

## HYDRAULIC FRACTURING FLUIDS

Numerous studies have determined that the fluids used in hydraulic fracturing are safe, pose no risk to public health and that engineering practices ensure they do not enter the water supply. In fact, more than one million wells have been fractured without a single incidence of water contamination.

### What exactly are fracturing fluids made of?

The main ingredient in fracturing fluid is water, which accounts for 95% of the mixture. Other ingredients each serve a critical purpose in the fracturing process.

Sand, the next most concentrated component, keeps fractures open, allowing oil or natural gas to reach the well and rise to the surface for collection. Water alone is not the most effective carrier of sand, so the mixture must be made more viscous or gel-like. The most common material used to gel the water is guar, which is made from guar beans (and which you will likely find in many of your favorite processed foods). In addition, nitrogen gas may be added to foam the mixture for better transport down the well.

To help in the recovery process, an enzyme or oxidizer breaks the fluid back down from its gelled state to a more liquid state so it can be collected.

Other ingredients in fracturing fluid could affect your health—if you were exposed to them in high enough quantities. However, the concentration of these elements is far below the levels necessary to pose a threat.

### What steps are taken during well construction to protect drinking water?

Well construction processes are designed to ensure maximum protection of the water supply and nearby ecosystems. Each well is lined with steel pipe casing that extends below the depth of any shallow aquifers and below an impervious layer of rock that would prevent any migration of fluids up into the drinking water supply. Production casing is used at depths below the surface casing, keeping any fluids or other material in the well bore from entering the surrounding rock formations.

The wells are also filled with concrete near the surface, and a new bore is drilled through the concrete, adding an extra layer of protection.

### Has hydraulic fracturing ever caused contamination of drinking water?

No. There has never been a documented instance of water contamination caused by hydraulic fracturing. The engineering practices perfected over the last 60 years and effective state regulation ensures the integrity of the water supply and the environment.

The Environmental Protection Agency and the Ground Water Protection Council have each released extensive studies declaring the practice safe, and the fluids non-threatening.