Gas Leaks Threaten Our Safety and Environment

Gas explosions like the tragic 2010 incident in San Bruno, California, cause deaths, injuries and destruction in our communities.

Gas Leaks Are Common

Gas leaks are widespread, costly and hazardous to the public's health and safety. There are opportunities for gas to leak from the point at which it emerges from a well, through the gathering and transmission pipelines that carry gas from the well to the market, all the way to storage facilities and the distribution lines that carry gas to homes and businesses. While some gas is released intentionally as part of normal operations such as opening and closing valves, large amounts of gas are unintentionally released, most often due to malfunctioning equipment, corrosion and natural causes like flooding.[1]

- There were at least 1,888 serious incidents related to the release of gas during gathering, transmission and distribution that were reported to the U.S. Pipeline and Hazardous Materials Safety Administration between January 2010 and November 2018.[2] There are also thousands of smaller active leaks in the country's gas system. Chicago's two primary gas companies, for example, reported 1,775 active leaks as of August 2018.[3]
- In 2017 alone, there were 118 incidents related to either gas distribution or onshore transmission that resulted in a fatality, serious injury, or loss of at least $50,000.[4]
- The U.S. Energy Information Administration reports that at least 123,692 million cubic feet of gas were lost in 2017.[5] Because accurately quantifying the number and volume of gas leaks has proven challenging, the true amount of lost gas is likely even higher.[6] This amount of gas could generate all the electricity consumed by over 1 million homes for an entire year.[7]

Consequences of Gas Pipeline Incidents: January 2010 through November 2018*

	Distribution	Transmission and Gathering	**Total**
Number of Incidents	850	1,038	**1,888**
Gas Released (million cubic feet)	1,053	18,935	**19,988**
Fatalities	66	20	**86**
Injuries	388	99	**487**
Number of People Evacuated	17,344	12,064	**29,408**
Number of Explosions	213	47	**260**
Estimated Cost of Gas Released	$4,148,016	$51,999,709	**$56,147,725**
Estimated Total Cost	$351,492,946	$1,004,738,599	**$1,356,231,545**

Gas Leaks Threaten Our Communities

Gas disasters endanger public safety and can cause massive damage to homes and communities. When gas lines leak, rupture or are otherwise damaged, the gas released can explode. When explosions take place in populated areas, they can result in deaths, injuries and forced evacuations.

Recent major gas explosions include:

- In September 2018, a series of more than 80 explosions in the communities of Andover, North Andover and Lawrence, Massachusetts, resulted in one death, 25 injuries and the destruction of as many as 80 homes.[8] The explosions and fires were believed to have been caused by the gas company's failure to relocate a pressure sensor during construction work.[9]
- In 2016, a gas explosion and the ensuing fires in Silver Spring, Maryland caused seven deaths and 68 injuries. The property damage was expected to exceed $1 million.[10]
- In 2014, a major explosion in New York City killed eight people, displaced more than 100 families and destroyed two five-story buildings.[11] The incident was blamed on the lax maintenance of infrastructure, which contributed to the gas main's failure.
- In 2010, a pipeline rupture in San Bruno, California resulted in an explosion that killed eight people and forced many more to evacuate.[12] The fire destroyed 38 homes and damaged 70 others. The National Transportation Safety Board attributed the incident to regulatory failures along with substandard equipment and operation.

Gas Leaks Threaten Our Environment

Continued reliance on gas for heating, electricity generation and other uses poses a serious threat to the climate. Leaks from the gas pipeline system release large amounts of methane, the main component of gas and a potent greenhouse gas.[13]

- Methane can leak during production, processing, distribution, storage and transportation. The amount of gas released from these leaks can reduce or even negate its greenhouse gas advantage over coal.[14] A pound of methane causes 86 times more warming than does a pound of carbon dioxide over a 20-year period.[15]
- A comprehensive 2018 study by Alvarez et al. estimates that roughly 2.3 percent of gas produced domestically is lost as methane.[16] According to the study, the estimated methane emissions from gas systems has roughly the same global warming impact over a 20-year timeframe as all of the carbon dioxide emissions from U.S. coal plants during 2015. Methane leakage from gas production could be far greater, with recent estimates of leakage ranging from less than 1 percent to over 10 percent.[17]
- Recent analysis based on peer-reviewed research estimates that oil and gas facilities in Pennsylvania emit over 520,000 tons of methane annually – five times greater than the amount self-reported by the industry to the Pennsylvania Department of Environmental Protection.[18]

Large amounts of gas are lost throughout the production process that carries gas from the wellhead to consumers.

Gas Leaks Are Costly to Consumers

Gas leaks have already cost American consumers billions of dollars and wasted significant amounts of gas.[19] Aging pipeline systems and poor maintenance force consumers to pay for gas that never reaches their homes. In most states, gas companies recover the costs of lost or unaccounted-for gas from consumers through purchased gas adjustment clauses authorized by state public utility commissions.[20] Gas companies are not incentivized to reduce the lost or unaccounted-for gas, except in New York and Pennsylvania where there are limits on the amount of recoverable costs.[21]

- Between 2000 and 2011, U.S. ratepayers paid at least $20 billion for gas that was never used.[22]
- The estimated gas that leaked from the U.S. gas transportation network between January 2010 and November 2017 was enough to heat 233,000 homes for an entire year.[23]

Gas pipelines harm our lands and release methane, a potent greenhouse gas.

Gas Lines Around the Country Are Frail and Aging

Much of the country's gas infrastructure is aging and leak-prone, which puts the public's safety and property at even greater risk.

The gas infrastructure in many U.S. cities is outdated and made from materials that are more susceptible to corrosion and leaks. Roughly 35 percent of the country's gas distribution mains and 56 percent of gas transmission pipelines were installed prior to 1970.[24] According to a joint project by the Environmental Defense Fund and Google Earth Outreach:[25]

- Nearly 45 percent of Boston's gas pipes are made from cast iron or other corrosive and leak-prone materials, and over half are more than 50 years old – the reality in many older Northeastern cities.[26]
- About 16 percent of pipes in the Los Angeles area are made from corrosive and leak-prone materials, and close to 40 percent of all pipes in the Southern California Gas Company's territory are over 50 years old.[27]
- In Pittsburgh, about 29 percent of the pipes managed by People's Natural Gas are made with outdated materials that are more liable to leak, and roughly 46 percent of them are over 50 years old.[28]

It's Time to Move Beyond Gas

Aging and leaky gas infrastructure threatens public safety, the environment and our pocketbooks – exacerbating the already serious problems created by using gas for energy. Renewables like wind and solar are already competitive with gas, and costs will continue to fall.[29]

Gas companies need to be held accountable for keeping Americans safe while we accelerate the transition to a cleaner, safer energy system that uses renewably generated electricity to heat our homes and power our vehicles.

Specifically, decision-makers should:

1. Electrify home heating – Switching to electric heating powered by renewable energy would allow us to eliminate carbon emissions from home heating and would facilitate the transition to a safer and more sustainable energy system.[30]
2. Fix high priority leaks – Repairs to gas infrastructure should be focused on addressing leaks that pose a threat to public health and safety. Policies should discourage investment in new or expanded gas infrastructure and encourage spending on zero-carbon energy sources.
3. Hold gas companies accountable – Gas companies should be held accountable for reducing lost gas and more diligently maintaining and operating their equipment to avoid further leaks and explosions. Public policies should regulate methane emissions and prevent gas companies from passing the costs of lost gas on to consumers.[31]

Nearly 2,000 incidents related to gas gathering, transmission and distribution were reported between January 2012 and November 2018.

For more information, please visit www.uspirgedfund.org

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*** Table notes:** All estimates come from the U.S. Department of Transportation Pipeline and Hazardous Materials Safety Administration.[32] Only incidents resulting from the "release of natural gas" are included. A release of gas qualifies as an "incident" if it results in 1) at least one death, 2) serious injury, 3) property damage of $50,000 or more, measured in 1984 dollars, 4) the unintentional release of 3 million cubic feet of gas or more, 5) the emergency shutdown of a liquified gas or underground storage facility, or 6) the operator judges the event to be significant enough to report. "Estimated Total Cost" includes the cost of public and private property damage, gas released, the operator's emergency response and any additional costs.

Notes

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