# Hydraulic Fracturing: Clean, Safe Method to Recover Natural Gas

## Time-tested method has enabled greater availability of clean, domestic natural gas

Hydraulic fracturing, often called "fracking," is a safe and essential way to develop the vast amounts of natural gas found in hard, shale rock formations around the United States.

### TECHNIQUE USED IN MORE THAN 1 MILLION WELLS OVER 60 YEARS.

The technique has been used in more than 1 million wells for over 60 years, but recently has grown more common as it has become more economical, contributing to a large and exciting increase in the availability of clean, domestic natural gas. Production from shale formations is the fastest growing source of natural gas, causing an unprecedented 39 percent increase in the estimated size of the overall U.S. gas resource base since 2006.[1]

Hydraulic fracturing is a method used to free natural gas that is trapped in shale rock formations, which are less porous than other types of natural-gas-containing rock. A liquid mix of primarily water and sand is injected into the rock at very high pressure, creating fractures within the rock that provide a path for natural gas to flow to the wellhead.

### HIGHLY-DILUTED ADDITIVES ARE ALSO INGREDIENTS IN TOOTHPASTE AND OTHER HOUSEHOLD PRODUCTS.

In addition to the water and sand that comprise 99 percent of the fluids used in fracturing, a small amount of additives are used to perfect the process. According to a recent study by the U.S. Department of Energy[2], these additives together represent less than 1 percent of the fracturing mix. Among other functions, the additives increase thickness and inhibit bacteria.

The additives used in fracturing fluids are used in many household products. For example, the additive commonly utilized as a gelling agent is also used in toothpaste, cosmetics, and even ice cream, and an often-used friction-reducing additive is also used to produce make-up remover and candy. These additives are diluted with water by a factor as high as 122 times before being pumped into the ground, according to the federal study.

### EPA SAYS STATES DOING A GOOD JOB ON FRACTURING.

Hydraulic fracturing is now in wide use, with more than 90 percent of natural gas wells in the United States having employed it to boost production at some time, yet there has not been a single confirmed case of contamination of underground drinking water caused by fracturing. Every natural gas well is cased with concrete and steel to ensure that no fluids seep out. In addition, all hydraulic fracturing takes place thousands of feet below water reservoirs, further minimizing any possibility of contact. Finally, state and local agencies have successfully regulated the use of hydraulic fracturing for more than 50 years, as underscored in February 2010 remarks by EPA's director of Drinking Water Protection that there's no evidence the process causes water contamination, adding, "I have no information that states aren't doing a good job already."[3]

Hydraulic fracturing is a safe and valuable means of recovering clean, domestic natural gas. Thanks to the dedication of those who perfected hydraulic fracturing, shale formations across the United States have become highly productive sources of new, clean natural gas for our country. ■

**99%**
**Water & Sand**

**1%**
**Additives**

**.007% Crosslinker Also in:**
Soaps, Laundry Detergent

**.09% Friction Reducer Also in:**
Water Treatment, Candy, Make-up Remover

**.09% Surfactant Also in:**
Glass Cleaner, Antiperspirant, Hair Color

**.12% Diluted Acid Also in:**
Household Cleaner, Swimming Pool Cleaner

**.06% Gelling Agent Also in:**
Toothpaste, Baking Goods, Ice Cream, Sauces, Cosmetics

**.04% Scale Inhibitor Also in:**
Household Cleansers, Deicing Agent

**.004% Iron Control Also in:**
Food Additive, Lemon Juice, Flavoring in Food & Beverages

**.002% Corrosion Inhibitor Also in:**
Pharmaceuticals, Plastics

**.01% Breaker Also in:**
Hair Cosmetics, Household Plastics

**.06% KCl Also in:**
Low Sodium Table Salt Substitute

**.0001% Biocide Also in:**
Disinfectant, Used to Sterilize Medical Equipment

**.01% pH Adjusting Agent Also in:**
Detergents, Washing Soda, Water Softener, Soap

[1] *Annual Energy Outlook 2009*, U.S. Energy Information Administration, March 2009
[2] *Modern Shale Gas Development in the United States*, U.S. Department of Energy, April 2009.
[3] *State Regulators Doing Fine Job on Hydro-Fracking*, Dow Jones, February 16, 2010.

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