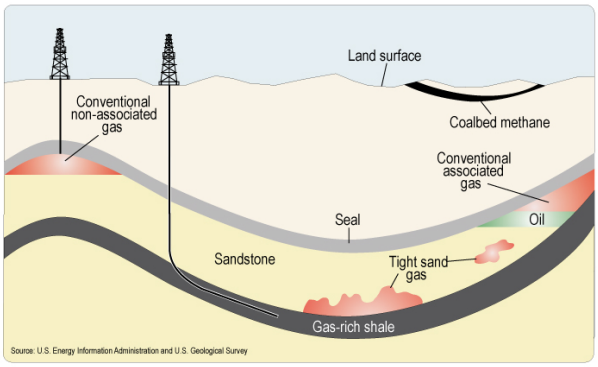
Frack Off! An introduction to the threat of hydraulic fracturing
Information Sheet
www.frack-off.org

What is fracking?

Hydraulic fracturing (fracking) is a technique used to extract hydrocarbons trapped in certain types of rock. In particular the widespread use of fracking is being driven by the expansion in shale gas extraction.

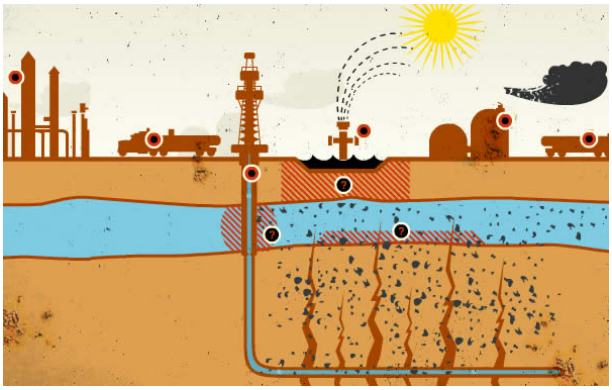
Shale Gas

Shale gas is natural gas that is trapped in impermeable shale rock, as opposed to more conventional natural gas deposits that are trapped *below* a layer of impermeable rock. Therefore simply drilling down to it is not enough and the rock must also be fractured in order to allow the gas to escape.



Hydraulic Fracturing

While the technique itself is not particularly new it has only come into widespread use during the explosion in shale gas extraction over the last few years in the US. Hydraulic fracturing uses pressurised fluid to free trapped gas. Wells are drilled and the fracking fluid injected into them under high pressure to crack the rock. The fracking fluid consists of water, sand and a lot of chemicals. Millions of gallons of water (and hundreds of tons of chemicals) are used to frack a well.



Other applications

Fracking isn't just used for extracting shale gas it can be also used in the extraction of shale oil and coal bed methane (2 other unconventional fossil fuels that have a similar litany of problems). Like shale gas, coal bed methane and shale oil are marginal, high cost fossil fuels that have suddenly become attractive now that prices have risen so high.

Side effects of fracking

There are a very large number of side effects that have been linked to fracking, many involving contamination of water in some way.

Methane contamination

The most well known side effect of fracking is methane contamination of nearby water (burning tap water syndrome). This can occur naturally in rare cases but seems to suddenly appear when fracking occurs.

Chemicals used

Fracking uses huge amounts of water mixed with toxic chemicals, a large fraction of which are never recovered. It is claimed that the chemicals used in the UK will not be toxic (unlike those used in the US) but that seems highly unlikely once the process gets underway in earnest.

Chemical	# of Categories	Chemical	# of Categories
2-butoxyethanol	13	Monoethanolamine	11
Ethylhexanol	13	Dazomet	10
Formaldehyde	13	Acetic Anhydride	10
Glutaraldehyde	13	Isopropanol	10
Boric Acid	12	Propargyl Alcohol (Prop-2-yn-1-01)	10
Ethane-1,2-diol (ethylene glycol)	12	5-chloro-2-methyl-4-isothiazotin-3-one	10
Ethylene Glycol	12	Sodium Bicarbonate (NaHCO3)	10
Methanol	11	Diesel	10

Fracking chemicals associated with ten or more health effect categories.

Toxic contamination

While the fracking fluid is underground it is in contact with rocks at high temperatures and pressures. This can result in various material leaching out of the rocks into the fracking fluid. Of particular concern are toxic elements like arsenic that can be brought to the surface by this process.

Radioactive Contamination

In a similar way radioactive isotopes (such as radium-226) can also be leached out of rocks the fracking fluid passes through. Biological concentration of these materials up the food chain would be the largest concern.

Food supply contamination

While the most of the above might seem to be local issues the potential contamination of irrigation water means that everyones food supplies could be affected. You don't have to live anywhere near a fracking site in order to be worried about your health.

Air pollution

Fracking has also been linked with air pollution, due to the production of ozone and leaks of a variety of volatile chemicals. Increases in respiratory problems have already been reported around the first fracking site in the UK.

Earthquakes

Fracking (as well as disposal of used fracking fluids by pumping them into old wells) also appears to trigger earthquakes. A recent increase of earthquakes in Arkansas declined abruptly after water injection was suspended. The first test well in the UK appears to have caused two earthquakes.

The big picture

While the other pollution issues with shale gas are important, the big picture is even more worrying. Shale gas is the thin end of the wedge in terms of the expansion into new realms of fossil fuel madness.

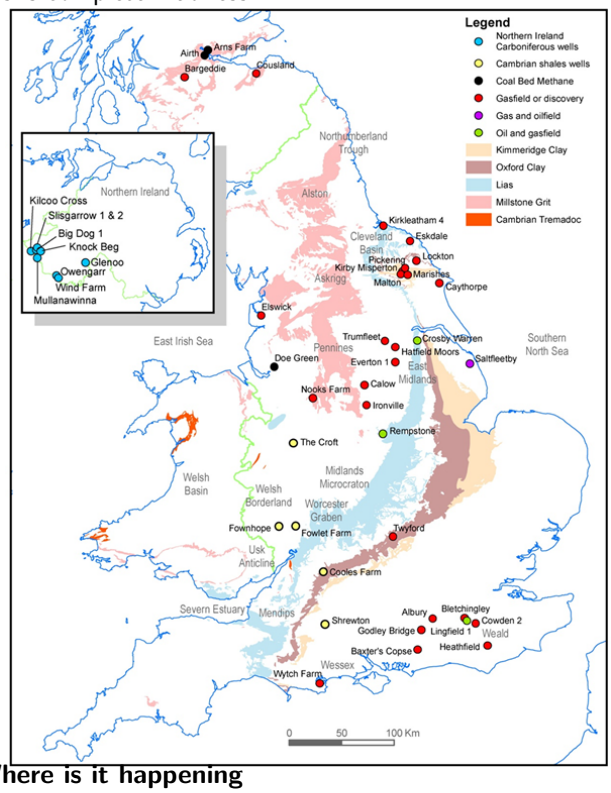
Extreme energy

Our present system is addicted to fossil fuels but we are running out fast. As a result the system is turning to more and more extreme measures to feed it's habit. Welcome to the world of extreme energy. Tar Sands, Mountain Top Removal, Deep Water Drilling, Coal Bed Methane and Shale Gas are all symptoms of this scramble to suck the last and most difficult to reach drops out of our planet.

Climate chaos

Fracking, like other forms of extreme energy is very carbon intensive. Fracking has the additional problem that the natural gas (methane) that it is trying to extract is a stronger greenhouse gas than the carbon dioxide emitted by burning it and the method results in significant amounts of methane leaking

directly into the atmosphere (fugitive emissions). If all the conventional fossil fuels already discovered are burned, that will emit more than enough carbon dioxide to cause runaway climate change. Trying to find more that can be burned to fuel civilisation's addiction using these extreme energy methods is complete madness.



Where is it happening

There are large areas of the UK where there are shale strata that might be able to produce gas.

Lancashire

Cuadrilla Resources have obtained planning permission for 5 sites in the Blackpool area. They have completed drilling and fracked the Presse Hall well (causing two earthquakes) and their drilling rig is presently being set up at the Marsh Road site.

- **Presse Hall, Weeton** - Well drilled and fracked
- **Grange Road, Singleton** - Well drilled, not yet fracked
- **Marsh Road, Banks** - Drilling rig has moved to this site
- **Anna's Road, Westby** - Construction of the pad has now started
- **Inskip Road, Wharles** - No work has started

Wales

Coastal Oil and Gas Ltd has obtained planning permission to drill core samples at a site near Maesteg, Bridgend in South Wales. If the samples prove interesting then larger scale tests (like those in Lancashire) could follow.

Kent

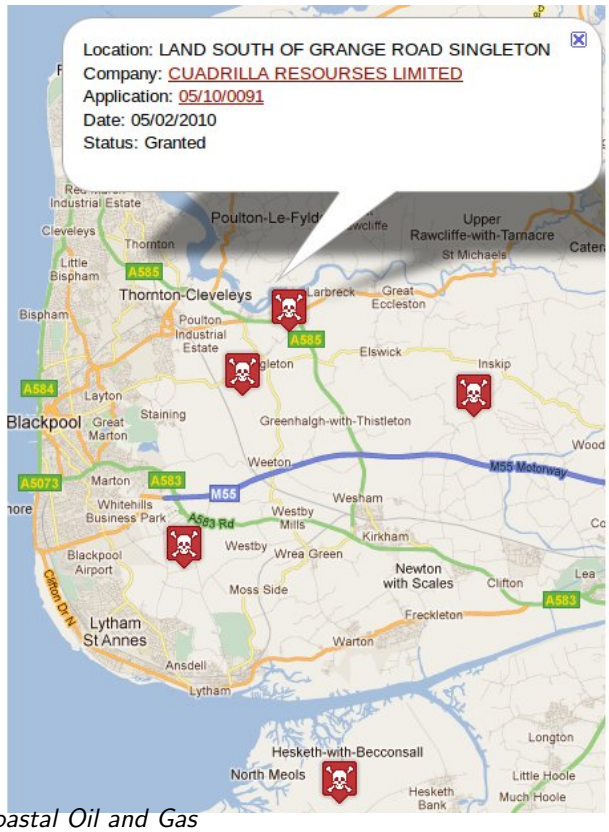
Coastal Oil and Gas Ltd have put in an application to drill core samples through coal and shale strata at a site near Woodnesborough. If the sample proves interesting, then larger scale tests (like those in Lancashire) could follow. It is unclear when the planning application will be decided.

Major players

The are a number of companies that have shown interest in exploiting shale gas but only 2 appear to have reached the stage of actual testing.

Cuadrilla Resources

Cuadrilla Resources is a privately owned company headquartered in Lichfield, Staffordshire. The company was set up with £34.2 million from the Australian AJ Lucas Group and has recently received extra funding (£35.4 million) from the American private equity company Riverstone LLC. The company has a petroleum exploration and development licence (PEDL 165) covering a large area of Lancashire. They are in the process of carrying out test drilling and fracking at 5 sites in the Blackpool area (for which they have planning permission).



Coastal Oil and Gas

Coastal Oil and Gas Ltd, headquartered in Bridgend, Mid Glamorgan, has planning permission to conduct core sampling at sites in South Wales and Kent. They are partnered with an Australian company Eden Energy.

What can be done

Quite a lot. This is an industry in it's infancy in the UK. The companies involved are typically start-ups that are presently just burning investment cash and are very vulnerable to loss of confidence by investors. If enough pressure can be applied at these early stages we can easily create an environment in which the continuation of these projects is no longer viable. We need to identify our nearest proposed franking sites and get organised. Local opposition is swelling in the Lancashire area, but people need to be alerted to the vast number of sites which the industry has in it's sights nation-wide.

Crucially, we are looking at an opportunity to crush the attempt at piloting this practise. A national campaign of direct action needs to be firmly focused on the Lancashire area. This is a real chance to kill-off a serious environmental threat. It's a battle with a very visible front-line. And a battle which must be won.

Resources

- http://www.tyndall.ac.uk/sites/default/files/coop_shale_gas_report_final_200111.pdf
- http://static.ewg.org/reports/2011/fracking/cracks_in_the_facade.pdf
- http://www.gilttaste.com/stories/327-what-will-fracking-do-to-your-food-supply
- http://www.earthworksaction.org/Health and Toxics.cfm
- http://www.acsf.cornell.edu/2011Howarth-Methane