

WHAT THE FRACK...?

Fracking is a process of drilling sideways deep underground, then injecting fluid at high pressure to fracture shale (a kind of sedimentary rock) or coal formations releasing natural gas or oil trapped within.

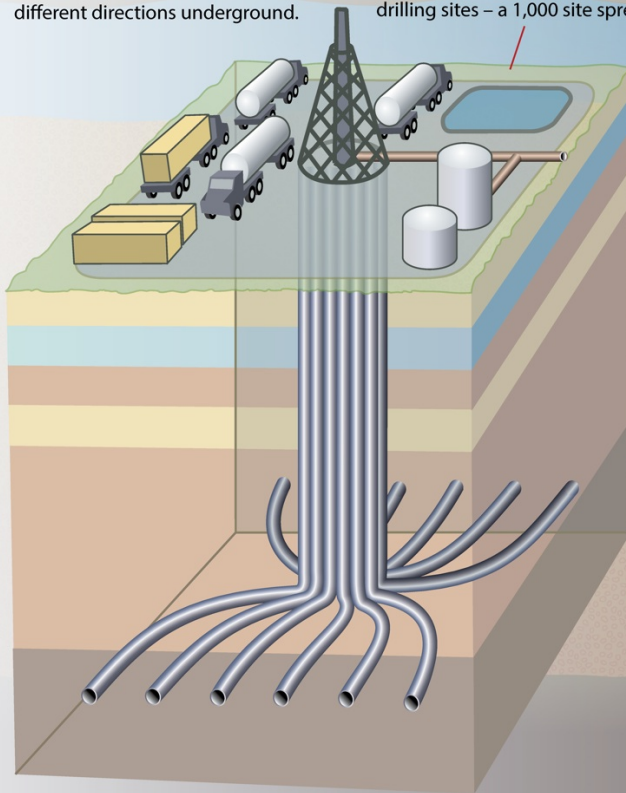
Fracking is short for horizontal high-volume slickwater hydraulic fracturing. In the past such fracturing was only practised on vertical wells.

Wastewater can release toxic volatile organic compounds (vocs) on evaporation.

A single frack pad can drill up to 16 wells extending horizontally in different directions underground.

Each drilling site is the size of a football field and is cleared of vegetation. Fracking areas are dotted with drilling sites – a 1,000 site spread is not uncommon.

Any leakage could cause serious contamination.



How a well is fracked

1 A huge rotary drill bores down from a frack pad to depths of 1.5 to 3 kilometres (though there are proposals to allow fracking at shallower depths). When it hits the gas or oil bearing shale it continues horizontally for a further kilometre or more.

2 The uppermost parts are cased with cement and steel. The horizontal bore has a steel casing down which small explosive charges are set off by a perforating gun in order to punch holes.

3 Now flush millions of litres of frack fluid – a slurry of water, sand and chemicals – under great pressure into the bore to make hairline cracks in the rock. The sand keeps the cracks propped open.

4 The fluid is pumped back up for several days to open the bore to allow the gas or oil to flow up. Between 40% and 70% of the fluid stays behind. Each well can be fracked 10 times if required.

5 For gas, cap the well until a pipeline is in place. For oil, fill up tankers.

6 Now start on the next well from the same pad, extending in a different direction, and repeat the process.

- Non-productive wells are closed off by inserting cement plugs.
- Disposal of recovered frack fluid is a headache. Best practice is to reuse it. But often it is off-loaded on ill-equipped municipal treatment plants or even surreptitiously dumped.
- Frack fluid remaining in wells is freshwater contaminated with chemicals and effectively removed from the water cycle – millions of litres per well.

Shale gas – natural gas trapped within shale formations.

Tight gas – retrieved from rocks of extremely low permeability, sandstone and limestone.

Coal seam gas (CSG) or coal bed methane (CBM) – natural gas extracted from coal beds.

Tight oil – oil from shale formations. Not usually called shale oil in order to avoid confusion with 'oil shale' (or kerogen, a substance requiring heating to be turned into fuel).