

# Hydraulic Fracturing Q&A

## What makes up frac fluid?

Water and sand comprise 99.5 percent of the mixture. Compounds used for specific purposes make up the remainder. For instance, guar, made from beans, makes the fluid more gel-like, which helps transport the sand deep into the shale fissures. When the fluid is ready to be removed, an enzyme or oxidizer reduces the fluid's consistency. Other compounds act as lubricants. Most of these compounds have common household uses.

## What chemicals are used in hydraulic fracturing?

The attached list details not only the most commonly used compounds, but also their purpose in the frac job and some of their better-known applications. All of the states where Devon operates require companies to make available a list of each product used in hydraulic fracturing.

## What protects my water supply?

In addition to the mile or more of rock formations that separate groundwater supplies from fracking operations, safeguards are taken to protect against potential groundwater contamination. State regulatory authorities ensure that these steps are followed and can impose severe penalties, including suspending a license and imposing fines, for violations.

When a well is drilled, steel casing is installed and surrounded by layers of concrete. These serve as additional barriers against any possible groundwater contamination. This American Petroleum Institute [video](#) demonstrates not only how fracking works, but also the protective casing and cementing process.

## What happens to the frac water after it is used?

Once its purpose is fulfilled, the water is recovered and either recycled or disposed of by injecting it several thousand feet below drinking water supplies. Injection wells are highly regulated by state agencies.

## What does the government say about hydraulic fracturing?

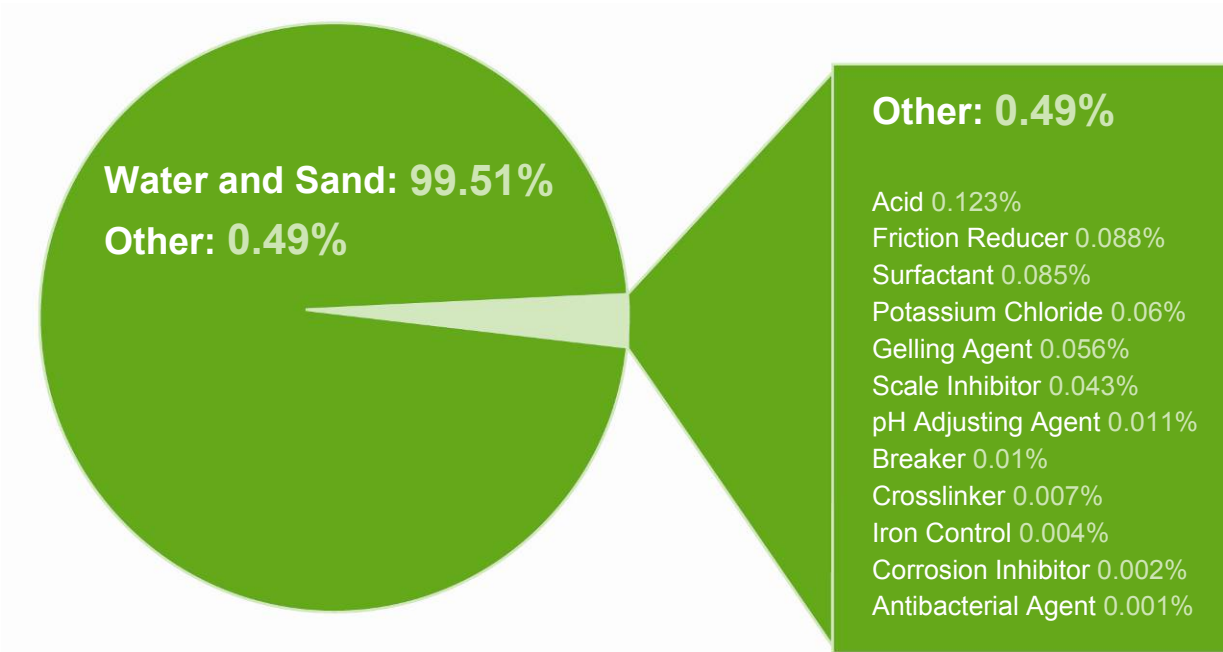
The Environmental Protection Agency studied the issue and determined in 2004 that the process poses no threat to drinking water supplies. In 2001, the U.S. Department of Energy noted that more restrictive regulation of hydraulic fracturing could inhibit the nation's supply of natural gas while providing no additional protection to underground water. More recently, the Ground Water Protection Council issued a 2009 report stating that the potential for groundwater contamination from hydraulic fracturing is extremely remote. Additionally, the Interstate Oil and Gas Compact Commission, a government agency composed of energy-producing states, has determined that existing

state regulations prevent groundwater contamination from hydraulic fracturing.

**What would happen if Congress added a federal layer to the regulatory framework?**

A study released in 2009 by IHS Global Insight concluded that additional restrictions on hydraulic fracturing would reduce natural gas production by at least 10 percent within five years. This would force the United States to rely more heavily on imported natural gas.

## Examples of Typical Shale Fracturing Mixture Makeup



### Also found in:

- .12% **Diluted Acid:** Household Cleaner, Swimming Pool Cleaner
- .09% **Friction Reducer:** Water Treatment, Candy, Make-up Remover
- .09% **Surfactant:** Glass Cleaner, Antiperspirant, Hair Color
- .06% **Potassium Chloride:** Low Sodium Table Salt Substitute
- .06% **Gelling Agent:** Toothpaste, Baking Goods, Ice Cream, Sauces, Cosmetics
- .04% **Scale Inhibitor:** Household Cleaners, Deicing Agent
- .01% **pH Adjusting Agent:** Detergents, Washing Soda, Water Softener, Soap
- .01% **Breaker:** Hair Cosmetics, Household Plastics
- .007% **Crosslinker:** Soaps, Laundry Detergent
- .004% **Iron Control:** Food Additive, Lemon Juice, Flavoring in Food & Beverage
- .002% **Corrosion Inhibitor:** Pharmaceuticals, Plastics
- .0001% **Antibacterial Agent:** Disinfectant, Used to Sterilize Medical Equipment

