

From: Paul Younger
Sent: 11 November 2014 12:30
To: Ross Barker
Cc: Robert Westaway
Subject: FW: Westaway and Younger on fracking.

Hi Ross

My response is as follows:

1. [REDACTED] entire tone suggests that we somehow owe some sort of duty of solidarity to the anti-fracking protestors. We don't. Neither do we owe any such debt to shale gas developers; they fund none of our work. We do, however, have a duty to promote objective facts and the truth as far as we can discern it, as well as a general commitment to fairness. In relation to the latter, it is surely unfair that shale gas developers should be regulated far more harshly than quarry operators.
2. [REDACTED] would do well to read the paper itself - answers to a fair few of his points are in there, such as our use of (and commentary on) the work of [REDACTED]
3. As for the joint Royal Academies' report (2012 - not 2011 as he writes) I was in that panel and have been involved in the follow-up. Many of our recommendations can only be implemented once there is an industry in existence. His claims are in any case out-of-date, but it is the Royal Society press office he needs to speak to about that.
4. The Water Framework Directive forbids disposal by re injection and new legislation cannot countermand that.
5. There is no evidence that faulting patterns in the Fylde (or the rest of the UK more generally) are in any way unusual. This has been repeatedly claimed, but never demonstrated, by protestors; examination of the relevant geological maps reveals nothing out of the ordinary. In any case, in my 30 years of experience of hydrogeology I have yet to find a fault passing through shale that transmitted significant quantities of groundwater.
6. [REDACTED] suggests that there is "no regulation and monitoring practice that will ensure that induced fractures will stay within the target formation". It is in the operators own interests to ensure that fractures do not extend to ludicrous distances beyond the target horizon as (i) they would require far more energy to achieve that, pushing their costs up to no good end and (ii) intercepting a permeable horizon would lead to ingress of groundwater to the productive zone, switching off gas production. That is why, contrary to [REDACTED] suggestion, shale gas operators DO monitor the progradation of induced fractures, using well-established micro-seismic monitoring methods. For abundant examples I would refer him to the Joint Royal Academies' report.

Best wishes

Paul Younger

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> On 11 Nov 2014, at 11:07, "Ross Barker" <Ross.Barker@glasgow.ac.uk> wrote:

> Hello both -

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> Please see below a message we've received from a member of the public, [REDACTED]

[REDACTED]

>

> Happy to take your lead on whether you want to offer a response.

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> Best regards,

> Ross

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> -----Original Message-----

> From: [REDACTED] [mailto:[REDACTED]@yahoo.com]

> Sent: 11 November 2014 10:16

> To: Ross Barker

> Subject: Westaway and Younger on fracking.

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> I read with interest the web page from Glasgow University entitled "Energy engineers call for new regulatory framework for fracking".

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> http://www.gla.ac.uk/news/headline_375187_en.html

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> I have a couple of questions -

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> Are Westaway and Younger aware that out of ten recommendations for regulation of UK onshore fracking made by the Royal Society and Royal Academy of Engineers (2011) only one has been implemented? Relating to seismic activity. And are they aware that they now want to undermine this one provision the government made in an attempt to assure people about minimising the risk of fracking causing seismic events?

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> Did Westaway and Younger, on the length of fractures, draw from the studies of the [REDACTED] [REDACTED] on fracking lengths, or perform their own research? [REDACTED] indeed suggested fractures outside the USA has in some cases extended beyond 600 metres. He recommended a safety margin of twice that between fractured well and aquifers.

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> Are Westaway and Younger aware that there is no regulation and monitoring practice that will ensure that induced fractures will stay within the target formation, as is required to minimise risk of migration of fluids from the formation? And have they considered that in the highly faulted geology of the UK such as in the Fylde there is a far greater risk than in their study sample of fluids migrating through natural fractures?

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> Are Westaway and Younger aware of recent mounting evidence from the US that they have actually seen seismic activity resulting from fracking itself rather than from waste water injection?

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> And finally, have Westaway not realised that despite what they say about existing EU and UK regulation, the government is planning through the Infrastructure Bill to allow wastewater re-injection by allowing "leaving any infrastructure or substance in the land"?

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> I would appreciate a reply on these matters. I can provide references if the answer to my questions is no.

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> Regards

> [REDACTED]

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