

Executive Summary:

This Guide provides tactical guidance and information for the On-Scene Incident Commander responsible for the management of pipeline emergencies involving flammable liquids, including crude oil and refined petroleum products. The application and use of a risk-based response (RBR) methodology for both planning and response purposes are critical success factors in the successful management of these pipeline incidents.

In order to safely and effectively employ risk-based processes at pipeline emergencies, emergency responders must initially be qualified at the First Responder – Operations and On-Scene Incident Commander levels, and have an understanding of the following:

- The physical properties (i.e., how it will behave) and chemical properties (i.e., how it will harm) of the materials involved.
- Basic design, construction and operations of liquid petroleum product pipelines, and their potential behavior in an emergency scenario.
- Knowledge of the strategic and tactical considerations to be evaluated at a hazardous materials incident.
- Selection, application and use of large-flow firefighting foam streams at pipeline emergencies involving Class B fuels.

Among the key factors that Incident Commanders operating at flammable liquid pipeline emergencies must know are the following:

- Flammable liquid pipeline incidents are often large, complex and lengthy response scenarios that will generate numerous response issues beyond those normally seen by most local-level response agencies. Although emergency response operations may be limited to less than 24 hours, post-response clean-up and recovery operations may continue for weeks.
- Unified command will be critical for the successful management of the incident.
- Proactive relationships and joint planning, training and exercises conducted prior to an incident between emergency responders, communities and pipeline operators have been beneficial in the safe and effective management of pipeline emergencies.
- Analysis of past pipeline incidents has shown that communication in the first critical minutes of the incident – between emergency responders and pipeline operators – is critical to determining the outcome of the incident. Incomplete, inadequate or unclear communications can result in a delayed response and can contribute to increased levels of product loss and damage.
- Flammable and combustible liquids are the most common products transported by liquid transmission pipelines. These include refined products such as gasoline, aviation gas and jet fuel, and distillates, such as home heating and diesel fuels. Intermediate products (i.e., not completely refined), such as naphtha or gas oil, may also be shipped by pipeline between refineries for final processing.
- Liquid petroleum pipeline systems can transport different grades or types of petroleum products through the same pipeline at different times in “batches” or through a “batch system.”
- Pipeline flows and conditions are monitored through computerized pipeline monitoring systems at the Pipeline Control Center (PCC). These include SCADA (Supervisory Control and Data Acquisition System) and volume balance systems, and monitor the status of gates and valves, product flow, pressures, and other operating characteristics. These monitoring systems provide pipeline personnel with the ability to monitor pipeline operations and initiate emergency shutdown procedures in the event of a pipeline release.
- Emergency responders should know the following about pipelines:
 - The location of pipelines in your response area and potential high risk areas.
 - The name of the pipeline operator and how to contact them.
 - Product(s) being transported by the pipeline.
 - Shut-off valve locations. This can help emergency responders to determine how quickly the release can be stopped. **CAUTION:** Emergency responders should NEVER attempt to isolate any pipeline valves on transmission pipelines unless under the direction of pipeline operations personnel.
 - The worst-case discharge / scenario.

- Depending upon the pipeline, the Pipeline Control Center can remotely control the pipeline flow and actuate remote pipeline valves in the event of a pipeline release.
 - Even with actions taken by the PCC to isolate the pipeline flow, depending upon the spacing between shutoff valves a significant backflow of product may continue from the pipeline breach.
 - When dealing with transmission pipelines, the backflow may continue for a period of several hours. Critical variables will include the location of the pipeline release, surrounding topography, and the proximity of both automatic and manually activated valves and pump stations to the incident location.
 - The Incident Commander must verify through pipeline industry Technical Specialists that the closest automatic and manually operated valves are isolated
- While the exact incident timeline will vary based upon local / regional resources and response times, key incident management benchmarks within hour 1 will include:
 - Conducting an incident size-up, identification of critical incident factors, and development of initial incident objectives.
 - Establishment of command and an Incident Command Post (ICP)
 - Establishment of a unified command organization.
- When contacting the pipeline operator, provide the following information:
 - Your name, location, organization name and telephone number
 - Location of the incident
 - Presence of smoke, fire or spill
 - Extent of damage
 - Topography
 - Weather conditions
- Structural firefighting clothing (SFC) and positive-pressure SCBA should be the initial level of PPE selected. For scenarios that have a low probability of fire, such as spill control and clean-up activities including decontamination, chemical splash protective clothing and a compatible NIOSH-approved respirator may be required depending upon the concentrations and properties of the contaminant.
- Spill Control Priorities – If product is being released from a liquid petroleum pipeline:
 - #1 - Keep it confined to a specific land area if safely possible.
 - #2 - Keep the product out of the water.
- #3 - If the product is in the water, protect downstream water intakes and sensitive areas.
 - Class B foam agents are the recommended extinguishing agents for flammable liquid fires. These can include aqueous film-forming foams (AFFF) for use on hydrocarbons (e.g., crude
 - Pipeline IC Competencies

oil, refined products) and alcohol-resistant AFFF concentrates for use on both hydrocarbons and polar solvents (e.g., ethanol).