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Chemicals Used in Fracking

Fracking fluids are complex mixtures of chemicals, water, and sand that are unique to each company. Like Colonel Sanders' 11 secret herbs and spices, the makeup of this fluid is a jealously guarded trade secret that the oil and gas companies typically refuse to divulge, even under pressure. In the past, the industry has remained largely unregulated, but over the last few years, environmental watchdog groups have become increasingly concerned.

Contrary to the image most of us may envision, of vast pools of oil deep within the earth that merely need to be tapped and sucked out, most oil and gas is found in small pockets of rock. Far beneath the Earth's surface lie multiple layers of different materials, including shale and clay. These porous rock formations trap natural gas, making it difficult to extract these fuels. Drilling companies use high
sure water, chemicals, and sand to create cracks in the rocks, allowing the gas to escape and flow
ards the wells, where it can be collected and processed for sale. This process is known as "fracking,"
h is shorthand for hydraulic fracturing.

kes a great deal of pressure and a lot of liquid to crack the rock layer buried thousands of feet
erground. Approximately 90% of all gas wells located on land employ fracking as a means of making
more accessible. Most wells are fracked numerous times to extract the maximum profit from a
ng site before the well is exhausted.

veen 50,000 and 350,000 gallons of fluid are used during a fracking treatment, plus 75,000 to 320,000 pounds of sand, or proppant. The sand fills the cracks left by the pressurized liquid to keep the cracks from closing during the oil extraction process.

Since the rock layer is porous, water alone cannot be used as fracking fluid. Water would simply sink into the rock without cracking the substrate. For this reason, the drilling companies must make a slick mixture of fracking fluids. Hundreds of chemicals may go into the mix, including many cancer-causing agents and chemicals known to be toxic to humans, animals, and the environment. While oil and gas corporations fight legally to avoid releasing the ingredients in this toxic stew, scientists researching the problem have analyzed fracking fluid and discovered the following substances common to diesel fuel:

- Benzene
- Ethylbenzene
- Toluene
- Xylene
- Naphthalene
- Polycyclic aromatic hydrocarbons
- Methanol

- Formaldehyde
- Ethylene glycol
- Glycol ethers
- Hydrochloric acid
- Sodium hydroxide

Not all companies use diesel fuel, but most of the companies surveyed by a 2010 congressional committee admitted that diesel fuel is part of their fracking mixture. Even in cases where diesel fuel is not used, the mixture generally includes high levels of benzene. It takes only a tiny amount of benzene to poison millions of gallons of groundwater. In the five years studied by the investigation (2005 to 2009), 32 million gallons of hydraulic fluids have been pumped into the ground in the United States. None of the companies that admitted using diesel fuel in their fracking mixture requested or acquired a permit to use diesel fuel as required by law.