

# Pipeline safety and land use planning information

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*\*Instructions on back*

## WHAT'S INSIDE

What Pipelines Transport and Their Hazards

Land Use Planning

Responding to a Pipeline Emergency

Call Before You Dig

## Pipelines are near you

Pipeline operators share/encourage an emphasis of **PUBLIC SAFETY** and **ENVIRONMENTAL PROTECTION** as top priorities in any pipeline emergency response.

You have received this information because the decisions you make regarding land use and property development in your jurisdiction may impact the pipelines in your area. These pipelines, operated by the companies whose fact sheets accompany this booklet, are part of the network of over 2.6 million miles of gathering, transmission, and distribution pipelines in the United States, transporting two-thirds of the energy we use each year.



*Buried Pipeline*

## What pipelines transport and what the potential hazards are

Many pipelines transport petroleum products and natural gas. Some pipelines transport other hazardous products such as chemicals, highly volatile liquids, anhydrous ammonia, or carbon dioxide. Exposure to these products can be harmful if inhaled, can cause eye and skin irritation, and/or difficulty in breathing. Fortunately, pipeline accidents are extremely rare, but they can occur. Natural gas and petroleum products are flammable, potentially hazardous, and explosive under certain conditions. Pipeline companies undertake many prevention and safety measures to ensure the integrity of their pipeline systems. You can obtain more specific information regarding pipelines and the products they carry by contacting the pipeline company directly.

## How you can help keep pipelines safe

While accidents pertaining to pipeline facilities are rare, awareness of the location of the pipeline, the potential hazards, and what to do if a leak occurs can help minimize the number of accidents. A leading cause of pipeline incidents is third-party excavation damage. Pipeline companies are responsible for the safety and security of their respective pipelines. To help maintain the integrity of pipelines and their right-of-way, it is essential that pipeline and facility neighbors protect against unauthorized excavations or other destructive activities. You can help by:

- Keeping the enclosed **fact sheets** for future reference.
- Attending a pipeline safety training program in your area.
- Familiarizing yourself and your agency with the Pipelines and Informed Planning Alliance (PIPA) best practices regarding land use planning near transmission pipelines (below).
- Completing and returning the enclosed postage-paid survey.
- Report to the pipeline company localized flooding, ice dams, debris dams, and extensive bank erosion that may affect the integrity of pipeline crossings.



*TriView™ Marker, Dome Marker, Flat Marker, Round Marker, Aerial Marker, Casing Vent Markers.*

## How to recognize the location of a pipeline

Markers are located in the pipeline right-of-way and indicate the approximate location, but not the depth, of a buried pipeline. Although not present in certain areas, these can be found at road crossings, fence lines, and street intersections. The markers display the product transported in the pipeline, the name of the pipeline operator, and a telephone number where the operator can be reached in the event of an emergency.

## Land use planning and transmission pipelines

The Pipelines and Informed Planning Alliance (PIPA) is a broad stakeholder initiative led and supported by the US Department of Transportation's Pipeline and Hazardous Materials Safety Administration. The goal of PIPA is to reduce risks and improve the safety of affected communities and transmission pipelines through implementation of recommended practices related to risk-informed land use and development near transmission pipelines. The PIPA recommended practices describe actions that can be taken by stakeholders when there are proposed changes in land use or new development adjacent to existing transmission pipelines.

PIPA has developed recommended practices to help in making decisions about what, where, and how to build safely near transmission pipelines. The decisions you make can impact the safety of the community surrounding the pipeline.

- Have you consulted with the pipeline company?
- Have you considered access for pipeline maintenance and emergency response?
- Is enhanced fire protection needed?
- How will excavation damage to the pipeline be prevented?

For more information, please go to [phmsa.dot.gov](http://phmsa.dot.gov).



## How to recognize a pipeline leak



### Sight

Natural gas and Highly Volatile Liquids (HVL) are colorless and nearly invisible to the eye. Small leaks can be identified by looking for dying or discolored vegetation in a naturally green area. Hazardous liquids produce a strong sheen or film standing on a body of water.

An HVL leak may be identified by a fog-like vapor cloud in areas of high humidity. Natural gas is colorless, but blowing dirt around a pipeline area may be observed, or vapor and "ground frosting" may be visible at high pressures, regardless of temperature.

Other ways to recognize a leak may include: water bubbling up or standing in an unusual area, a mist or vapor cloud, a powerful fire or explosion with dense smoke plumes, or an area of petroleum-stained ground.



### Sound

The volume of a pipeline leak can range from a quiet hissing to a loud roar, depending on the size and nature of the leak.



### Smell

An unusual smell, petroleum or gaseous odor will sometimes accompany pipeline leaks. Natural gas and HVLs are colorless, tasteless and odorless unless odorants, such as Mercaptan, are added.

Most HVLs contain a slight hydro-carbon or pungent odor. Most are nontoxic; however, products such as ammonia are considered a toxic chemical and can burn the senses when it seeks out moisture (eyes, nose or lungs). If inhaled, HVLs may cause dizziness or asphyxiation without warning.



Vapor Cloud



Sheen on Water



Dead Vegetation



Bubbling Water

## Responding to a pipeline emergency

### **First Response Call Intake Check List**

The following protocol is intended to be a solid framework for call intake, but should not in any manner rescind or override agency procedures for the timing of broadcasts and messaging.

These procedures are established as recommended practices to consider with existing agency policy and procedure to ensure the most swift and accurate handling of every incident involving the release of dangerous gases and/or hazardous liquids.

All information should be simultaneously entered, as it is obtained by the telecommunicator, into an electronic format (when available) that will feed/populate any directed messages sent to emergency responders in conjunction with on-air broadcasts.

### **Location**

Request exact location of the incident (structure addresses, street names, intersections, directional identifiers, mile posts, etc.) and obtain callback and contact information.

The following guidelines are designed to ensure the safety of those in the area if a petroleum product or natural gas pipeline leak is suspected or detected:

### **Secure the area around the leak to a safe distance.**

Because vapors from products transported in pipelines can migrate great distances, it is important to avoid creating ignition sources in the area. Keep in mind, Highly Volatile Liquid (HVL) vapors are heavier than air and can collect in low areas such as ditches, sewers, etc. If safe, evacuating people from homes, businesses, schools, and other places of congregation, as well as controlling access to the site may be required in some incident scenarios. Sheltering in place may be the safest action if the circumstances make going outdoors dangerous.

- **Evacuate or shelter in place.** Depending on the level of chemical, natural gas, or product, and whether or not the product was released, or other variables, it may be necessary to evacuate the public or have the public shelter in place. Evacuation route and the location of the incident will determine which procedure is required, but both may be necessary. Evacuate people upwind of the incident, if necessary. Involving the pipeline company may be important in making this decision.

If the pipeline leak is **not** burning:

- **DO NOT** create any potential source of ignition such as an electrical switch, vehicle ignition, lighting a match, etc.
- **DO NOT** start motor vehicles or electrical equipment.
- **DO NOT** ring doorbells. Knock with your hand to avoid potential sparks from knockers.
- **DO NOT** drive into a leak or vapor cloud at any time.

If the pipeline leak **is** burning, attempt to control the spread of the fire, but:

- **DO NOT** attempt to extinguish a petroleum product or natural gas fire. When extinguished, petroleum products, gas and vapor could collect and explode if reignited by secondary fire or ignition source.
- **DO NOT** attempt to operate any pipeline valves yourself. You may inadvertently route more product to the leak or cause a secondary incident.
- **DO NOT** come into direct contact with any escaping liquid or gas.

**Establish a command center.** Work with pipeline representatives as you develop a plan to address the emergency. The pipeline representatives will need to know:

- Your contact information and the location of the emergency
- Size, characteristics and behavior of the incident, and if there are any primary or secondary fires
- Any injuries or deaths
- The proximity of the incident to any structures, buildings, etc.
- Any environmental concerns such as bodies of water, grasslands, endangered wildlife and fish, etc.

## Call before you dig



99%\* of all incidents involving injury, damage and service outages can be avoided by making a FREE CALL to 811. Your call should be made at least two to three business days prior to excavating. Examples of some activities that require a call to 811 include:

- Utility excavation
- Maintenance construction activities
- Land development activities
- Landscaping

Once your underground utilities have been marked, you will know their approximate location and can safely begin your dig, following safe excavation practices.

\* CGA Dirt Report 2013



## National Pipeline Mapping System (NPMS)

The National Pipeline Mapping System (NPMS) is a geographic information system created by the U.S. Department of Transportation (DOT), Pipeline and Hazardous Materials Safety Administration (PHMSA), Office of Pipeline Safety (OPS) in cooperation with other federal and state governmental agencies and the pipeline industry to provide information about companies and their pipelines. The NPMS web site is searchable by ZIP Code or by county and state, and can display a printable county map.

Within the NPMS, PHMSA has developed the Pipeline Integrity Management Mapping Application (PIMMA) for use by pipeline companies and federal, state, and local government officials only. The application contains sensitive pipeline infrastructure information that can be viewed via internet browsers. Access to PIMMA is limited to federal, state, and local government officials, as well as pipeline companies. PIMMA access cannot be given to any person who is not a direct employee of a government agency.

For a list of companies with pipelines in your area and their contact information, or to apply for PIMMA access, go to [npms.phmsa.dot.gov](http://npms.phmsa.dot.gov). Companies that operate production facilities, gas/liquid gathering piping, and distribution piping are not represented by NPMS nor are they required to be.

## Maintaining safety and integrity of pipelines

Pipeline companies invest significant time and capital maintaining the quality and integrity of their pipeline systems. Most active pipelines are monitored 24 hours a day via manned control centers. Pipeline companies also utilize aerial surveillance and/or on-ground observers to identify potential dangers. Control center personnel continually monitor the pipeline system and assess changes in pressure and flow. They notify field personnel if there is a possibility of a leak. Automatic shut-off valves are sometimes utilized to isolate a leak. Gas transmission and hazardous liquid pipeline companies have developed supplemental hazard and assessment programs known as Integrity Management Programs (IMPs). IMPs have been implemented for areas designated as "high consequence areas" (HCAs) in accordance with federal regulations. Specific information about companies' programs may be found on their company web sites or by contacting them directly.



## High consequence area identification\*

Pipeline safety regulations use the concept of HCAs, to identify specific locales and areas where a release could have the most significant adverse consequences. Once identified, operators are required to devote additional focus, efforts, and analysis in HCAs to ensure the integrity of pipelines.

Releases from pipelines can adversely affect human health and safety, cause environmental degradation, and damage personal or commercial property. Consequences of inadvertent releases from pipelines can vary greatly, depending on where the release occurs, and the commodity involved in the release.

### **What criteria define HCAs for pipelines?**

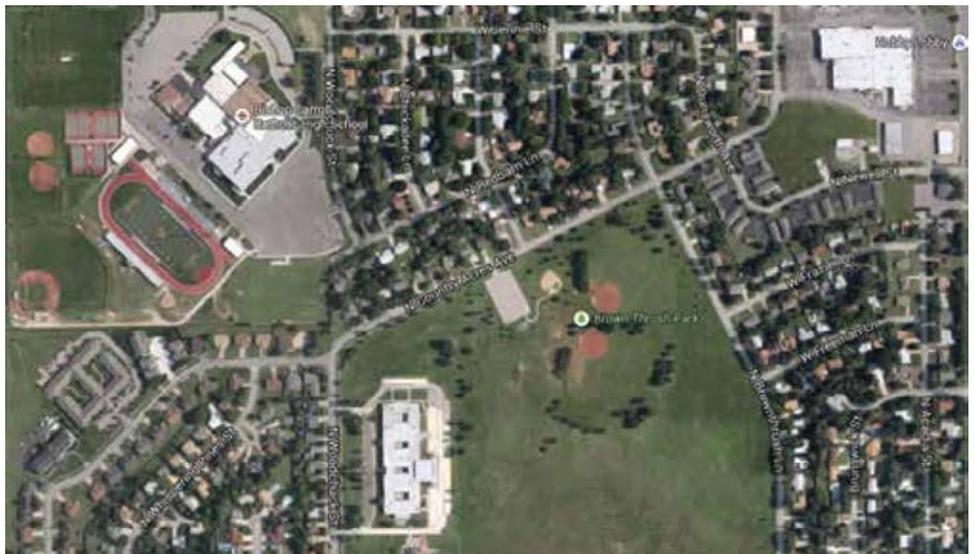
Because potential consequences of natural gas and hazardous liquid pipeline releases differ, criteria for HCAs also differ. HCAs for natural gas transmission pipelines focus solely on populated areas. (Environmental and ecological consequences are usually minimal for releases involving natural gas.) Identification of HCAs for hazardous liquid pipelines focuses on populated areas, drinking water sources, and unusually sensitive ecological resources.

### **HCAs for hazardous liquid pipelines:**

- Populated areas include both high population areas (called “urbanized areas” by the U.S. Census Bureau) and other populated areas (areas referred to by the Census Bureau as a “designated place”).
- Drinking water sources include those supplied by surface water or wells and where a secondary source of water supply is not available. The land area in which spilled hazardous liquid could affect the water supply is also treated as an HCA.
- Unusually sensitive ecological areas include locations where critically imperiled species can be found, areas where multiple examples of federally listed threatened and endangered species are found, and areas where migratory water birds concentrate.

### **HCAs for natural gas transmission pipelines:**

- An equation has been developed based on research and experience that estimates the distance from a potential explosion at which death, injury or significant property damage could occur. This distance is known as the “potential impact radius” (or PIR), and is used to depict potential impact circles.
- Operators must calculate the potential impact radius for all points along their pipelines and evaluate corresponding impact circles to identify what population is contained within each circle.
- Potential impact circles that contain 20 or more structures intended for human occupancy; buildings housing populations of limited mobility; buildings that would be hard to evacuate. (Examples are nursing homes, schools); or buildings and outside areas occupied by more than 20 persons on a specified minimum number of days each year, are defined as HCAs.



High Consequence Area (PHMSA Fact Sheet: High Consequence Area (HCA))

\* <https://primis.phmsa.dot.gov/comm/FactSheets/FSHCA.htm>

## Planning, zoning, and property development

It is crucial to coordinate with pipeline companies to take the location of pipelines into consideration in land-use plans, zoning, and property-development activities. Developments can make use of pipeline easements as open spaces and greenway connectors. Pipeline depth is a crucial consideration during development planning to ensure that costs for lowering or relocation are identified. Changes to the topography on either side of a pipeline may impose unacceptable stresses on the pipeline. Pipeline companies would like to coordinate in the development of site plans where large numbers of people congregate, including schools, churches, etc.

## Pipeline Safety and Damage Prevention\*

PROHIBITION APPLICABLE TO EXCAVATORS. A person who engages in demolition, excavation, tunneling, or construction.

1. May not engage in a demolition, excavation, tunneling, or construction activity in a State that has adopted a One-Call notification system without first using that system to establish the location of underground facilities in the demolition, excavation, tunneling, or construction area;
2. May not engage in such demolition, excavation, tunneling, or construction activity in disregard of location information or markings established by a pipeline facility operator...;
3. And who causes damage to a pipeline facility that may endanger life or cause serious bodily harm or damage to property.
  - A. May not fail to promptly report the damage to the owner or operator of the facility; and
  - B. If the damage results in the escape of any flammable, toxic, or corrosive gas or liquid, may not fail to promptly report to other appropriate authorities by calling the 911 emergency telephone number.

\* Pipeline Inspection, Protection, Enforcement, and Safety Act of 2006 (Section 2)

## Identified sites\*

Owners and companies of gas transmission pipelines are regulated by the US Department of Transportation (DOT). According to integrity management regulations, gas pipeline companies are required to accept the assistance of local public safety officials in identifying certain types of sites or facilities adjacent to the pipeline which meets the following criteria:

- (a) A small, well-defined outside area that is occupied by twenty or more persons on at least 50 days in any twelve-month period (the days need not be consecutive).  
Examples of such an area are playgrounds, parks, swimming pools, sports fields, and campgrounds.
- (b) A building that is occupied by 20 or more persons on at least 5 days a week for 10 weeks in any 12 month period (the days and weeks need not be consecutive).  
Examples included in the definition are: religious facilities, office buildings, community centers, general stores, 4-H facilities, and roller rinks.
- (c) A facility that is occupied by persons who are confined, are of impaired mobility, or would be difficult to evacuate. Examples of such a facility are hospitals, schools, elder care, assisted living/nursing facilities, prisons and child daycares.

If you know of sites within your jurisdiction that fit any of the above requirements, please go to [my.spatialobjects.com/isr/home](http://my.spatialobjects.com/isr/home) to provide this valuable information to pipeline companies.

\* 49 CFR §192.903.

**Download** the Pipeline Awareness Viewer™ (PAV) app for important land use and property development information. Use PAV to learn about:



- The PIMMA application and apply for access



- Land use planning and transmission pipelines



- The 811 process



- How to recognize a pipeline leak



- The different types of pipelines



- How to recognize the location of a pipeline



- Take online survey

## How to use PAV:

- Launch the app.
- Point your device at the brochure cover and tap the screen to scan.\*
- Once the content is revealed, tap the pop-out button  to freeze the content on your screen.
- Tap the buttons to view important videos or to visit websites about pipeline safety.



*\*For best results, enable Wi-Fi on your device before using PAV. Windows Phone® and BlackBerry® devices are not supported at this time.*