

Gas Fracking (Fracturing)

Map of Shale Gas Basins in the U.S. and 14 World Regions

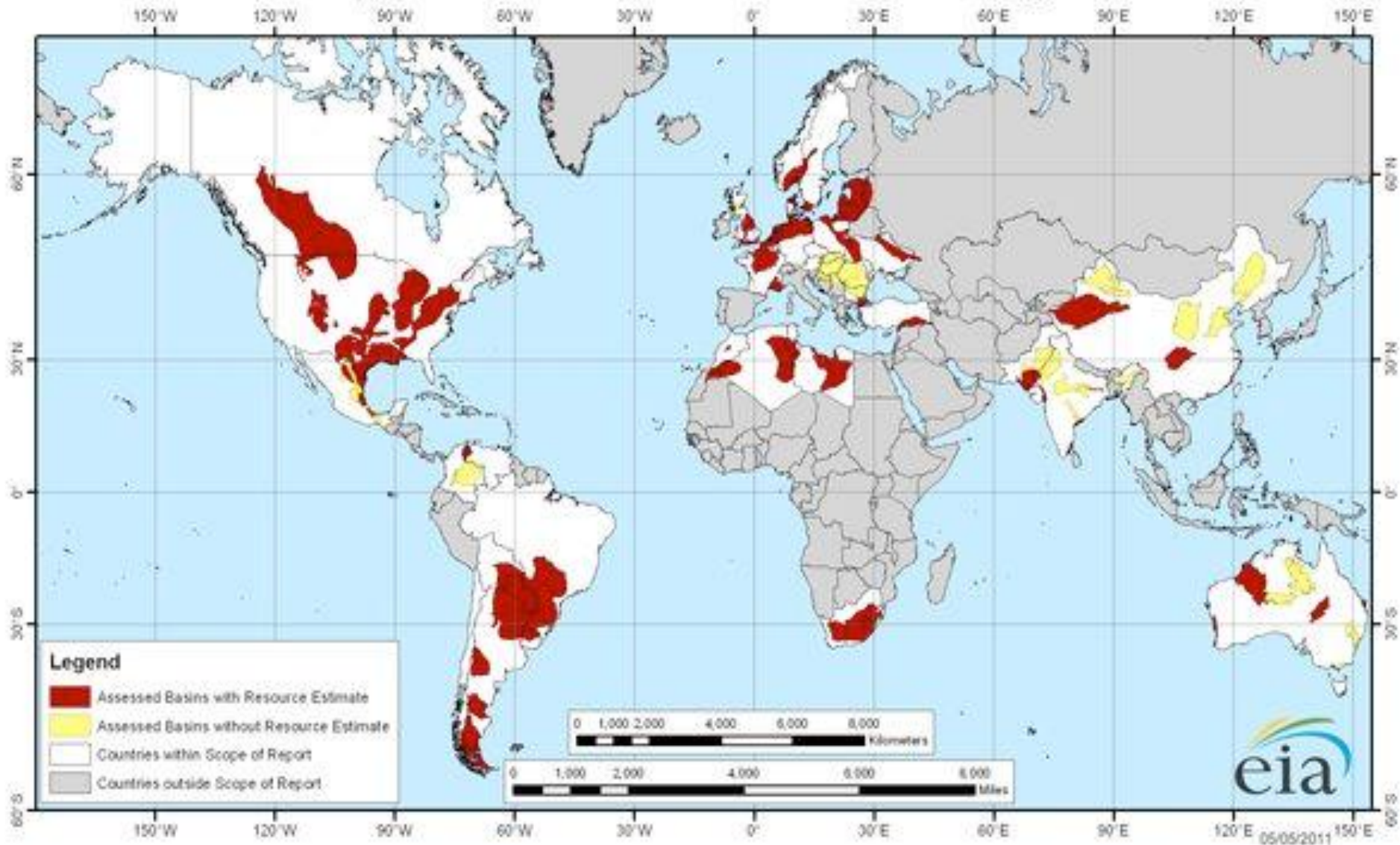
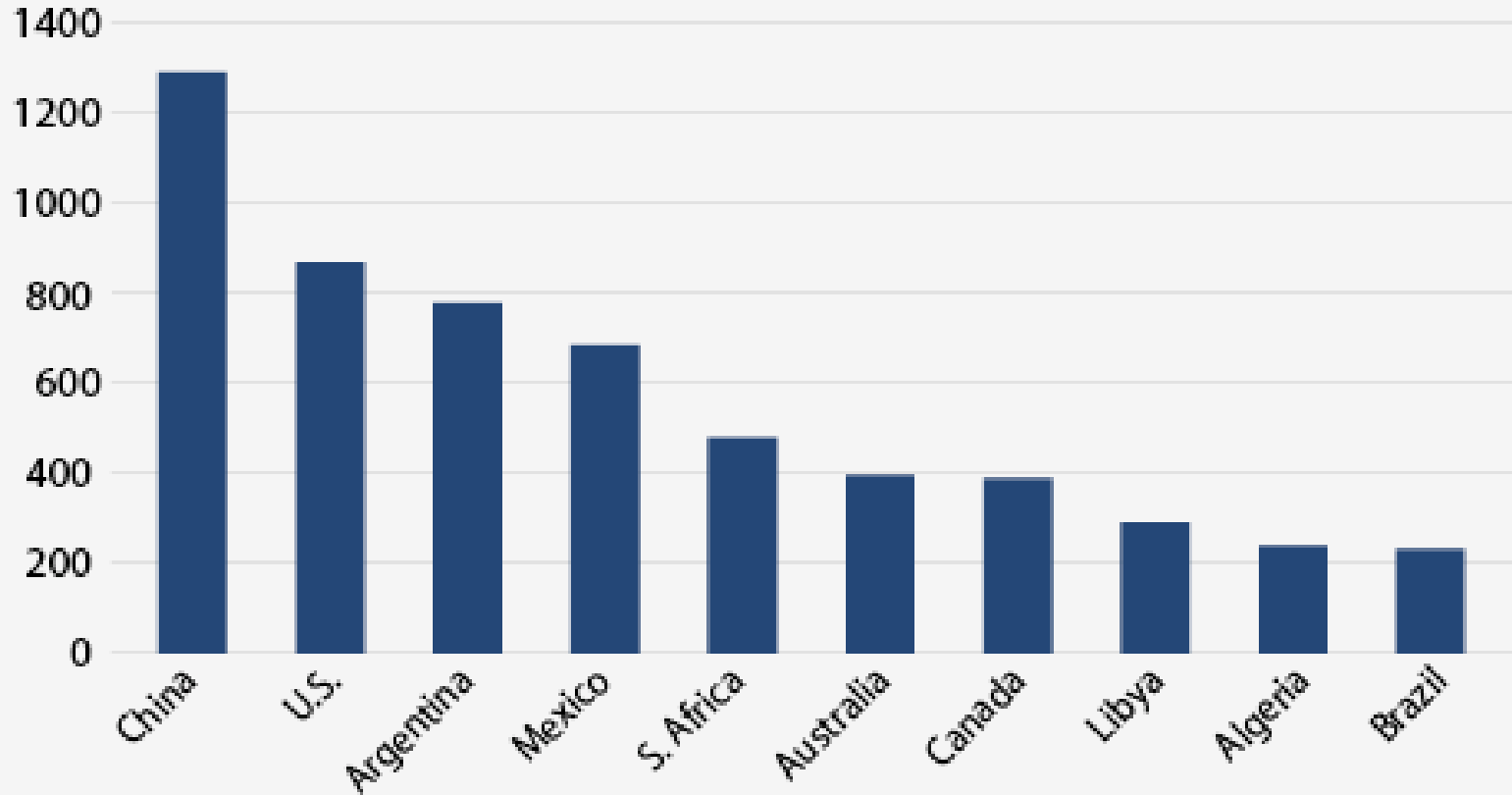


FIGURE 1

Estimated shale gas technically recoverable resources by country

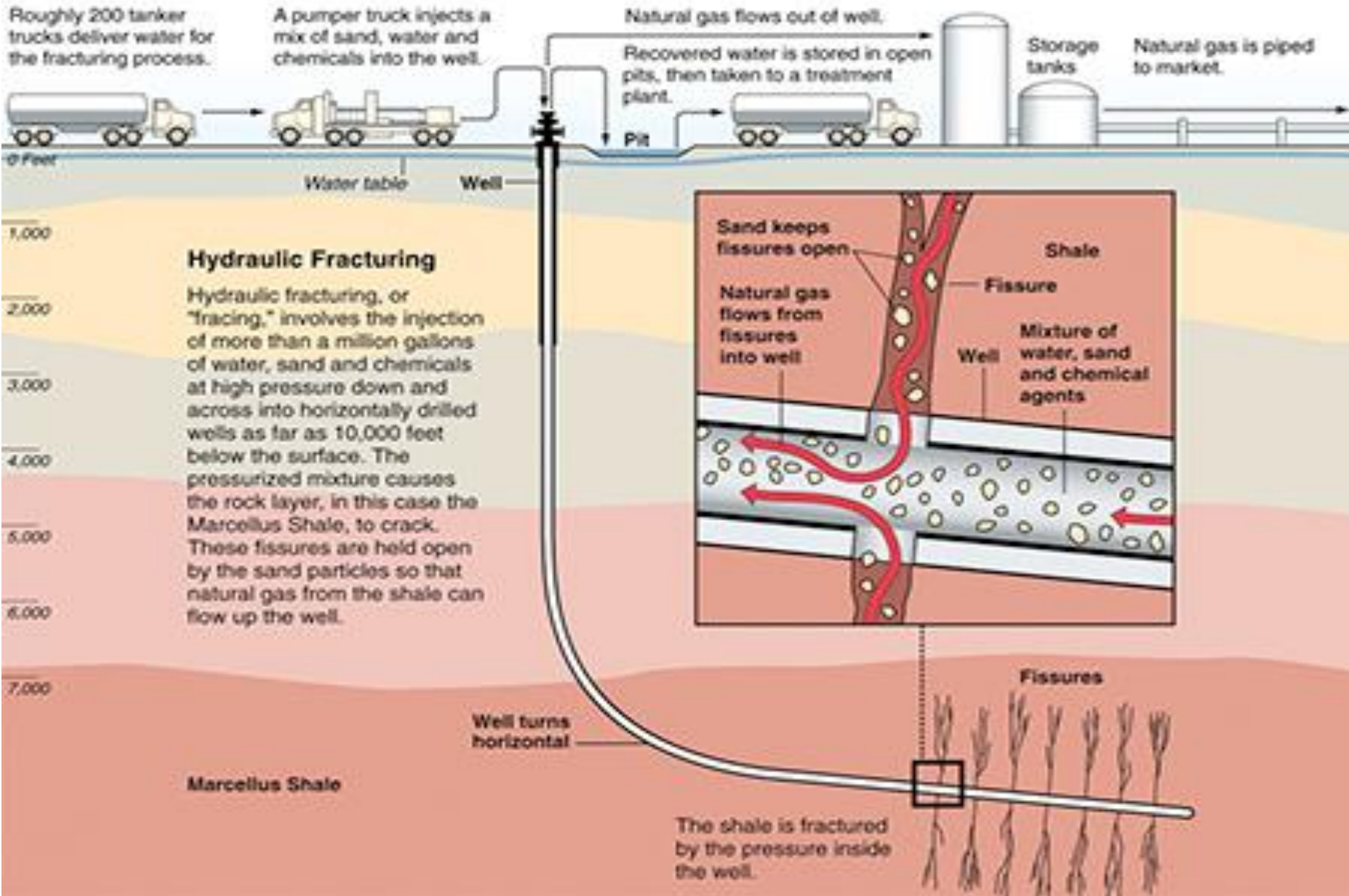


Source: U.S. Energy Information Administration.

Shale Gas

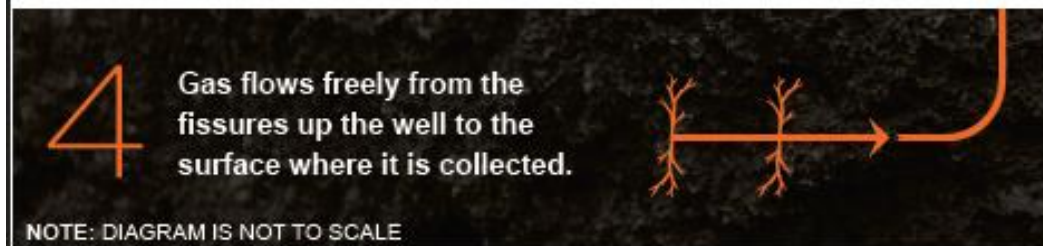
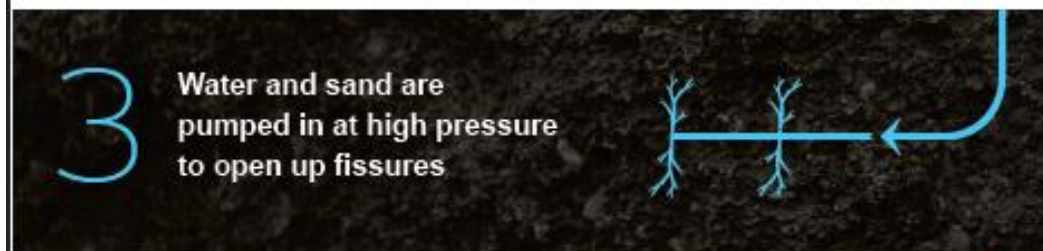
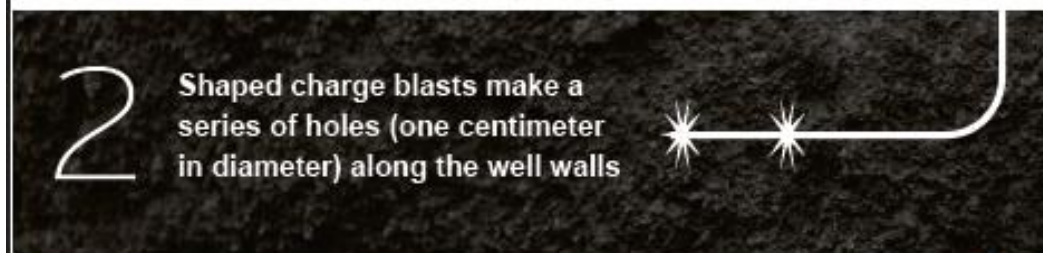
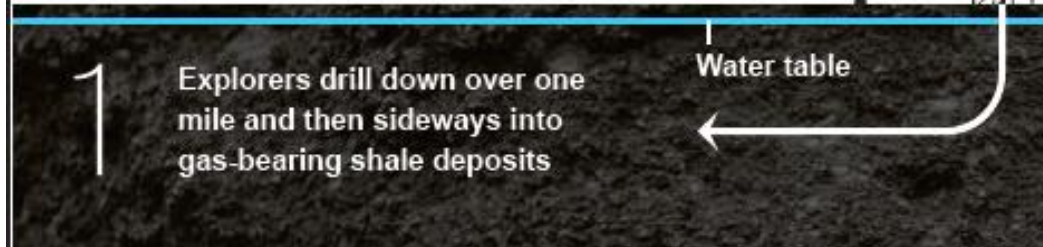


Source: <http://static.guim.co.uk/sys-images/Guardian/Pix/pictures/2011/10/18/1318939138992/Shale-Gas-007.jpg>



Fracking: How shale gas is extracted

Gas is found in shale formed from deposits of mud, silt, clay and organic matter



NOTE: DIAGRAM IS NOT TO SCALE

What is fracking?

Hydraulic fracturing, or fracking, is a method of forcing natural gas or oil from rock layer deep below the Earth's surface.

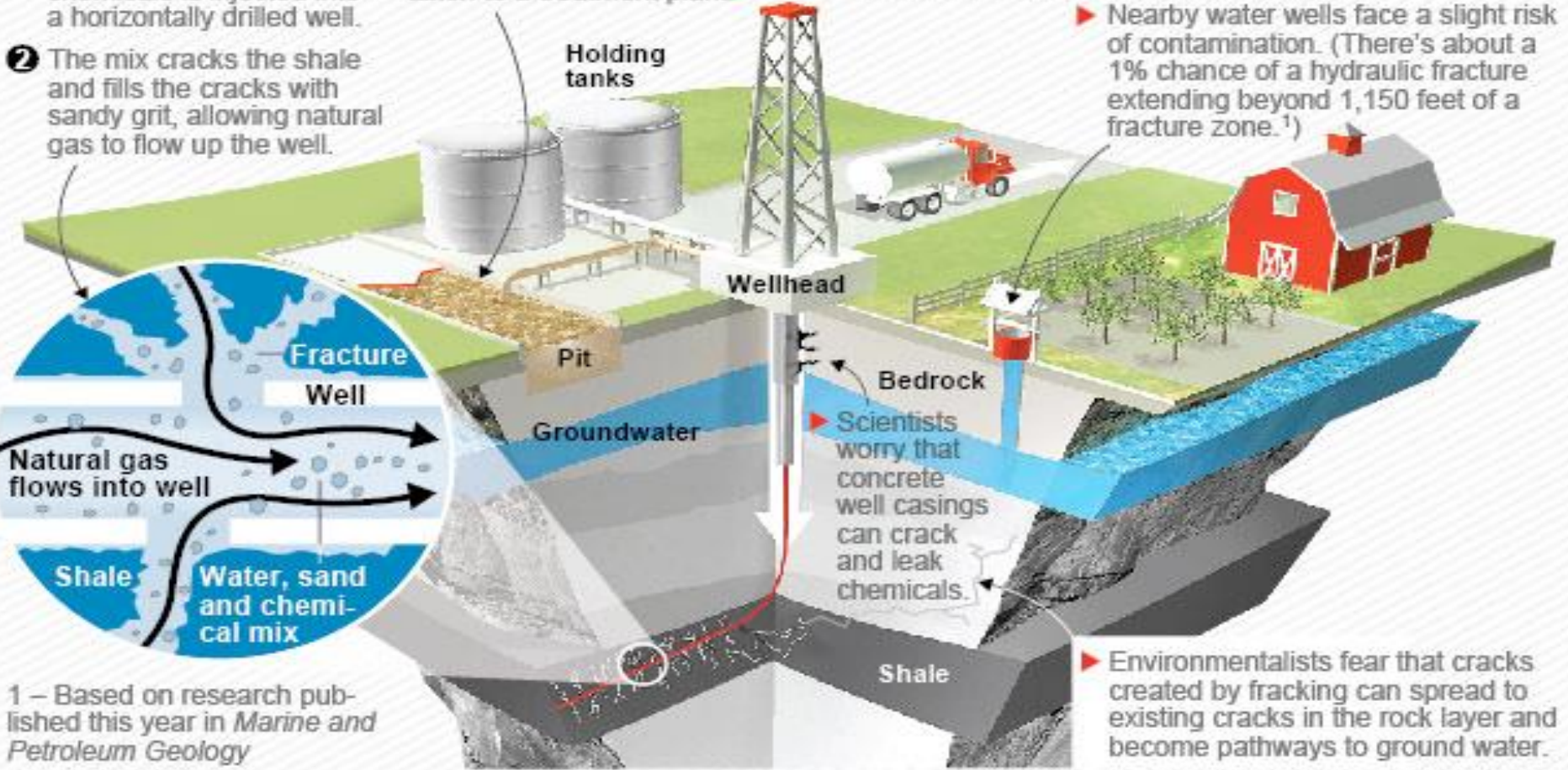
How fracking works ...

- 1 A pressurized mixture of sand, water and chemicals is injected into a horizontally drilled well.
- 2 The mix cracks the shale and fills the cracks with sandy grit, allowing natural gas to flow up the well.
- 3 The recovered water is stored in lined pits or taken to a treatment plant.

... and why it's controversial

Much of the water used in fracking is collected from the well and processed, but some communities have raised concerns that potentially carcinogenic chemicals can escape into drinking water.

▶ Nearby water wells face a slight risk of contamination. (There's about a 1% chance of a hydraulic fracture extending beyond 1,150 feet of a fracture zone.¹)



1 – Based on research published this year in *Marine and Petroleum Geology*

Sources: Duke University; U.S. Energy Information Administration; National Research Council; *Marine and Petroleum Geology* By Dan Vergano and Karl Gelles, USA TODAY



Source: http://www.energieleben.at/wp-content/uploads/2012/03/Rig_cc_pubdom_KenGallager.jpg

Fracking Area in the US



Source: <http://www.kontextwochenzeitung.de/newsartikel/2012/09/gas-fieber-am-bodensee/>

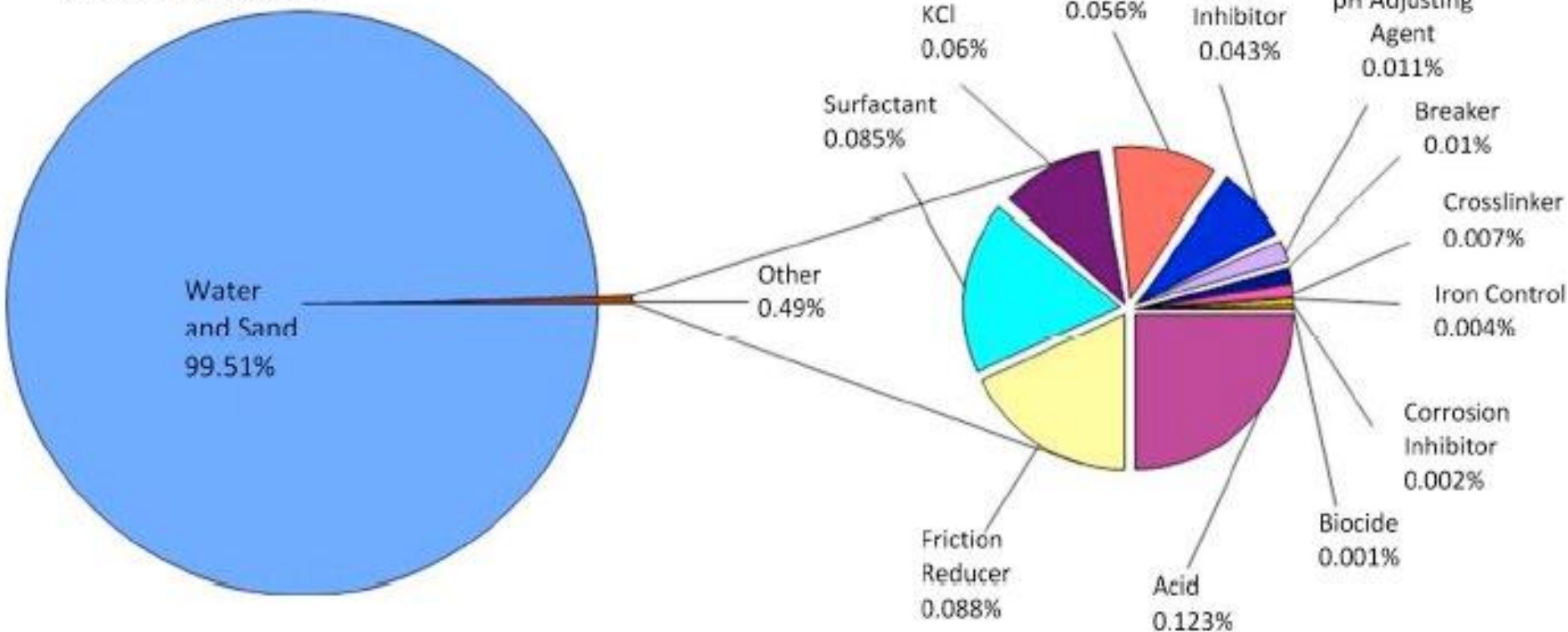


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Source: http://www.scientificamerican.com/media/inline/government-fracking-panel_1.jpg

EXHIBIT 35: VOLUMETRIC COMPOSITION OF A FRACTURE FLUID



Source: ALL Consulting based on data from a fracture operation in the Fayetteville Shale, 2008