

***The Lancet*: Correspondence from Michael Hill, Lytham St Annes,
Lancashire, UK 'Shale gas regulation in the UK and health
implications of fracking'**

CONFIDENTIAL FINAL PROOF

Under strict embargo until publication:

00:01 [UK time] Friday 20 June

Shale gas regulation in the UK and health implications of fracking

I have some serious concerns with Sari Kovats and colleagues' Comment (March 1, p 757),¹ as I feel it is misleading (albeit unintentionally). Although the UK Government has indeed stated that it accepts the Royal Society and Royal Academy of Engineering Working Group's recommendations on shale gas extraction,² the reality is that only one of these recommendations has been implemented in full; one out of ten in 2 years. Other recommendations have been ignored or the opposite has been put in place.³ I urged the Government to at least comment on the report by its own scientific adviser.⁴ Although the Government has now stated it accepts all of the recommendations, the reality on the ground does not follow the theories in the Department of Energy and Climate Change.⁵

Kovats and colleagues' Comment¹ relies too heavily on what should be done and what might be important. It confuses best practices with actual realities.

We need to start informing regulators and industry with what is important and what must be done to ensure the risks are managed and are as low as reasonably practicable. This is presently not the case. While fracking in the UK might be in its infancy, in the USA there are more than 1 million wells fracked and a large amount of data before, during, and after fracking has been collected. Recent studies from the USA have suggested an increased risk of adverse health events (such as congenital heart defects and low Apgar scores) in individuals living close to natural gas development (within a radius of 10 miles).^{6,7} These preliminary findings need to be replicated and explored further in large prospective studies; it may be irresponsible to consider any further fracking in the

UK (exploratory or otherwise) until these prospective studies have been completed and the health impacts of fracking have been determined.

Fracking has already happened in the UK and is due to resume later this year (four wells in Roseacre and four in Little Plumpton on the Fylde coast) in close proximity to large urban populations. This approach will use about 22 million L of fracking fluid per well and will leave underground (free to migrate) about 88 million L of fracking waste containing lead, arsenic, cadmium, and other materials at much higher concentrations than those found in drinking water.⁸ This is the case even when no chemicals are added at the surface. The effects of truck movements, flaring, fracking waste treatment, compressors, noise pollution, generators, wireline logging, drilling, etc, should not be ignored.

The need for specific regulations coupled with strict enforcement through an independent, competent body is clear. But no such body exists, and no such efficient regulations are forthcoming. The existing regulators are being scrapped—restructured (Offshore Safety Division) or downsized (Environment Agency to lose 15% of its staff within 18 months)—while any new shale regulations are being fiercely opposed by the UK Government. They choose to legislate to make fracking easier for the operators, but fail to make it safer for the public.

Kovats and colleagues' Comment¹ was misleading because it gives the impression that the industry is regulated and the Government has things under control—it isn't and they don't. The reality of shale gas regulation in the UK is far from the best practice alluded to in the Comment¹ and far from that needed to protect the public and environment in a densely populated country such as the UK.

I am an expert adviser to the European Union Commission on Best Available Techniques Reference on Management of Tailings and Waste Rock.
I declare no competing interests.

Michael Hill
mike.hill@shalegasoffice.co.uk

Lytham St Annes, Lancashire, UK

- 1 Kovats S, Depledge M, Haines A, et al. The health implications of fracking. *Lancet* 2014; **383**: 757–58.
- 2 Royal Society, Royal Academy of Engineering. Shale gas extraction in the UK: a review of hydraulic fracturing, June 2012. London: Royal Society and Royal Academy of Engineering, 2012.
- 3 Hill M. Brief review of the Royal Society/Royal Academy of Engineering report and the present position of shale gas regulation. November, 2013. <http://www.shalegasoffice.co.uk/downloads/all/d5776aee1401797912.pdf> (accessed June 3, 2014).
- 4 MacKay DJC, Stone TJ. Potential greenhouse gas emissions associated with shale gas extraction and use. September, 2013. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/237330/MacKay_Stone_shale_study_report_09092013.pdf (accessed June 3, 2014).
- 5 Department of Energy and Climate Change. The Government's response to the MacKay-Stone report. https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/305811/140424_MacKay_Stone_Response_.pdf (accessed June 3, 2014).
- 6 McKenzie LM, Guo R, Witter RZ, Savitz DA, Newman LS, Adgate JL. Birth outcomes and maternal residential proximity to natural gas development in rural Colorado. *Environ Health Perspect* 2014; **122**: 412–17.
- 7 McKenzie LM, Witter RZ, Newman LS, Adgate JL. Human health risk assessment of air emissions from development of unconventional natural gas resources. *Sci Total Environ* 2012; **424**: 79–87.
- 8 Environment Agency. Shale Gas North West—monitoring of flowback water. Dec 6, 2011. http://webarchive.nationalarchives.gov.uk/20131223234446/http://www.environment-agency.gov.uk/static/documents/Business/6th_Dec_-_Shale_gas_-_North_West_-_Monitoring_of_flowback_water_-_update_%283%29.pdf (accessed June 4, 2014).



Published Online
June 20, 2014
[http://dx.doi.org/10.1016/S0140-6736\(14\)60888-6](http://dx.doi.org/10.1016/S0140-6736(14)60888-6)