

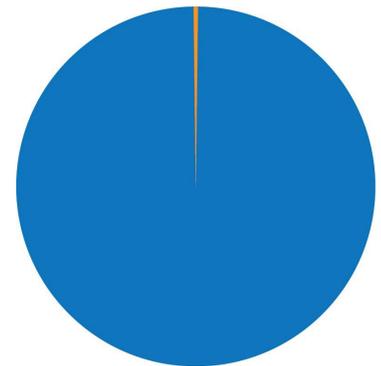
Hydraulic fracturing, or “fracking,” is a process to extract oil and natural gas deposits from tight rock formations. A mixture of pressurized water, sand, and chemicals is pumped into the formation creating tiny fissures in targeted areas of the source rock. These tiny fissures allow oil and natural gas to escape and flow through piping up to the surface. First tried 70 years ago, hydraulic fracturing became widely used in the last two decades after horizontal drilling began to replace [vertical drilling](#). The combination of horizontal drilling and fracturing allows more efficient recovery of resources with a much [smaller environmental footprint](#) than drilling multiple vertical wells. Over [95 percent of the wells](#) in the U.S. are hydraulically fractured at some point during their lifetime.

“It is no more toxic than substances commonly found in homes.”
[University of Colorado researchers](#)

Hydraulic Fracture Fluid

Hydraulic fracturing fluid, or “fracking fluid,” is [99.5 percent water and sand](#). The remaining percentage is made up of chemicals commonly found in everyday products, such as toothpaste, detergent, and even ice cream, that often can be purchased at your grocery store.

Additive	Main Compound	Common Use
Diluted Acid	Hydrochloric, Muriatic Acid	Swimming Pools
Biocide	Glutaraldehyde	Dental Disinfectant
Breaker	Ammonium Persulfate	Bleaching Hair
Crosslinker	Borate Salts	Laundry Detergents
Iron Control	Citric Acid	Food Additive
Gelling Agent	Guar Gum	Biscuits
Scale Inhibitor	Ethylene Glycol	Antifreeze
Surfactant	Isopropanol	Glass Cleaner
Friction Reducer	Polyacrylamide	Water and Soil Treatment



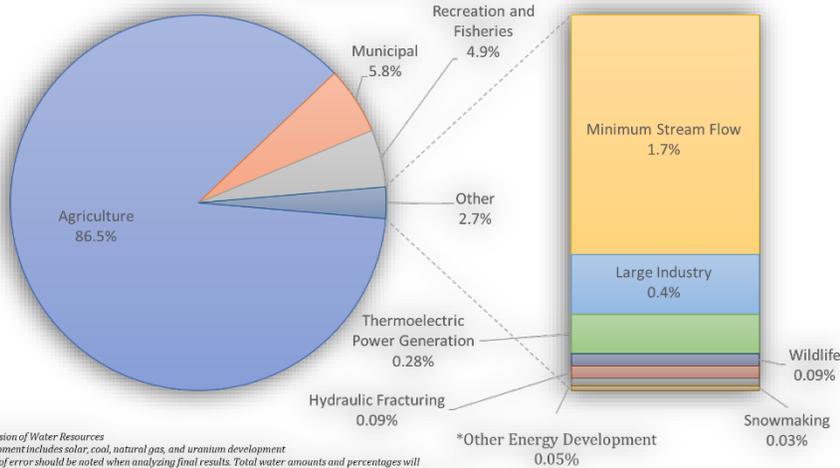
■ Water/Sand ■ Chemicals

Groundwater Protection

Hydraulic fracturing occurs thousands of feet below ground. Colorado was the first state to [require disclosure of chemicals](#) and their concentrations, and the first state to [require groundwater testing](#) before and after drilling. Additionally, Colorado requires that each well must be encased in [multiple layers of industrial-grade steel casing](#), which is then surrounded by cement to create multiple layers of protection. At least [26 studies](#), including those from the Environmental Protection Agency (EPA) and the U.S. Geological Survey (USGS), have found that the hydraulic fracturing process doesn’t contaminate groundwater.

Water Use

Colorado Water Utilization by Sector, 2011-2015
 Agriculture uses the majority of Colorado water; energy sector consumes less than 1% of total



Source: Colorado Division of Water Resources
 *Other energy development includes solar, coal, natural gas, and uranium development
 Note: A small margin of error should be noted when analyzing final results. Total water amounts and percentages will vary slightly from year-to-year based on supplies from varying snowpack and demands resulting from varying climatic conditions.

Relatively speaking, a very small amount of water is used during oil and natural gas development. Hydraulic fracturing uses 0.1 percent of Colorado's total water use annually. Approximately 85 percent of the state's water is used by Colorado's important agriculture sector.

Much of the water used during the fracturing process is treated in waste water plants and is often recycled. While the recycled water will not be used for drinking water, it can be re-used for additional drilling projects.

Additional Resources & Information

Sources

- Colorado Oil & Gas Conservation Commission (COGCC) | www.cogcc.state.co.us
- United States Geological Survey (USGS) | www.usgs.gov
- U.S. Department of Energy | www.energy.gov
- FracFocus | www.fracfocus.org

For More Oil & Natural Gas Industry Informational Fact Sheets:

www.coga.org/factsheets



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