

Fracking: Do you know what's going on?

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An introduction to the issues and concerns raised by the current plans of local operators to explore, and possibly exploit, shale gas reserves in our area.

Seismicity

In April and May 2011 seismic events were recorded in an area of Lancashire, which previously had never experienced any activity of this kind. The government announced that earthquakes of 2.3 magnitude and 1.5 magnitude were caused by a hydraulic fracturing (fracking) treatment of a single gas well at Preese Hall, near Blackpool. The British Geological Survey, who reviewed a report requested by the Department of Energy and Climate Change, suggested that the most probable cause for the earthquakes was from fracking fluid being injected into a naturally occurring fault. This lubricated the fault and caused areas of rock to 'slip' resulting in seismic activity being felt many kilometres away.

The review states that for at least the next few operations seismic activity is to be kept low, but this can be adjusted over time with a maximum suggested 3 magnitude. It is also stated that the earthquakes at Preese Hall damaged the structure of the well, raising concerns over methane and fluid migration both in this and possible future wells. The cumulative effect of thousands of fracking operations in Lancashire can never be properly assessed, therefore seismic size and frequency will always remain unknown.

Traffic

For a single horizontal well fracturing, requiring 5 million gallons of fresh water, expect up to 1500 super sized tanker trips each time it is fracked. Then up to another 750 tanker trips to transport the toxic waste on our roads to waste disposal plants possibly Davey Hume in Manchester. That's only one well, with one fracture treatment. With a planned 10 wells on a pad and 80 pads that's 800 wells in a 437 square mile area. Can our roads cope with this traffic?

Many of the routes are small narrow roads through shopping areas, past schools and through densely populated residential areas. Traffic between the Plough roundabout and Banks, Hesketh Banks and Tarleton is restricted to 2 roads: Ralph's Wife's Lane and Water Lane / A565 however this is the approved rig traffic route.

There are issues on the carbon footprint of transportation, the road infrastructure and maintenance required and the need for adequate provisions by the emergency services in the event of a tanker accident carrying radioactive waste water or chemicals through densely populated areas.

Water

Each well requires the underground injection of from three to five million gallons water, sand and chemicals - a toxic fracking fluid. The high end quote from Cuadrilla is for 800 wells.

During initial exploratory drilling at Preese Hall alone there were 6 fracture treatments using 1.847 million gallons (2.2 million us gallons) of water and chemicals. (8.4 million litres) but this was to test for gas only. But imagine that over 800 wells on a commercial basis where more water is required to extract gas. If the reserves are developed using high-volume fracking, trillions of gallons of toxic fluid will be injected underground, and most of it will stay there forever. That's fresh water wasted when water is a valuable resource.

The most valuable commodity in the world today, and likely to remain so for much of this century, is not oil, not natural gas, not even some type of renewable energy. It's water—clean, safe, fresh water. According to *Bloomberg News*, the worldwide scarcity of usable water already has made water more valuable than oil. The United Nations estimates that by 2050 more than two billion people in 48 countries will lack sufficient water. This process uses vast quantities of freshwater not salt water.

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Pollution and Health

A sample of 260 known products contained in flowback from fracked wells in New York state has revealed that, 58 give rise to health concerns, 6 require immediate attention as very dangerous to humans, 8 are known to be cancer causing – and many others have serious adverse effects on blood, brain functions, kidneys, liver, central nervous system, thyroid glands, placenta and the lungs. Oil industry data shows that 5% of wells are faulty and can leak flowback fluid in the first year of operation. This failure rate worsens as the wells age to up to 20%.

The UK government has so far failed to accept that any special regulation and monitoring of these operations is required. The Environment Agency has so far performed not one Impact Assessment of drilling sites. And Lancashire County Council has failed to submit any planning applications to a planning committee since drilling and fracking started, a manager just signed them off. This is despite an EU Directive that this industry poses high risk to the environment and our health.

Flaring, Venting and Condensate

Nearly all shale gas wells produce a percentage of gas, which is unusable and often toxic. The amount can vary considerably even from sites in close proximity to each other. These toxic gases are 'dealt with' on site. Toxins such as benzene, toluene, xylenes and ethylbenzene are cooled and form a liquid or 'condensate'. The toxic fumes from this condensate are heavier than air and can clearly be seen polluting surrounding areas close to shale gas wells. Naturally occurring toxic hydrogen sulphide and other compounds associated with the fracking process, need to be flared off on site and are often responsible for air pollution for the lifetime of the well.

Reports from the USA show that a single well can release over a hundred tonnes of volatile organic compounds and up to four tonnes of hazardous air pollutants whilst bringing the well into production. As sites in Lancashire are predicted to have ten wells per site, it is clear that the health risk from airborne pollutants is a significant cause for concern.

Planning & Regulation

Lancashire County Council - in July 2010 Cuadrilla Resources applied for temporary planning permission for 5 sites in Lancashire for exploration for shale gas. The decision to approve was taken by officers, not councillors, and no environmental impact assessment was required. In light of this the process was very short and many local residents claim they were unaware. No mention was made of "Hydraulic Fracturing" in any of the documents. All the details of the operation and processes used are supplied by the operator.

The Department for Energy and Climate Change (DECC) issued the exploration licence under the Petroleum Act, in 2008. The licence does not define the method of exploration. DECC also grant a licence for well operation i.e. the actual sinking of the well. No Strategic Environmental Assessment was required in 2008.

The Environment Agency (EA) decided that no Groundwater permit was required because, although chemicals would be introduced into the ground, they concluded there was no "pathway" to groundwater. EA concluded that a permit would be required for the storage and disposal of backwash water. No permit has been applied for or issued. In practical terms EA have done very little monitoring or inspection. There is little or no baseline data for groundwater or surface water in the area.

The Health and Safety Executive's (HSE) role is in approving the well design and construction. They do not supervise construction and rely on an "independent" engineer's report. They have pleaded severe lack of resources and as far as we are aware have not visited any of the sites.

The potential for gaps between regulatory authorities was highlighted in the recent Fracking trial at Preston Magistrates Court i.e. that regulation was not joined up. DECC are currently considering consultations following their review of Cuadrilla's report on the earthquakes. If Fracking is to continue it will be subject to operational safeguards yet to be defined.