Shale gas and fracking: peril or saviour?

What does fracking mean to the public outside of the world of energy and policy? I've not done any systematic study but I would hazard a guess that in many people it will invoke images from the now famous *Gasland* film by Josh Fox, of householders igniting their tap water. These images have been replicated in other TV programs, for example in a British documentary in the BBC's flagship *Horizon* series that showed the geochemist Rob Jackson of Duke University igniting water from an outside tap on a farm in Pennsylvania. Jackson's team reported high levels of methane in groundwater in one of the few scientifically peer reviewed studies of shale gas contamination in active fracking areas, but other areas of the United States that have been extensively fracked for shale gas show no sign of contamination. And while this has been happening, shale gas has risen to being one of the most important primary energy sources in the US.

For many British people fracking will almost certainly conjure a word, rather than an image of burning tap water to mind. That word would be 'earthquake'. Britain has no shale gas industry to speak of, but what little is has became famous not because of flaming taps but because fracking caused a couple of very small earthquakes. (Many geologists would prefer to call them 'tremors'). On Friday April 1 2011 an earthquake of magnitude 2.3 occurred with an epicentre just two miles from the site of Britain's first fracking operation. On the following Saturday morning people interviewed by the local press described wardrobe doors being flung open, a police station building shaking, motorbikes falling over and traffic lights suddenly not working. Pedestrians reported that the Lytham Road Bridge in Blackpool had cracked, even though other local residents maintained that the cracks had been in existence since the 1970s and had moss growing inside them.

So shale gas is full of stories and it's difficult to tell the truth from reality. Reading the internet you get information that bewilders rather than explains. It bamboozles you rather than helps you make up your mind. In this talk I will look at the science of shale gas concentrating on peer-reviewed science and I'll try to reveal at least some of the facts.

Biography:

Mike Stephenson is Director of Science and Technology at the British Geological Survey. He has done research in the Middle East and Asia, including highlights in Oman, Saudi Arabia, Jordan, Pakistan, Iran and Iraq. Mike also runs the Science Programme at BGS, the UK's national geoscience and data centre, in charge of 520 scientists and technologists. He has professorships at Nottingham and Leicester universities. He has published three books and over 90 peer-reviewed papers. His book 'Shale gas and fracking: the science behind the controversy' won an 'honourable mention' at the Association of American Publishers PROSE awards in Washington DC. The PROSE Awards '…annually recognize the very best in professional and scholarly publishing…'. His most recent book 'Energy and Climate Change: An Introduction to Geological Controls, Interventions and Mitigations' examines the Earth system science context of the formation and use of fossil fuel resources, and the implications for climate change.

Mike Stephenson regularly represents UK science interests in energy, as well as providing extensive advice to the UK Government. For example in October 2013 he was shale gas and carbon capture and storage (CCS) advisor to Sir Mark Walport, Chief UK Government Scientific Advisor, on a fact-finding mission to Texas and Alberta. He gave verbal evidence to the UK House of Lords Select Committee on Economic Affairs inquiry into shale gas in Oct 2013.