Flight Services Centre (24 hours)	Halifax, NS	506-446-3425 (Option #5)
General		1-800-876-4693
Environment and Climate Change Canada		
24 Hour Weather One On One	-	1-900-565-5555
Spill Response (24 hours)	Maritimes-wide	1-800-565-1633
Fisheries and Oceans Canada		
Maritimes Region - Canadian Coast Guard Regional Operations Centre		
Toll-free Maritimes Only (24 hours)	Halifax, NS	1-800-565-1633
24 hours		902-426-6030

**ERP Annex D
Emergency Contacts**

Doc No.	ERP Annex D
Rev Status	03
Issue Date	2018-04-30

CANUTEC		
Information (24 hours)	Ottawa, ON	613-992-4624
Emergency (24 hours)	Ottawa, ON	613-996-6666
Cellular	Ottawa, ON	*666
Fax	Ottawa, ON	613-954-5101

New Brunswick – Lead Contacts

Telephone Directory – New Brunswick Lead Agency and Priority Contacts

Organization	Location	Telephone Number
NB Emergency Measures Organization (EMO)		
Emergency (24 hours)	New Brunswick-wide	1-800-561-4034
Direct Line	New Brunswick-wide	1-506-457-7535
Daytime Only	Fredericton, NB	506-453-2133
Fax	Fredericton, NB	506-453-5513
Saint John EMO – Non Emergency	Saint John, NB	506-649-6014 Fax: 506-658-2916
Daytime Only Fredericton, NB 506-453-2133 Fax Fredericton, NB 506-453-5513		
NB Office of the Provincial Fire Marshal NBOFM		
Request HAZMAT Coordinator	Fredericton, NB	1-866-942-9628
NB Department Justice and Public Safety NBOPM		
Operations Branch	Fredericton, NB	506-462-5100
NB Department of Transportation and Infrastructure		
Operations Branch	Fredericton, NB	506-457-6865
Local Authorities (Counties and Municipal Districts)		
City of Saint John	Saint John, NB	506-649-6014
Town of St. George (EMO Coordinator)	St. George, NB	506-755-4325
Town of St. Stephen (Fire Chief)	St. Stephen, NB	506-466-7779
St. Stephen Local Services, Environment and Local Government Regional Office Charlotte County (Daytime Only)	St. Stephen, NB	506-466-7370
Saint John Regional Office, Environment and Local Government Saint John County (Daytime Only)	Saint John, NB	506-658-2558 (Hampton) 506-832-6010

New Brunswick – Supporting Contacts

Telephone Directory – New Brunswick Supporting Agency and Services

Organization	Location	Telephone Number
Department of Environment and Local Government		
Contact through Provincial Emergency Measures Organization (EMO) Office		
WorkSafeNB		
24 hours (Maritimes only)	New Brunswick-wide	1-800-222-9775
24 hours (Outside of the Maritimes)	Saint John Head Office	506-632-2200
Fax	Saint John Head Office	506-632-6972
Department of Transportation		
Contact through Provincial Emergency Measures Organization (EMO) Office		
NB Department of Energy and Resource Development		
Contact through Provincial Emergency Measures Organization (EMO) Office		
Department of Agriculture and Aquaculture		
Contact through Provincial Emergency Measures Organization (EMO) Office		
Department of Health		
Contact through fire, police and ambulance or Provincial Emergency Measures Organization (EMO) Office		

Producers*

Telephone Directory – Producers

Organization	Location	Telephone Number
REPSOL – Canaport LNG Terminal		
Control Centre Number		

***Note: Redacted. The contents of this table have been redacted. This section contains security sensitive information to be used in the case of an emergency. It is protected from publication under Clause 1(a) of Order AO-001-MO-006-2016 because there is a real and substantial risk that its disclosure will impair the security of EBPC pipeline facilities.**

Media Contacts

Telephone Directory – Media Contacts

Radio Station	Location	Telephone Number	Fax Number
CBC Radio One (CBD-FM) 91.3 (sjranews@saintjohn.cbc.ca)	Saint John, NB	506-632-7750	506-632-7761
CHSJ & The Wave – FM (ABL) news@radioabl.ca	Saint John, NB	506-648-3000	506-644-3485
CIOK & CJYC – FM and CFBC – AM (MBS) mbsnews@nb.aibn.com	Saint John, NB	506-658-5111	506-658-5116
CHNI-FM (News 88.9, Rogers Talk Radio) news889@rogers.com	Saint John, NB	506-635-6500	506-635-6505
CHTD 98.1, The Tide – FM (ABL) tidenews@radioabl.ca	St. Stephen, NB	506-466-2222	506-466-4500
CFBO 90.7 FM - French	Dieppe, NB	506-854-9690	506-854-3540
CHQC-FM 105.7	Saint John, NB	506-643-6996	506-453-3958
UNBSJ Radio (cfmh@unbsj.ca)		506-648-5667	506-648-5541
WQDY-WALZ Radio FM (The Boarder) wqdy@wqdy.fm	St. Stephen/ Calais	207-454-7545	207-454-3062
Television Station	Location	Telephone Number	Fax Number
CBAT – CBC Television	Saint John, NB	506-632-7757	506-632-7761
CBAT – CBC Television	Fredericton, NB	506-451-4000	506-451-4058
CKLT – CTV (news@ctv.ca)	Saint John, NB	506-636-6068 1-888-565-6397 (Hfx)	506-658-1208 902-454-3280 (Hfx)
Global Maritimes (TV) globalnb@nb.sympatico.ca	Saint John, NB	506-642-6488	506-652-5965
Newspapers	Location	Telephone Number	Fax Number
Daily Gleaner, The	Fredericton, NB	506-458-6842	506-452-7405
L'Acadie Nouvelle	Caraquet, NB	506-727-4444	506-727-7620
St. Croix Courier (editor@st.croixcourier.ca)	St. Stephen, NB	506-466-3220 (editor)	506-466-9950
Telegraph-Journal (newsroom@telegraphjournal.com)	Saint John, NB	506-645-3268	506-633-6758
Times & Transcript	Moncton, NB	506-859-4881	506-859-4904

**ERP Annex D
Emergency Contacts**

Doc No.	ERP Annex D
Rev Status	03
Issue Date	2018-04-30

(news@timestranscript.com)			
Chronicle Herald and Mail Star	Halifax, NS	902-426-2811 ext. 1187	902-426-1158
Other	Location	Telephone Number	Fax Number
Canadian Press	Fredericton, NB	506-457-0746	506-457-9708
Media Monitoring Service (Nova Scotia and New Brunswick)			
Mediascan Canada Inc. 1657 Barrington Street Halifax, NS			902-422-9200
Lisa Beaupre, Account Manager 302-6009 Quinpool Road, Halifax, NS B3K 5J6		Direct: 902-422-9200 Ext. 382 Toll Free: 1-877-269-3367 Fax: 1-902-492-2660 Email: lisa.beaupre@cision.com	

***Note: Redacted. The contents of this table have been redacted. This section contains security sensitive information to be used in the case of an emergency. It is protected from publication under Clause 1(a) of Order AO-001-MO-006-2016 because there is a real and substantial risk that its disclosure will impair the security of EBPC pipeline facilities.**

ERP Annex E Support Services

Doc No.	ERP Annex E
Rev Status	04
Issue Date	2019-04-30

Contractors	Location	Phone Number	24 -hour Phone Number
Pipeline Contractors			
Sunny Corner Enterprises	Saint John , NB	506-633-4177	
Hazardous Waste			
MRR (Midland Resource Recovery)	Lancaster, Ontario	613-347-3558	
Envirosystems	Saint John, NB	506-635-5600	
Rental Contractors			
United Rentals	Saint John, NB	506-658-1408	
Hertz Equipment Rentals	Saint John, NB	888-777-2700 506-645-2277	
Excavators/Dozers/Gravel			
Simpsons Contracting Ltd	Saint John, NB	506-635-8711	506-635-8711
Booms/Cranes			
Irving Equipment	Saint John, NB	800-561-2726	506-635-5606
Vacuum Truck			
Envirosystems	Saint John, NB	506-635-5600	506-652-9178
Instrument Repairs / Gas Scopes			
Land and Sea	Dartmouth, NS	902-461-2009	
Hetek Solutions	Ottawa, Ontario	519-659-1144	
NDE			
Acuren Inspection Inc.	Saint John, NB	506-633-1774	
Air Support – Helicopter and Fixed Wing			
Grandfalls Aviation	Grand Falls, NB	506-473-2566	

ERP Annex F

Emergency Equipment List

Doc No.	ERP Annex F
Rev Status	04
Issue Date	2019-04-30

Quantity*	Asset	Location*	Comments
	NPS 30 Security Pipe		Pipe Rack
	NPS 30 Mechanical Split Sleeve		
	NPS 30 Clock spring		
	4 ft. sections of Scaffolding		
	Pipeline Evacuators (Air Removers)		
	Portable Generators		
	45 gal Large Spill Kits		
	Small Spills Kits		
	GMI Gas Scopes		
	Ethane Detector		
	Portable Hand Held Radios		Intrinsically Safe
	Personal 4 Gas monitor		Calibration stations at Red Head Meter Station Centre and MR31029
	Lockout Tagout kits		
	ATV's c/w transportation trailers		
	Snow Mobiles c/w transportation trailer		
	3" Portable Flare Stack		
	Snow Plowing Equipment		
	Helicopter Services		

*Note: Redacted. The contents of this table have been redacted. This section contains security sensitive information to be used in the case of an emergency. It is protected from publication under Clause 1(a) of Order AO-001-MO-006-2016 because there is a real and substantial risk that its disclosure will impair the security of EPBC pipeline facilities.

ERP Annex G
Environmental Considerations

Doc No.	ERP Annex G
Rev Status	04
Issue Date	2019-04-30

The Pipeline interacts with two Designated Watershed Protected Areas: Spruce Lake Watershed, which provides water to the West Side of the City of Saint John, and Dennis Stream Watershed, which provides water to the Town of St. Stephen. The environmental mitigation measures for Designated Watershed Protected Areas will be considered for emergency response and are managed through the Environmental Protection Plan during normal operations.

Complete As-built drawings and locations of all Environmentally sensitive areas are accessible to all EBPC staff both in print form and online.

SAFETY DATA SHEET



Issuing Date July 16, 2015

Revision Date 09-Apr-2013

Revision Number 0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

GHS product identifier

Product Name Natural Gas

Other means of identification

UN-Number UN1971

Synonyms Methane, Sweet Gas, Fuel Gas, Pipeline Spec Gas, Sales Gas, Dry Natural Gas, Compressed Gas

Recommended use of the chemical and restrictions on use

Recommended Use Fuel

Uses advised against No information available

Supplier's details

Emera Brunswick Pipeline
Suite 1102
1 Germain Street
Saint John NB
E2L 4V1

Emergency Telephone Number 1-888-410-2220

2. HAZARDS IDENTIFICATION

Classification


This chemical is not considered hazardous according to the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200).

GHS Label elements, including precautionary statements

WPS-SE-001 - Natural Gas

Revision Date July 16, 2015

Emergency Overview



The product contains no substances which at their given concentration are considered to be hazardous to health

Appearance Colorless Physical State Gas. Odor Naturally Odorless Gas (mercaptan odor added before end use)

Precautionary Statements

Prevention

- None

General Advice

- None

Storage

- None

Disposal

- None

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

No information available.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms

Methane, Sweet Gas, Fuel Gas, Pipeline Spec Gas, Sales Gas, Dry Natural Gas, Compressed Gas

Chemical Name	CAS-No	Weight %	Trade secret
Natural gas, dried	68410-63-9	100	*

Note: A complex mixture of light gases separated from raw natural gas consisting of aliphatic hydrocarbons having carbon numbers in the range of C1-C4, predominantly methane and ethane.

Note: The percentages listed above are approximate only and will vary. When odorized, natural gas will contain approximately 2 ppmV odorant, consisting of 16% isopropyl mercaptan, 6% normal propyl mercaptan, and 78% tertiary butyl mercaptan.

*The exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

Description of necessary first-aid measures

General Advice Show this safety data sheet to the doctor in attendance.

Eye Contact Get medical attention immediately if symptoms occur.

Skin Contact Get medical attention if irritation develops and persists.

WPS-SE-001 - Natural Gas

Revision Date: July 16, 2015

Inhalation Artificial respiration and/or oxygen may be necessary. Consult a physician. Move to fresh air in case of accidental inhalation of vapors.

Ingestion Clean mouth with water and afterwards drink plenty of water. None under normal use.

Protection of First-aiders Use personal protective equipment. Remove all sources of ignition.

Most important symptoms/effects, acute and delayed

Most Important Symptoms/Effects No information available.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician A patient adversely affected by exposure to this product should not be given adrenaline (epinephrine) or similar heart stimulant since these would increase the risk of cardiac arrhythmias.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Carbon dioxide (CO₂), Dry chemical. DO NOT EXTINGUISH A LEAKING GAS FIRE UNLESS LEAK CAN BE STOPPED.

Unsuitable Extinguishing Media Do not use a solid water stream as it may scatter and spread fire.

Specific Hazards Arising from the Chemical

Extremely flammable. Flash back possible over considerable distance. Do not direct water at source of leak or safety devices; icing may occur. May form explosive mixtures with air. Withdraw immediately in case of rising sound from venting safety devices.

Hazardous Combustion Products Carbon oxides. Sulfur oxides. Nitrogen oxides (NO_x).

Explosion Data

Sensitivity to Mechanical Impact None.

Sensitivity to Static Discharge Yes.

Protective Equipment and Precautions for Firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. For massive fire, use unmanned hose holders or monitor nozzles; if this is impossible withdraw from area and let fire burn. Vapors from liquefied gas are initially heavier than air and spread along ground. Vapors may accumulate in confined areas (basement, tanks, hopper/tank cars, etc.). Vapors may travel to source of ignition and flash back. If possible, stop the flow of gas. Do not extinguish the fire until supply is shut off as otherwise an explosive-ignition may occur. If the fire is extinguished and the flow of gas continues, use increased ventilation to prevent build-up of explosive atmosphere. Ventilation fans must be explosion proof. Use non-sparking tools to close container valves.

Isolate spill or leak area for at least 100 meters (330 feet) in all directions.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions

Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak. Take precautionary measures against static discharges. Pay attention to flashback. All equipment used when handling the product must be grounded. ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area).

Environmental Precautions

Environmental Precautions

Prevent spreading of vapors through sewers, ventilation systems and confined areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

WPS-SE-001 - Natural Gas

Revision Date | July 16, 2015

Methods and materials for containment and cleaning up

Methods for Containment Prevent further leakage or spillage if safe to do so.
Methods for Cleaning Up None required.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Wear personal protective equipment. Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharges. Use only in an area containing flame proof equipment. To avoid ignition of vapors by static electricity discharge, all metal parts of the equipment must be grounded. Use only in area provided with appropriate exhaust ventilation. Contents under pressure. Do not breathe gas. "NO SMOKING" signs should be posted in storage and use areas.

Conditions for safe storage, including any incompatibilities

Storage Keep away from open flames, hot surfaces and sources of ignition. Keep containers tightly closed in a cool, well-ventilated place. Store in accordance with local regulations.
Incompatible Products Acids, Halogens, Oxidizing agents. Chlorine, aluminum chloride,

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines This product does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.
Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection Tightly fitting safety goggles. Face-shield.
Skin and Body Protection Wear fire/flame resistant/retardant clothing.
Respiratory Protection If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.
Hygiene Measures When using, do not eat, drink or smoke. Provide regular cleaning of equipment, work area and clothing.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State Gas **Appearance** Colorless.

WPS-SE-001 - Natural Gas

Revision Date: July 16, 2015

Property	Values	Remarks/ - Method
Odor	Naturally Odorless Gas (mercaptan odor added before end user)	Odor Threshold Mercaptan – 1 ppb
pH	No data available	None known
Melting Point/Range	No data available	None known
Boiling Point/Boiling Range	-161.4 °C / -258 °F	None known
Flash Point	-187.7 °C / -305.86 °F	Tag closed cup
Evaporation rate	No data available Gas	None known
Flammability (solid, gas)	No data available	None known
Flammability Limits in Air		
upper flammability limit	15.4%	
lower flammability limit	5.0%	
Vapor Pressure	522 kPa @ 37.8°C	None known
Vapor Density	0.56 (air= 1)	None known
Relative Density	No data available	None known
Specific Gravity	No data available.	None known
Water Solubility	3.5% @ 17°C	None known
Solubility in other solvents	Soluble in alcohol, ether, benzene, organic solvents.	None known
Partition coefficient: n-octanol/water	No data available	None known
Autoignition Temperature	538 °C / 1000.4 °F	None known
Decomposition Temperature	No data available	None known
Viscosity	No data available	None known
Flammable Properties	Extremely flammable gas	
Explosive Properties	No data available	
Oxidizing Properties	No data available	
Other information		
VOC Content (%)	No data available	

10. STABILITY AND REACTIVITY

Reactivity

No data available.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Conditions to avoid

Heat, flames and sparks.

Incompatible materials

Acids, Halogens, Oxidizing agents. Chlorine, aluminum chloride.

Hazardous decomposition products

None known based on information supplied.

11. TOXICOLOGICAL INFORMATION

WPS-SE-001 - Natural Gas

Revision Date | July 16, 2015

Information on likely routes of exposure

Product Information

Inhalation	Simple asphyxiant. At very high concentrations can displace the normal air and cause suffocation from lack of oxygen
Eye Contact	May cause temporary eye irritation.
Skin Contact	None known.
Ingestion	Not an expected route of exposure.

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms	Simple asphyxiant. May cause suffocation by displacing the oxygen in the air. Exposure to oxygen-deficient atmosphere (<19.5%) may cause dizziness, drowsiness, nausea, vomiting, excess salivation, diminished mental alertness, loss of consciousness and death. Exposure to atmospheres containing 8-10% or less oxygen will bring about unconsciousness without warning and so quickly that the individuals cannot help or protect themselves. Lack of sufficient oxygen may cause serious injury or death.
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Delayed and immediate effects and also chronic effects from short and long term exposure

Sensitization	No information available.
Mutagenic Effects	No information available.
Carcinogenicity	Contains no ingredient listed as a carcinogen.
Reproductive Toxicity	No information available.
STOT - single exposure	No information available.
STOT - repeated exposure	No information available.
Chronic Toxicity	No known effect.
Target Organ Effects	Respiratory system.
Aspiration Hazard	No information available.

Numerical measures of toxicity - Product

Acute Toxicity	No information available.
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12. ECOLOGICAL INFORMATION

Ecotoxicity

None known.

Persistence and Degradability	Product is biodegradable.
--------------------------------------	---------------------------

Bioaccumulation	Not likely to bioaccumulate.
------------------------	------------------------------

Chemical Name	Log Pow
Natural gas, dried	2.8

Other Adverse Effects

No information available.

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods	This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.
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WPS-SE-001 - Natural Gas

Revision Date | July 16, 2015

Contaminated Packaging Empty containers pose a potential fire and explosion hazard. Do not cut, puncture or weld containers.

14. TRANSPORT INFORMATION

DOT

UN-Number UN1971
 Proper shipping name Natural gas, compressed
 Hazard Class 2.1
 Description UN1971, Natural gas, compressed, 2.1
 Emergency Response Guide Number 115

TDG

UN-Number UN1971
 Proper Shipping Name Natural gas, compressed
 Hazard Class 2.1
 Description UN1971, Natural gas, compressed, 2.1

MEX

UN-Number UN1971
 Proper Shipping Name Natural gas, compressed
 Hazard Class 2.2
 Description UN1971, Natural gas, compressed, 2.2

ICAO

Forbidden by Passenger Air
 UN-Number UN1971
 Proper shipping name Natural gas, compressed
 Hazard Class 2.2
 Description UN1971, Natural gas, compressed, 2.2

IATA

Forbidden by Passenger Air
 UN-Number UN1971
 Proper Shipping Name Natural gas, compressed
 Hazard Class 2.2
 ERG Code 10L
 Description UN1971, Natural gas, compressed, 2.2

IMDG/IMO

UN-Number UN1971
 Proper Shipping Name Natural gas, compressed
 Hazard Class 2
 Em S No. F-D, S-U
 Description UN1971, Natural gas, compressed, 2.2, (-187.7°C c.c.)

UN-Number UN1971
 Proper Shipping Name Natural gas, compressed
 Hazard Class 2
 Classification Code 1F
 Description UN1971, Natural gas, compressed, 2.1 (3)
 ADR/RID-Labels 13

Proper Shipping Name Natural gas, compressed
 Hazard Class 2
 Classification Code 1F
 Description UN1971, Natural gas, compressed, 2.1
 Limited Quantity 0

Doc No.	ERP Annex H
Rev Status	04
Issue Date	2019-04-30

WPS-SE-001 - Natural Gas

Revision Date July 16, 2015

Ventilation VE01

15. REGULATORY INFORMATION

International Inventories

DSL	Complies
EINECS	Complies
KECL	Complies

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/ND SL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	No
Fire Hazard	Yes
Sudden Release of Pressure Hazard	Yes
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65

This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations

This product does not contain any substances regulated by state right-to-know regulations.

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	Health Hazard 2	Flammability 4	Instability 0	Physical and Chemical Hazards -
HMIS	Health Hazard 2	Flammability 4	Physical Hazard 0	Personal Protection X

Prepared By	Product Stewardship 23 British American Blvd. Latham, NY 12110 1-800-572-6501
Issuing Date	09-Apr-2013
Revision Date	09-Apr-2013
Revision Note	Initial Release.

ERP Annex H
Natural Gas MSDS

Doc No.	ERP Annex H
Rev Status	04
Issue Date	2019-04-30

WPS-SE-001 - Natural Gas

Revision Date July 16, 2015

General Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet



Material Safety Data Sheet **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

1. PRODUCT AND COMPANY IDENTIFICATION

Company

Arkema Canada Inc.
1100 Burloak Drive, Suite 107
Burlington, Ontario, L7L 6B2

Thio and Fine Chemicals

Customer Service Telephone Number: (800) 567-5726
(Monday through Friday, 8:30 AM to 4:30 PM EST)

Emergency Information

Transportation: CANUTEC: (613) 996-6666
(24 hrs., 7 days a week)
Medical: Rocky Mountain Poison Center: (866) 767-5089
(24 hrs., 7 days a week)

Product Information

Product name: SPOTLEAK® 1009
Synonyms: Not available
Molecular formula: Not available
Chemical family: mercaptans
Molecular weight: 88.16 g/mol
Product use: Odour agents

2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!
EXTREMELY FLAMMABLE LIQUID AND VAPOR.
VAPOR MAY CAUSE FLASH FIRE.
HARMFUL OR FATAL IF SWALLOWED.
CAN ENTER LUNGS AND CAUSE DAMAGE.
MAY CAUSE ALLERGIC SKIN REACTION.
OBJECTIONABLE ODOR MAY CAUSE NAUSEA, HEADACHE OR DIZZINESS.

Potential Health Effects

Primary routes of exposure:
Inhalation and skin contact.

Signs and symptoms of acute exposure:
Objectionable odor may cause nausea, headache or dizziness. Prolonged or repeated skin contact may cause:
Allergic skin reaction: redness, rash. Aspiration hazard if swallowed - can enter lungs and cause damage. Symptoms of aspiration may include increased breathing and heart rate, coughing and related signs of respiratory distress.

Skin:
No more than slightly toxic. Non-irritating. (based on animal studies) May cause allergic skin reaction. (based on components)

Inhalation:
Practically nontoxic. (based on animal studies)



Material Safety **Uncontrolled Copy - SDS-028802**
SPOTLEAK® 1009

Eyes:
Practically non-irritating. (based on animal studies)

Ingestion:
Slightly toxic. (based on components)

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS-No.	Wt/Wt	WHMIS Controlled
2-Propanethiol, 2-methyl-	75-66-1	>= 60 - <= 100 %	Y
2-Propanethiol	75-33-2	>= 10 - < 30 %	Y
1-Propanethiol	107-03-9	>= 1 - < 5 %	Y

The substance(s) marked with a "Y" in the above WHMIS Controlled column are those identified as hazardous chemicals under the Controlled Products Regulation.

4. FIRST AID MEASURES

Inhalation:
If inhaled, remove victim to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention.

Skin:
In case of contact, immediately flush skin with soap and plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Thoroughly clean shoes before reuse.

Eyes:
Immediately flush eye(s) with plenty of water.

Ingestion:
If swallowed, DO NOT induce vomiting. Call a physician or Poison Control Center immediately. If vomiting occurs, have person lean forward. Never give anything by mouth to an unconscious person.

5. FIREFIGHTING MEASURES

Flash point: < 0.01 °F (< -17.77 °C) (Tag closed cup)
Auto-ignition temperature: 473 °F (245 °C)
Lower flammable limit (LFL): 1.1 %(V)
Upper flammable limit (UFL): 12.1 %(V)

Extinguishing media (suitable):
Water spray, Carbon dioxide (CO2), Foam, Dry chemical

Doc No.	ERP Annex I
Rev Status	04
Issue Date	2019-04-30



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Protective equipment:

Fire fighters and others who may be exposed to products of combustion should wear full fire fighting turn out gear (full Bunker Gear) and self-contained breathing apparatus (pressure demand / NIOSH approved or equivalent).

Further firefighting advice:

Water may be ineffective.
Keep containers and surroundings cool with water spray.
Fire fighting equipment should be thoroughly decontaminated after use.
Do not allow run-off from fire fighting to enter drains or water courses.

Hazardous combustion products:

Vapours may spread long distances and ignite.
When burned, the following hazardous products of combustion can occur:
Carbon oxides
hydrogen sulfide
sulfur oxides

Explosion Data:

Sensitivity to Mechanical Impact: No
Sensitivity to Static Discharge: Yes

6. ACCIDENTAL RELEASE MEASURES

In case of spill or leak:

Prevent further leakage or spillage if you can do so without risk. Evacuate area of all unnecessary personnel. Ventilate the area. Eliminate all ignition sources. Avoid generation of vapors. Contain and collect spillage with non-combustible absorbent material such as sodium bicarbonate, sodium carbonate, calcium carbonate, clean sand or non-acidic clay and then wet down (dampen) the mixture with water. Sweep or scoop up using non-sparking tools and place into suitable properly labeled containers for prompt disposal. The sweepings should be wetted down further with water. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Consult a regulatory specialist to determine appropriate provincial or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits.

7. HANDLING AND STORAGE

Handling

General information on handling:

Keep away from heat, sparks and flames.
Do not taste or swallow.
Avoid breathing vapor or mist.
Avoid prolonged or repeated contact with skin.
Keep container closed.
Use only with adequate ventilation.
Wash thoroughly after handling.
Check that all equipment is properly grounded and installed to satisfy electrical classification requirements.
Container hazardous when empty.
Emptied container retains vapor and product residue.
Follow label warnings even after container is emptied.
RESIDUAL VAPORS MAY EXPLODE ON IGNITION.
DO NOT CUT, DRILL, GRIND, OR WELD ON OR NEAR THIS CONTAINER.
Improper disposal or reuse of this container may be dangerous and/or illegal.

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 3 / 12

Doc No.	ERP Annex I
Rev Status	04
Issue Date	2019-04-30



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Storage

General information on storage conditions:

Store in well ventilated area away from heat and sources of ignition such as flame, sparks and static electricity. Ensure that all storage and handling equipment is properly grounded and installed to satisfy electrical classification requirements. Static electricity may accumulate when transferring material. All metal and groundable storage containers, including but not limited to drums, cylinders, Returnable Intermodal Bulk Containers (RIBCs) and Class C Flexible Intermodal Bulk Containers (FIBCs) must be bonded and grounded during filling and emptying operations. This product should be stored in a closed container, away from direct sunlight, at ambient temperatures.

Storage incompatibility – General:

Store separate from: Strong oxidizing agents

Acids (concentrated solutions)

Alkaline earth metals

Bases

Reducing agents

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Airborne Exposure Guidelines:

Engineering controls:

Investigate engineering techniques to reduce exposures. Provide ventilation if necessary to minimize exposures. If practical, use local mechanical exhaust ventilation at sources of air contamination such as open process equipment.

Consult ACGIH ventilation manual or NFPA Standard 91 for design of exhaust systems.

Respiratory protection:

Avoid breathing vapor or mist. Where airborne exposure is likely or airborne exposure limits are exceeded (if applicable, see above), use NIOSH approved respiratory protection equipment appropriate to the material and/or its components (full facepiece recommended). Consult respirator manufacturer to determine appropriate type equipment for a given application. Observe respirator use limitations specified by NIOSH or the manufacturer. For emergency and other conditions where there may be a potential for significant exposure or where exposure limit may be significantly exceeded, use an approved full face positive-pressure, self-contained breathing apparatus or positive-pressure airline with auxiliary self-contained air supply.

Skin protection:

Wear appropriate chemical resistant protective clothing and chemical resistant gloves to prevent skin contact. Consult glove manufacturer to determine appropriate type glove material for given application. Wear face shield and chemical resistant clothing such as a rubber apron when splashing may occur. Rinse immediately if skin is contaminated. Wash contaminated clothing and clean protective equipment before reuse. Wash thoroughly after handling.

Eye protection:

Use good industrial practice to avoid eye contact.

9. PHYSICAL AND CHEMICAL PROPERTIES

Color: clear

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 4 / 12



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Physical state:	liquid
Odor:	pungent
Odour Threshold:	0.1 ppb
pH:	not determined
Density:	not determined
Specific Gravity (Relative density):	0.812 59.9 °F(15.5 °C)
Bulk density:	not determined
Vapor pressure:	341 mmHg 32 °F (0 °C)
Relative vapor density:	3.04
Vapor density:	3 kg/m ³
Boiling point/boiling range:	62 °C
Freezing point:	< -49.99 °F (< -45.55 °C)
Evaporation rate:	not determined
Solubility in water:	68 °F (20 °C) insoluble
Solubility in other solvents: [qualitative and quantitative]	Soluble in: Alcohols Ethyl ether
Refractive index:	1.425
Viscosity, dynamic:	0.57 mPa.s 68 °F (20 °C)
% Volatiles:	100 %
Molecular weight:	88.16 g/mol
Critical point:	Critical pressure: 41853 mmHg Critical temperature: 583 °F (306 °C)

10. STABILITY AND REACTIVITY

Stability:
This material is chemically stable under normal and anticipated storage, handling and processing conditions.

Hazardous reactions:
Materials to avoid:
• Reacts violently with : Strong oxidizing agents Acids Bases Reducing agents Alkaline earth metals Release of : sulphur dioxide



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Conditions / hazards to avoid:

Keep away from heat and sources of ignition. To avoid thermal decomposition, do not overheat.

Hazardous decomposition products:

Thermal decomposition giving flammable and toxic products, Carbon oxides, sulfur oxides, hydrogen sulfide

11. TOXICOLOGICAL INFORMATION

Data on this material and/or its components are summarized below.

Data for SPOTLEAK® 1009

Acute toxicity

Oral: LD50 - No data available.

Dermal:

No more than slightly toxic. (rat) LD50 > 2,000 mg/kg.

Inhalation:

Practically nontoxic. (rat) 4 h LC50 > 5.3 mg/l. (vapor)

Skin Irritation:

Non-irritating. (rabbit)

Eye Irritation:

Practically non-irritating. (rabbit)

Sensitization:

No data available.

Skin Sensitization:

No data available.

Repeated dose toxicity

No data available.

Carcinogenicity

No data available.

Genotoxicity

Assessment in Vitro:

No data available.

Assessment in Vivo:

No data available.

Developmental toxicity

No data available.

Reproductive effects

No data available.

Other information

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 6 / 12



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Aspiration hazard

Data for 2-Propanethiol, 2-methyl- (75-66-1)

Acute toxicity

Oral:
Slightly toxic. (rat) LD50 = 4,729 mg/kg.

Sensitization:
No data available.

Skin Sensitization:
Skin sensitizer. Buehler method. (guinea pig) Skin allergy was observed.
Sensitising. LLNA: Local Lymph Node Assay. (mouse) Produced an allergic reaction.

Repeated dose toxicity
Subchronic inhalation administration to rat / affected organ(s): kidney / signs: inflammation, degeneration, increased organ weight / (not considered relevant to humans)
Repeated oral administration to rat / affected organ(s): kidney / signs: hyaline droplet nephropathy / (not considered relevant to humans)

Carcinogenicity
No data available.

Genotoxicity

Assessment in Vitro:
No genetic changes were observed in laboratory tests using: bacteria, animal cells

Assessment in Vivo:
No genetic changes were observed in laboratory tests using: mice

Developmental toxicity
Exposure during pregnancy. inhalation (rat and mouse) / No birth defects were observed.
Reproductive/Developmental Effects Screening Assay. oral (rat) / No birth defects were observed.

Reproductive effects
Reproductive/Developmental Effects Screening Assay. oral (rat) / No toxicity to reproduction.

Other information
Aspiration hazard

Data for 2-Propanethiol (75-33-2)

Acute toxicity

Oral:
Slightly toxic. (rat) LD50 between 2,000 - 5,000 mg/kg.

Sensitization:
No data available.

Skin Sensitization:
Sensitising. LLNA: Local Lymph Node Assay. (mouse) Produced an allergic reaction.

Repeated dose toxicity
No data available.



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Carcinogenicity

No data available.

Genotoxicity

Assessment in Vitro:

No genetic changes were observed in laboratory tests using: animal cells, bacteria, (data for a similar material)

Assessment in Vivo:

No genetic changes were observed in laboratory tests using: mice, (data for similar material)

Developmental toxicity

Exposure during pregnancy. inhalation (rat and mouse) / No birth defects were observed. (data for a similar material)

Reproductive effects

Reproductive/Developmental Effects Screening Assay. oral (rat) / No toxicity to reproduction

Other information

Aspiration hazard

Human experience

Inhalation:

Systemic effects: headache, nausea, unconsciousness, cyanosis, breathing difficulties, rapid heart beat. (vapor) (repeated or prolonged exposure)

Data for 1-Propanethiol (107-03-9)

Acute toxicity

Oral:

Slightly toxic. (rat) LD50 = 1,848 mg/kg.

Sensitization:

No data available.

Skin Sensitization:

Sensitising. LLNA: Local Lymph Node Assay. (mouse) Produced an allergic reaction. (data for a similar material)

Repeated dose toxicity

No data available.

Carcinogenicity

No data available.

Genotoxicity

Assessment in Vitro:

No data available.

Assessment in Vivo:

No data available.

Developmental toxicity

No data available.

Reproductive effects



Material Safety Uncontrolled Copy - SDS-028802

SPOTLEAK® 1009

No data available.

Other information
Aspiration hazard

Human experience
Inhalation:
Objectionable odor may cause nausea, headache or dizziness.

Human experience
Eye contact:
Eye: irritating. (vapor)

12. ECOLOGICAL INFORMATION

Chemical Fate and Pathway

Data on this material and/or its components are summarized below.

Data for 2-Propanethiol, 2-methyl- (75-66-1)

Biodegradation:
Not readily biodegradable. (63 d) biodegradation 6 %

Data for 2-Propanethiol (75-33-2)

Biodegradation:
Not readily biodegradable. (28 d) biodegradation 0 %

Data for 1-Propanethiol (107-03-9)

Biodegradation:
Readily biodegradable. (14 d) biodegradation 94 %

Octanol Water Partition Coefficient:
log Pow = 1.81 (measured)

Ecotoxicology

Data on this material and/or its components are summarized below.

Data for 2-Propanethiol, 2-methyl- (75-66-1)

Aquatic toxicity data:
Slightly toxic. Oncorhynchus mykiss (rainbow trout) 96 h LC50 = 34 mg/l

Aquatic invertebrates:
Moderately toxic. Daphnia magna (Water flea) 48 h EC50 = 6.7 mg/l

Algae:
Slightly toxic. Pseudokirchneriella subcapitata (green algae) 72 h EC50 = 24 mg/l

Data for 2-Propanethiol (75-33-2)

Aquatic toxicity data:
Slightly toxic. Oncorhynchus mykiss (rainbow trout) 96 h LC50 = 34 mg/l (data for a similar material)

Aquatic invertebrates:
Highly toxic. Daphnia magna (Water flea) 48 h EC50 0.25 - 0.5 mg/l

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 9 / 12



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Algae:

Slightly toxic. Pseudokirchneriella subcapitata (green algae) 72 h ErC50 = 21.9 mg/l (data for a similar material)

Microorganisms:

Practically nontoxic Respiration inhibition / Activated sludge 3 h EC50 = 880.5 mg/l

Data for 1-Propanethiol (107-03-9)

Aquatic toxicity data:

Moderately toxic. Pimephales promelas (fathead minnow) 96 h LC50 = 1.3 mg/l

Aquatic invertebrates:

Highly toxic. Daphnia magna (Water flea) 48 h EC50 = 0.07 mg/l

13. DISPOSAL CONSIDERATIONS

Waste disposal:

Disposal via incineration is recommended. Dispose of in accordance with federal, provincial and local regulations. Consult a regulatory specialist to determine appropriate provincial or local reporting requirements, for assistance in waste characterization and/or hazardous waste disposal and other requirements listed in pertinent environmental permits. Note: Chemical additions to, processing of, or otherwise altering this material may make this waste management information incomplete, inaccurate, or otherwise inappropriate. Furthermore, provincial and local waste disposal requirements may be more restrictive or otherwise different from federal laws and regulations.

14. TRANSPORT INFORMATION

Canadian Transportation of Dangerous Good (TDG)

UN Number : 3336
 Proper shipping name : Mercaptan mixture, liquid, flammable, n.o.s.
 Technical name : (tert-Butylmercaptan, Isopropyl mercaptan)
 Class : 3
 Packaging group : II
 Marine pollutant : yes

International Maritime Dangerous Goods Code (IMDG)

UN Number : 3336
 Proper shipping name : MERCAPTANS, LIQUID, FLAMMABLE, N.O.S.
 Technical name : (t-Butylmercaptan, PROPANETHIOLS)
 Class : 3
 Packaging group : II
 Marine pollutant : yes
 Flash point : < 0.01 °F (< -17.77 °C) Tag closed cup

15. REGULATORY INFORMATION

Chemical Inventory Status

EU. EINECS	EINECS	Conforms to
US. Toxic Substances Control Act	TSCA	The components of this product are all on the TSCA Inventory.

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 10 / 12



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

Australia. Industrial Chemical (Notification and Assessment) Act	AICS	Conforms to
Canada. Canadian Environmental Protection Act (CEPA). Domestic Substances List (DSL)	DSL	All components of this product are on the Canadian DSL.
Japan. Kashin-Hou Law List	ENCS (JP)	Conforms to
Korea. Existing Chemicals Inventory (KECI)	KECI (KR)	Conforms to
Philippines. The Toxic Substances and Hazardous and Nuclear Waste Control Act	PICCS (PH)	Conforms to
China. Inventory of Existing Chemical Substances	IECSC (CN)	Conforms to
New Zealand. Inventory of Chemicals (NZIoC), as published by ERMA New Zealand	NZIOC	Conforms to

Canada - Federal Regulations

Workplace Hazardous Materials Information System (WHMIS)

B2: Flammable liquid
D2B: Toxic material causing other toxic effects

Ingredient Disclosure List (IDL)

<u>Chemical Name</u>	<u>CAS-No.</u>
1-Propanethiol	107-03-9

WHMIS Regulated Carcinogens (IARC, ACGIH Listed):

IARC:

No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH:

No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

National Pollution Release Inventory (NPRI)

Canadian National Pollutant Release Inventory (NPRI): No component is listed on the NPRI above the threshold.

16. OTHER INFORMATION

Latest Revision(s):

Reference number: 000000035653
Date of Revision: 05/06/2014

Date Printed: 05/06/2014

PREPARED BY: TECHNICAL DEPARTMENT
PHONE NUMBER OF PREPARER: (800) 567-5726
PREPARATION DATE: 05/06/2014

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 11 / 12

Doc No.	ERP Annex I
Rev Status	04
Issue Date	2019-04-30



Material Safety **Uncontrolled Copy - SDS-028802**

SPOTLEAK® 1009

SPOTLEAK® is a registered trademark of Arkema Inc.

THIS PRODUCT HAS BEEN CLASSIFIED IN ACCORDANCE WITH THE HAZARD CRITERIA OF THE CPR AND THE MSDS CONTAINS ALL THE INFORMATION REQUIRED BY THE CPR.

THE INFORMATION PRESENTED HEREIN HAS BEEN COMPILED FROM SOURCES CONSIDERED TO BE DEPENDABLE AND IS ACCURATE TO THE BEST OF OUR KNOWLEDGE. HOWEVER, SINCE DATA, SAFETY STANDARDS, AND GOVERNMENT REGULATIONS ARE SUBJECT TO CHANGE AND THE CONDITIONS OF HANDLING AND USE, OR MISUSE ARE BEYOND OUR CONTROL, ARKEMA CANADA INC. MAKES NO WARRANTY EXPRESSED OR IMPLIED, WITH RESPECT TO COMPLETENESS OR CONTINUING ACCURACY OF THE INFORMATION CONTAINED HEREIN AND DISCLAIMS ALL LIABILITY FOR RELIANCE THEREON. USER SHOULD SATISFY HIMSELF THAT HE HAS ALL CURRENT DATA RELEVANT TO HIS PARTICULAR USE. THE INFORMATION PROVIDED HEREIN RELATES ONLY TO THE SPECIFIC PRODUCT DESIGNATED AND MAY NOT BE VALID WHERE SUCH PRODUCT IS USED IN COMBINATION WITH ANY OTHER MATERIALS OR IN ANY PROCESS.

Product code: 001009

Version 1.0

Issued on: 05/06/2014

Page: 12 / 12

Quick-FDS [17131-63410-30375-013881] - 2014-11-25 - 17:36:50

**Scentinel® E Gas Odorant**

Version 2.0

Revision Date 2018-04-02

SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product information**

Product Name : Scentinel® E Gas Odorant
Material : 1106808, 1086435, 1086434, 1095112, 1079767, 1064505,
1098464, 1098226, 1024677, 1024673, 1034741, 1024674,
1024676, 1024678, 1024780, 1024782, 1024781, 1024778,
1024783, 1036153, 1024779, 1024675, 1105014

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:**Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

Transport:

CHEMTREC 800.424.9300 or 703.527.3887(int'l)

Asia: CHEMWATCH (+612 9186 1132) China: 0532 8388 9090

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

Mexico CHEMTREC 01-800-681-9531 (24 hours)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Argentina: +(54)-1159839431

Responsible Department : Product Safety and Toxicology Group
E-mail address : SDS@CPChem.com
Website : www.CPChem.com

ODOR-FADE WARNING

A GAS LEAK CAN CAUSE A FIRE OR EXPLOSION RESULTING IN SERIOUS INJURY OR DEATH.

Be aware that the stenching chemical added to gas to make it detectable may not warn of a gas leak or the presence of propane or natural gas to all persons in every instance.

Instances where the odorant in an odorized gas may be undetectable include:

- Odor intensity may fade or be eliminated for a variety of chemical and physical causes, including the oxidation of rusting pipes, adsorption into or sticking onto the interior of pipes or appliances, or absorption into liquids.
- Contact with soil in underground leaks may de-odorize or remove odorant from the gas.

Sc Sentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

- Some people have a diminished ability, or inability to smell the stench. Factors that negatively affect a person's sense of smell include age, gender, medical conditions, and alcohol/tobacco usage.
- The stench of odorized gas may not awaken sleeping persons.
- Other odors may mask or hide the stench.
- Exposure to the odor for even a short period of time, may cause nasal fatigue, where a person can no longer smell the stench.

Gas detectors listed by the Underwriters Laboratories (UL) can be used as an extra measure of safety for detecting gas leaks, especially under conditions where the odorant alone may not provide an adequate warning. Gas detectors emit a loud, shrill sound when gas is present and do not depend on sense of smell. Because the odor intensity can fade or people may have problems with their sense of smell, we recommend installing, per manufacturer's instructions, one or more combustible gas detectors, in suitable locations to ensure adequate coverage to detect gas leaks.

Educate yourself, your employees, and your customers with the content of this warning and other important facts associated with the so-called "odor-fade phenomenon."

SECTION 2: Hazards identification**Classification of the substance or mixture**

This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Classification

: Flammable liquids, Category 2
Skin sensitization, Category 1

Labeling

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H225: Highly flammable liquid and vapor.
H317: May cause an allergic skin reaction.

Precautionary Statements

: **Prevention:**
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P233 Keep container tightly closed.
P240 Ground/bond container and receiving equipment.
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.
P242 Use only non-sparking tools.
P243 Take precautionary measures against static discharge.
P261 Avoid breathing dust/fume/gas/mist/vapors/spray.
P264 Wash skin thoroughly after handling.
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves/ eye protection/ face protection.
Response:
P303 + P361 + P353 IF ON SKIN (or hair): Remove/ Take off immediately all contaminated clothing. Rinse skin with water/ shower.

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

P333 + P313 If skin irritation or rash occurs: Get medical advice/ attention.

P337 + P313 If eye irritation persists: Get medical advice/ attention.

P363 Wash contaminated clothing before reuse.

P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.

Storage:

P403 + P235 Store in a well-ventilated place. Keep cool.

Disposal:

P501 Dispose of contents/ container to an approved waste disposal plant.

Carcinogenicity:**IARC**

No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

NTP

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH

No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

SECTION 3: Composition/information on ingredients

Synonyms : Mercaptan Mixture
Gas Odorant

Molecular formula : Mixture

Component	CAS-No.	Weight %
t-Butyl Mercaptan	75-66-1	75 - 80
Isopropyl Mercaptan	75-33-2	13 - 18
n-Propyl Mercaptan	107-03-9	3 - 8

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

If inhaled : Move to fresh air. If unconscious, place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

- In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.
- If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

SECTION 5: Firefighting measures

- Flash point : -18 °C (0 °F)
estimated
- Autoignition temperature : 200 °C (392 °F)
- Suitable extinguishing media : Dry chemical. Carbon dioxide (CO₂). Alcohol-resistant foam.
- Unsuitable extinguishing media : High volume water jet.
- Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.
- Special protective equipment for fire-fighters : Wear self-contained breathing apparatus for firefighting if necessary.
- Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.
- Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.
- Hazardous decomposition products : Carbon oxides. Sulfur oxides.

SECTION 6: Accidental release measures

- Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.
- Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

|| For additional details, see the Exposure Scenario in the Annex portion

SECTION 7: Handling and storage**Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations. Persons susceptible to skin sensitization problems or asthma, allergies, chronic or recurrent respiratory disease should not be employed in any process in which this mixture is being used.

Advice on protection against fire and explosion : Do not spray on an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers : No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection**Chevron Phillips Chemical Company LP**

Ingredients	Basis	Value	Control parameters	Note
t-Butyl Mercaptan	Manufacturer	TWA	0.5 ppm,	

Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection : Wear a supplied-air NIOSH approved respirator unless

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

- Hand protection : The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.
- Eye protection : Eye wash bottle with pure water. Tightly fitting safety goggles.
- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate: Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

|| For additional details, see the Exposure Scenario in the Annex portion

SECTION 9: Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

- Physical state : Liquid
 Color : Clear
 Odor : Repulsive

Safety data

- Flash point : -18 °C (0 °F)
 estimated
- Lower explosion limit : 1.4 %(V)
- Upper explosion limit : 12.5 %(V)
- Oxidizing properties : no
- Autoignition temperature : 200 °C (392 °F)
- Thermal decomposition : No data available

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Molecular formula	: Mixture
Molecular weight	: Not applicable
pH	: Not applicable
Pour point	: No data available
Boiling point/boiling range	: 57 - 60 °C (135 - 140 °F)
Vapor pressure	: 48.00 kPa at 38 °C (100 °F)
Relative density	: 0.81 at 16 °C (61 °F)
Water solubility	: Negligible
Partition coefficient: n-octanol/water	: No data available
Viscosity, kinematic	: No data available
Relative vapor density	: 2 (Air = 1.0)
Evaporation rate	: > 1 (N-Butyl Acetate = 1)
Percent volatile	: > 99 %

SECTION 10: Stability and reactivity

Chemical stability	: This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.
--------------------	--

Possibility of hazardous reactions

Conditions to avoid	: Not applicable.
Materials to avoid	: May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.
Thermal decomposition	: No data available
Hazardous decomposition products	: Carbon oxides Sulfur oxides
Other data	: No decomposition if stored and applied as directed.

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

SECTION 11: Toxicological information**Scentinel® E Gas Odorant****Acute oral toxicity**: Acute toxicity estimate: 10,366 mg/kg
Method: Calculation methodAcute toxicity estimate: > 5,000 mg/kg
Method: Calculation method**Acute inhalation toxicity**

t-Butyl Mercaptan

: LC50: 26643 ppm
Exposure time: 4 h
Species: Rat
Sex: male and female
Test atmosphere: vapor
Method: OECD Test Guideline 403LC50: 22200 ppm
Exposure time: 4 h
Species: Rat
Sex: male
Test atmosphere: vapor
Method: OECD Test Guideline 403LC50: 16500 ppm
Exposure time: 4 h
Species: Mouse
Sex: male
Test atmosphere: vapor
Method: OECD Test Guideline 403

Isopropyl Mercaptan

LC50: > 32.24 mg/l
Exposure time: 4 h
Species: Rat
Sex: male and female
Test atmosphere: vapor
Method: OECD Test Guideline 403
Test substance: yes

An LC50/inhalation/4h/rat could not be determined because no mortality of rats was observed at the maximum achievable concentration.

Acute dermal toxicity

Isopropyl Mercaptan

: LD50: > 2,000 mg/kg
Species: Rat**Scentinel® E Gas Odorant****Skin irritation**

: May cause skin irritation and/or dermatitis.

Scentinel® E Gas Odorant**Eye irritation**

: May cause irreversible eye damage.

Scentinel® E Gas Odorant**Sensitization**

: Causes sensitization.

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Repeated dose toxicity

t-Butyl Mercaptan

: Species: Rat, Male and female
Sex: Male and female
Application Route: Inhalation
Dose: 9, 97, 196 ppm
Exposure time: 13 wks
Number of exposures: 6 hrs/d, 5 d/wk
NOEL: > 196 ppm

Species: Rat, Male and female
Sex: Male and female
Application Route: oral gavage
Dose: 10, 50, 200 mg/kg bw/day
Exposure time: 42-53 days
Number of exposures: Daily
NOEL: 50 mg/kg bw/day
Lowest observable effect level: 200 mg/kg bw/day
Method: OECD Guideline 422

Species: Rat, Male and female
Sex: Male and female
Application Route: Inhalation
Dose: 25.1, 99.6, 403.4 ppm
Exposure time: 13 wks
Number of exposures: 6 hrs/d, 5 d/wk
NOEL: 99.6 ppm
Lowest observable effect level: 403.4 ppm
Method: OECD Guideline 413
Target Organs: Liver, Kidney, Blood, Upper respiratory tract
Information given is based on data obtained from similar substances.

Reproductive toxicity

t-Butyl Mercaptan

: Species: Rat
Sex: male and female
Application Route: oral gavage
Dose: 10, 50, 200 mg/kg bw/day
Number of exposures: Daily
Test period: 42 -53 days
Method: OECD Guideline 422
NOAEL Parent: 200 mg/kg bw/day
NOAEL F1: 50 mg/kg bw/day
No adverse effects expected

Developmental Toxicity

t-Butyl Mercaptan

: Species: Mouse
Application Route: Inhalation
Dose: 11, 99, 195 ppm
Exposure time: GD 6-16
Number of exposures: 6 hrs/d
NOAEL Teratogenicity: > = 195 ppm
NOAEL Maternal: > = 195 ppm

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Species: Rat
 Application Route: Inhalation
 Dose: 11, 99, 195 ppm
 Exposure time: GD6-19
 Number of exposures: 6 hrs/d
 NOAEL Teratogenicity: > =195 ppm
 NOAEL Maternal: > = 195 ppm

Species: Rat
 Application Route: oral gavage
 Dose: 10, 50, 200 mg/kg bw/day
 Exposure time: 42-53 days
 Number of exposures: Daily
 NOAEL Teratogenicity: 50 mg/kg bw /day
 NOAEL Maternal: 200 mg/kg bw /day

**Scentinel® E Gas Odorant
Aspiration toxicity**

: May be harmful if swallowed and enters airways.
 Substances known to cause human aspiration toxicity hazards or to be regarded as if they cause human aspiration toxicity hazard.

CMR effects

t-Butyl Mercaptan

: Carcinogenicity: Not available
 Mutagenicity: Did not show mutagenic effects in animal experiments.
 Teratogenicity: Did not show teratogenic effects in animal experiments.
 Reproductive toxicity: No toxicity to reproduction

**Scentinel® E Gas Odorant
Further information**

: Concentrations substantially above the TLV value may cause narcotic effects. Symptoms of overexposure may be headache, dizziness, tiredness, nausea and vomiting.
 Solvents may decrease the skin.

SECTION 12: Ecological information**Toxicity to fish**

t-Butyl Mercaptan

: LC50: 34 mg/l
 Exposure time: 96 h
 Species: Oncorhynchus mykiss (rainbow trout)
 semi-static test Method: OECD Test Guideline 203

Isopropyl Mercaptan

LC50: 34 mg/l
 Exposure time: 96 h
 semi-static test Analytical monitoring: yes
 Method: OECD Test Guideline 203
 Information given is based on data obtained from similar substances.

n-Propyl Mercaptan

LC50: 1.3 mg/l
 Exposure time: 96 h
 Species: Pimephales promelas (fathead minnow)
 Analytical monitoring: yes

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Test substance: yes
 Method: OECD Test Guideline 203
 Toxic to aquatic organisms.

Toxicity to daphnia and other aquatic invertebrates

t-Butyl Mercaptan : EC50: 6.7 mg/l
 Exposure time: 48 h
 Species: Daphnia magna (Water flea)
 static test Method: OECD Test Guideline 202

Isopropyl Mercaptan EC50: 0.25 - 0.5 mg/l
 Exposure time: 48 h
 Species: Daphnia magna (Water flea)
 static test Test substance: yes
 Method: OECD Test Guideline 202

n-Propyl Mercaptan EC50: 0.07 mg/l
 Exposure time: 48 h
 Species: Daphnia magna (Water flea)
 Analytical monitoring: yes
 Test substance: yes
 Method: OECD Test Guideline 202
 Very toxic to aquatic organisms.

Toxicity to algae

t-Butyl Mercaptan : EC50: 24 mg/l
 Exposure time: 72 h
 Species: Pseudokirchneriella subcapitata (green algae)
 Method: OECD Test Guideline 201

Isopropyl Mercaptan ErC50: 21.9 mg/l
 Exposure time: 72 h
 Species: Pseudokirchneriella subcapitata (green algae)
 static test Method: OECD Test Guideline 201

M-Factor

propane-2-thiol : M-Factor (Acute Aquat. Tox.) 1

M-Factor (Chron. Aquat. Tox.) 1

M-Factor

propane-1-thiol M-Factor (Acute Aquat. Tox.) 10

Elimination information (persistence and degradability)

Bioaccumulation

t-Butyl Mercaptan : Bioconcentration factor (BCF): 12
 Bioaccumulation is unlikely.

Biodegradability : Expected to be biodegradable

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Ecotoxicology Assessment

Acute aquatic toxicity	
t-Butyl Mercaptan	: Toxic to aquatic life.
Isopropyl Mercaptan	: Very toxic to aquatic life.
n-Propyl Mercaptan	: Very toxic to aquatic life.
Chronic aquatic toxicity	
t-Butyl Mercaptan	: Toxic to aquatic life with long lasting effects.
Isopropyl Mercaptan	: Very toxic to aquatic life with long lasting effects.
n-Propyl Mercaptan	: Very toxic to aquatic life with long lasting effects.
Results of PBT assessment	
t-Butyl Mercaptan	: Non-classified PBT substance, Non-classified vPvB substance
Isopropyl Mercaptan	: Non-classified PBT substance, Non-classified vPvB substance
Additional ecological information	: An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Very toxic to aquatic life., Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this SDS pertains only to the product as shipped.

Use material for its intended purpose or recycle if possible. This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

Product	: The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.
Contaminated packaging	: Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

|| For additional details, see the Exposure Scenario in the Annex portion

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the SDS and the

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, (-18 °C), MARINE POLLUTANT, (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, ENVIRONMENTALLY HAZARDOUS, (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

UN3336, MERCAPTANS, LIQUID, FLAMMABLE, N.O.S., (TERTIARY BUTYL MERCAPTAN, ISOPROPYL MERCAPTAN), 3, II, ENVIRONMENTALLY HAZARDOUS

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

SECTION 15: Regulatory information**National legislation****SARA 311/312 Hazards** : Flammable (gases, aerosols, liquids, or solids)
Respiratory or skin sensitization**EPCRA - EMERGENCY PLANNING COMMUNITY RIGHT - TO - KNOW**

CERCLA Reportable Quantity : This material does not contain any components with a CERCLA RQ.

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

SARA 302 Reportable Quantity : This material does not contain any components with a SARA 302 RQ.

SARA 302 Threshold Planning Quantity : No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 304 Reportable Quantity : This material does not contain any components with a section 304 EHS RQ.

SARA 313 Ingredients : This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 112 (40 CFR 61).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 112(r) for Accidental Release Prevention (40 CFR 68.130, Subpart F).

This product does not contain any chemicals listed under the U.S. Clean Air Act Section 111 SOCM I Intermediate or Final VOC's (40 CFR 60.489).

US State Regulations

Massachusetts Right To Know : n-Propyl Mercaptan - 107-03-9
t-Butyl Mercaptan - 75-66-1
Isopropyl Mercaptan - 75-33-2

Pennsylvania Right To Know : t-Butyl Mercaptan - 75-66-1

New Jersey Right To Know : n-Propyl Mercaptan - 107-03-9
t-Butyl Mercaptan - 75-66-1

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

Isopropyl Mercaptan - 75-33-2

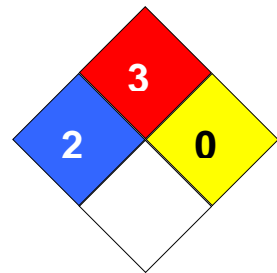
California Prop. 65 Ingredients : This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status

Europe REACH : On the inventory, or in compliance with the inventory
 United States of America (USA) TSCA : On the inventory, or in compliance with the inventory
 Canada DSL : On the inventory, or in compliance with the inventory
 Australia AICS : On the inventory, or in compliance with the inventory
 New Zealand NZIoC : On the inventory, or in compliance with the inventory
 Japan ENCS : On the inventory, or in compliance with the inventory
 Korea KECI : On the inventory, or in compliance with the inventory
 Philippines PICCS : On the inventory, or in compliance with the inventory
 China IECSC : On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 2
 Fire Hazard: 3
 Reactivity Hazard: 0

**Further information**

Legacy SDS Number : 93850

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this SDS pertains only to the product as shipped.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

Key or legend to abbreviations and acronyms used in the safety data sheet


ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health

Scentinel® E Gas Odorant

Version 2.0

Revision Date 2018-04-02

CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration Values	PRNT	Presumed Not Toxic
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		

	Annex K Incident Reporting and Notification Requirements	Doc No.	ERP Annex B
		Rev Status	03
		Issue Date	2018-04-30

Legend

- ✓ – Compulsory Contact.
 - A. Local fire department should be notified of all incidents including primary fires, gas leaks, obstruction of a roadway and industrial accidents.
 - B. Request the New Brunswick Emergency Measures Organization (NBEMO) officer to contact the Department of Environment and Local Government for all spills or releases that have harmed or could potentially harm the environment.
 - C. Contact WorkSafeNB, if the incident results in serious injury or death of a provincially regulated (not EBPC) worker or responder.
 - D. Request the New Brunswick Emergency Measures Organization (NBEMO) officer to contact the Department of Transportation for incidents affecting highways and major roadways.
 - E. Request the New Brunswick Emergency Measures Organization (NBEMO) officer to contact the Department of Energy and Resource Development if the incident affects forests, parks or wildlife.
 - F. Request the New Brunswick Emergency Measures Organization (NBEMO) officer to contact the Department of Agriculture and Aquaculture, if the incident affects agricultural land or the fishing industry.
 - G. Request the fire, police, ambulance or New Brunswick Emergency Measures Organization (NBEMO) officer to contact the Department of Health, if the incident affects the health of the public.
 - H. To isolate airspace above a release, contact nearest NAV Canada flight service station and request a NOTAM (Notice to Airmen).
 - I. Contact Environment Canada for incidents involving any spills on aboriginal lands, in national parks, into river or lake systems with fish or onto railway right-of-ways.
 - J. Contact Department of Fisheries and Oceans, Canada (DFO), if any hydrocarbons have entered a waterway frequented by fish or occupied by waterfowl.
 - NOTE: The Canadian Coast Guard is part of DFO and must be notified, if an incident is impeding shipping or navigable waters and also must be notified of any release to the environment through their spill line (1-800-565-1633).
 - K. Contact CANUTEC, (Canadian Transport Emergency Centre operated by the Transportation of Dangerous Goods (TDG) Directorate of Transport Canada), if information about handling procedures is required for any material releases. This is not mandatory.
 - L. Activate mutual aid partner agreements as required.