



# Environment, Safety and Health Bulletin

## Natural Gas Line Breaks

DOE/EH-0697

2006-02

January 2006

**Special Operations Reports** are issued to initiate management actions in response to events whose subject matter represents significant Departmental safety concerns.

**Environment, Safety and Health Alerts** are issued to initiate immediate action on potentially significant safety issues.

**Environment, Safety and Health Bulletins** are issued to share information and recommend actions on potential safety issues.

**Safety Advisories** are issued to provide information to the DOE Complex on potentially significant safety or health issues.

### PURPOSE

This Bulletin provides information on a safety concern that may impact operations at Department of Energy (DOE) facilities. Specifically, the objective is to reduce the incidence of gas line breaks and prevent natural gas fires and explosions.

### BACKGROUND

DOE records show that, over the past 5 years, there have been 14 accidental gas line releases, 9 of which occurred in 2005. Eleven of the incidents occurred from construction equipment rupturing or penetrating buried lines. Two occurrences involved workers cutting the wrong lines, and another case was due to a vehicle backing into an unprotected gas pipe.

In about half of all the incidents, there was a lack of supervision where the workers did not review the permits thoroughly, did not follow directions, paid little attention to markings that identified the path of the gas line, or disregarded the information in the permit. The remaining occurrences included unprotected aboveground gas piping and use of backhoes and similar equipment in areas where gas lines were too close to the digging surface.

### WHAT ARE THE HAZARDS?

Natural gas can explode when mixed with air in certain concentrations and ignited by a spark or flame. The National Transportation Safety Board has documented cases where natural gas from ruptured pipelines resulted in flash fires and explosions, causing fatalities and significant property damage.

### CONTROLLING THE HAZARDS

- Gas Releases from Damaged Lines
  - Turn off machinery, control sources of ignition such as open flames or vehicle engines, and do not operate electrical switches. If the gas line is plastic, touching or coming close to the pipe can result in a static discharge that could ignite the leaking gas.
  - Immediately evacuate all personnel from endangered areas and prevent vehicles and bystanders from entering the area.
  - Immediately report the accident to utility maintenance. Never attempt to repair the line yourself!

- Escaping Gas Catches Fire
  - Evacuate the area and prevent others from entering.
  - Do not attempt to put out flames. Putting out a gas fire without stopping the supply of gas could result in a more serious hazard.
- Gas Line is Pulled or Jarred
  - Gas lines that have been pulled, stretched, or bent could be damaged at a distant location.
  - Stop all work and check for the sound or other signs of escaping gas. Report incident to utility maintenance. Do not attempt repairs.

### PREVENTING GAS LINE BREAKS

- Conduct a pre-task meeting just prior to performing the work. Review procedures and discuss work activities.
- Buried gas lines need to be clearly marked on the ground before excavation work begins.
- Inconsistencies between as-built drawings and markings of gas lines should be resolved by hand digging or potholing (localized hole digging).
- Hand digging or potholing should be done within 5 feet of a marked gas line.
- Potholing should be done at several locations to ensure that the depth of the gas line did not change significantly at any point.
- Backhoes and similar equipment should not be used near gas lines.
- Observations at the work site that differ from the operational plan or from the work permit descriptions should be noted and immediately reported to the supervisor.
- Damage protection (e.g. installing bollards) needs to be provided for aboveground gas piping and meters.

### SUMMARY

- Gas line breaks may lead to fires and explosions.
- Coordinate with utility maintenance before performing excavations.
- Stay alert and take precautions to work safely.

### ADDITIONAL SOURCES OF INFORMATION

- Your Safety and Health Office
- Information on the web:
  - [http://www.osha.gov/dts/shib/shib\\_05\\_21\\_03\\_sugl.html](http://www.osha.gov/dts/shib/shib_05_21_03_sugl.html)
  - [http://www.nts.gov/Publictn/P\\_Acc.htm](http://www.nts.gov/Publictn/P_Acc.htm)

If you have any questions, please contact Dr. Bill McArthur by telephone at 301-903-9674 or by e-mail at [bill.mcarthur@eh.doe.gov](mailto:bill.mcarthur@eh.doe.gov)

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# PREVENT EVENTS

## Learning from Experience

**PREVENT EVENTS** is intended for use by personnel during morning meetings, pre-job briefings, and work unit meetings to communicate key industry experience.

### Management:

1. Do we have written guidance and procedures for preventing and controlling gas line accidents?
2. Do we conduct pre-task meetings with subcontractors just before excavation work begins?
3. Do our utility personnel check to be sure that underground utility lines are clearly marked before digging starts?

### Supervisors and Workers:

1. Have we discussed everything in the permit?
2. Whom do we contact if we rupture a gas pipeline?
3. Do we need to notify the utility people if we dragged a gas line out of place without breaking it?
4. Once we find the gas line by hand digging, can we use a backhoe to finish the work?
5. When performing decommissioning work, what should we do if we find inconsistencies such as when an aboveground gas line is not color-coded for removal but the work package calls for removal of all lines?

