

# WHAT IS FRACKING



Hydraulic fracturing, or better known as fracking, is used to extract natural gas from rock layers deep within the earth. The widespread use of fracking is driven by the expansion of shale gas extraction.

Shale gas is natural gas that is trapped inside impermeable shale rock. Just drilling down to the rock is not enough to release the shale gas from the rock. The rock must be fractured for the gas to be released.

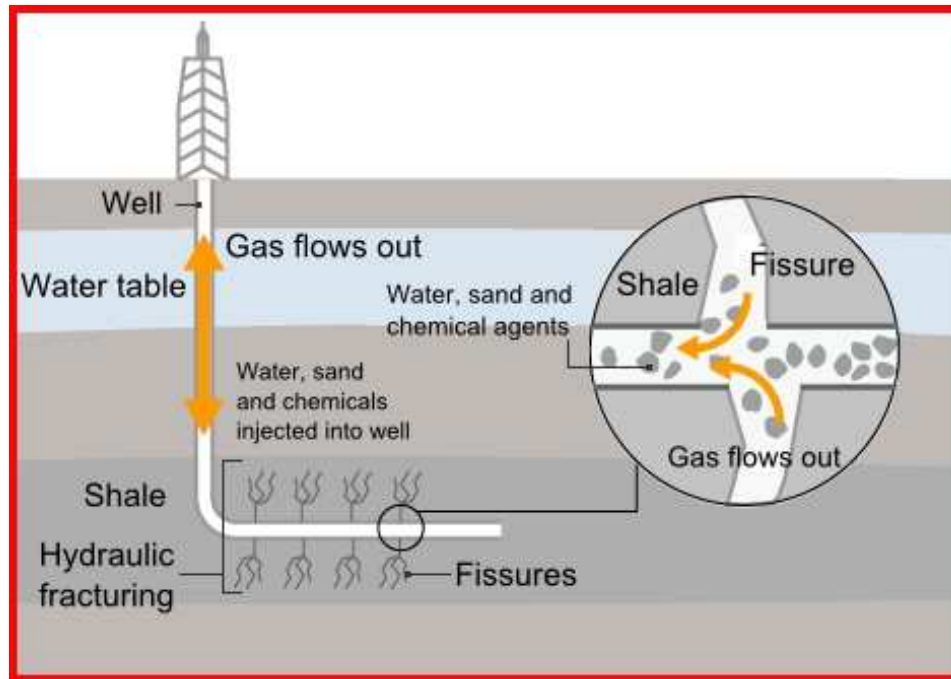
The process to extract the gas has three parts:

- Gas companies first drill a well  $\pm 2,1\text{km}$  to  $3,6\text{km}$  deep and then drill horizontal for a further  $1,2\text{km}$  to  $1,8\text{km}$ . This drilling can take up to two months to complete. The well is then cased with cement to ensure groundwater protection.
- Then fracking takes place. Water mixed with up to 600 different chemicals including toxins and dangerous chemicals such as lead, uranium, mercury, radium, hydrochloric acid, methanol etc. is called the fracking fluid.

The fracking fluid is then pressure injected into the ground through the well. The mixture reaches the end of the well and due to the high pressure the shale rock cracks and creates fractures or cracks through which the natural gas then flows into the well.

Up to 17 million litres of water is used in the fracking of one well. The fracking process itself takes two or three days per well.

- After the rock is fractured, the gas company installs equipment which consists of a series of pipes and valves to contain the gas and harvest it at a manageable pace.



Picture from: <http://www.bbc.co.uk/news/world-africa-22151746>

Fracking can also be used in the extraction of shale oil and coal bed methane.

### Environmental concerns

Hydraulic fracturing has raised environmental concerns. These concerns include the following:

- Contamination of underground sources of drinking water. Methane gas and toxic chemicals can leach out from the system into the groundwater.
- Risks to air quality. If the waste fluid is left in open air pits to evaporate, harmful volatile organic compounds are released into the atmosphere, creating contaminated air and increase the effect of acid rain. The extraction of previously isolated hydrocarbons can also lead to raised atmospheric CO<sub>2</sub> levels if not properly managed.
- Migration of gases and hydraulic fracturing chemicals to the surface. Not all the fracturing fluid is recovered; some of the toxic fluid is left in the ground and can migrate to the surface.
- Mishandling of waste.
- The health effects of all the above mentioned concerns. According to some sources there are documented cases of water contamination next to areas where fracking takes place as well as cases of sensory, respiratory, and neurological damage due to ingested contaminated water.

## REFERENCES

1. <http://www.bbc.co.uk/news/world-africa-22151746>
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