

Shale gas extraction in the UK: a review of hydraulic fracturing

Emma Woods
Science Policy Centre

THE
ROYAL
SOCIETY



Terms of reference

Shale gas extraction in the UK: a review of hydraulic fracturing

June 2012

THE
ROYAL
SOCIETY

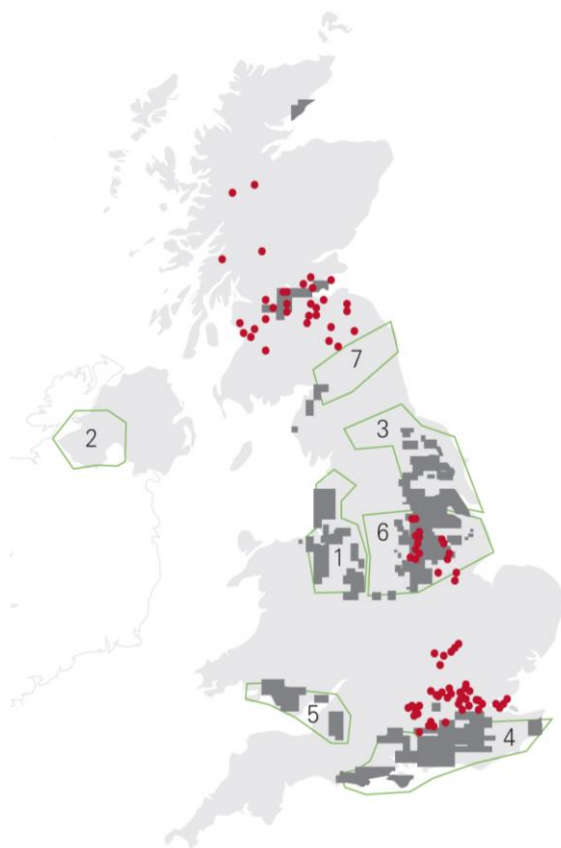


- What are the major risks associated with hydraulic fracturing as a means to extract shale gas in the UK?
- Can these risks be effectively managed? If so, how?

Headline messages

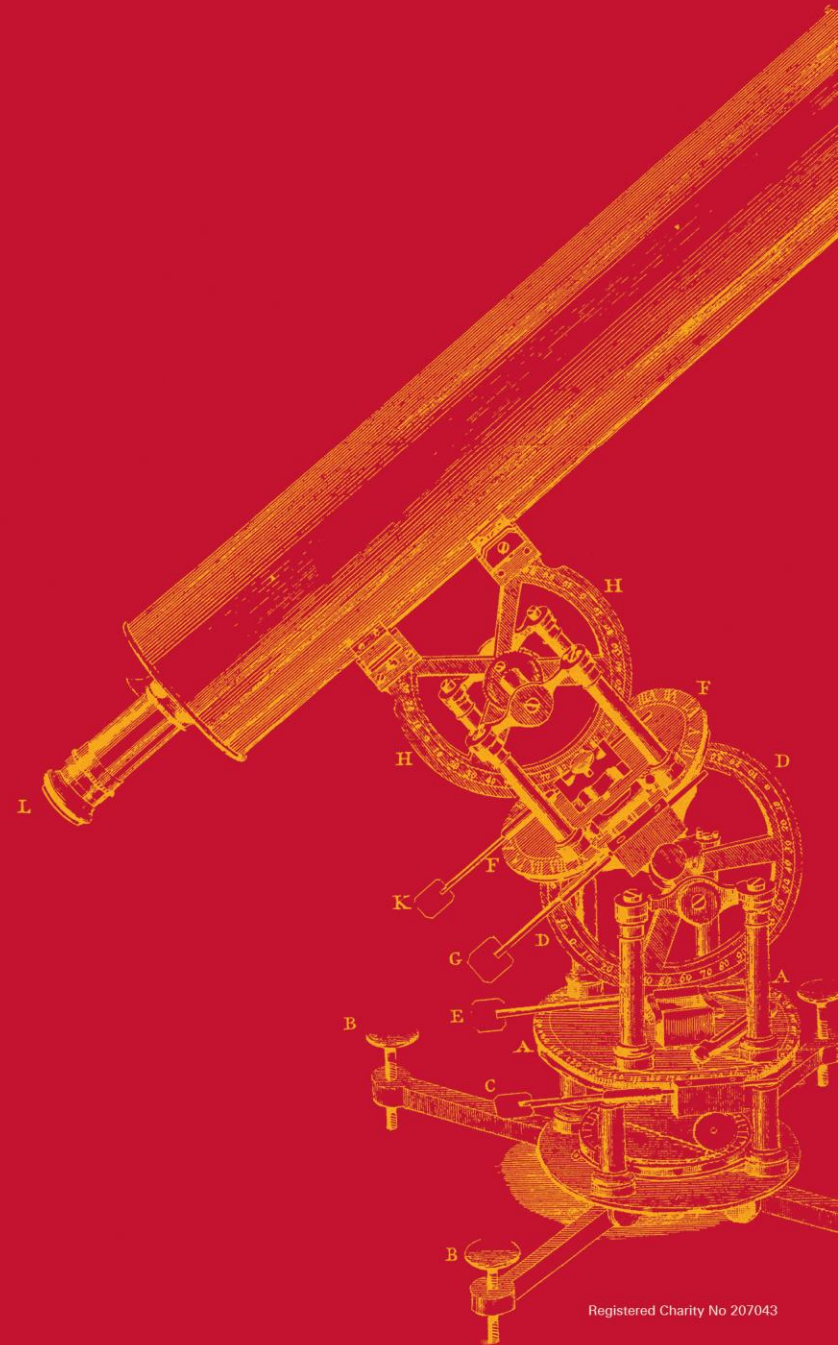
- **Yes the risks can be managed, as long as operational best practices are implemented and enforced through regulation.**
- Cross-cutting issues
 - Monitoring
 - Sharing data
- Attention must be paid to the way in which risks scale up.

Detecting groundwater contamination

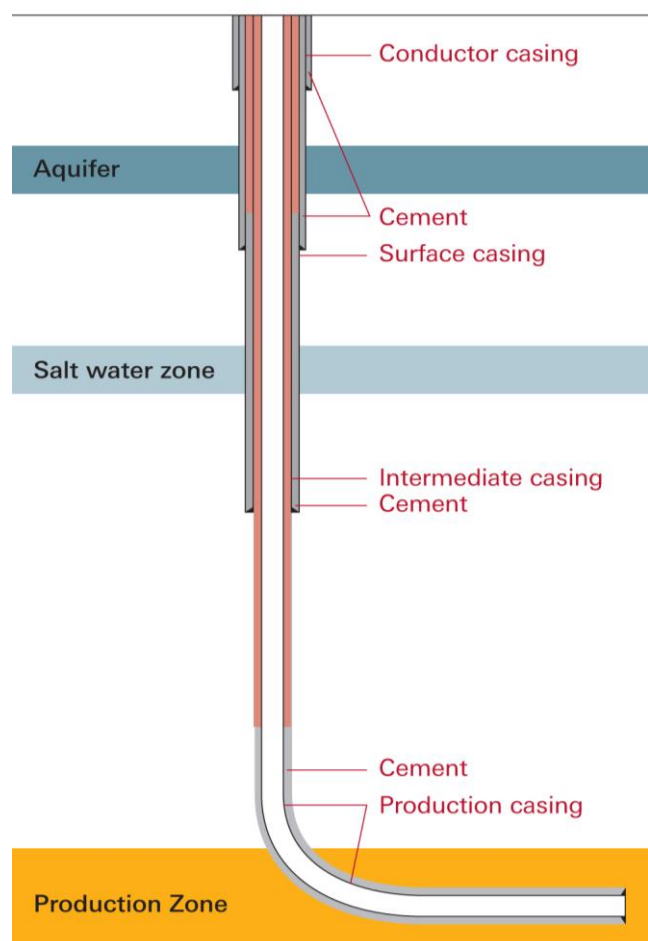


- National baseline surveys (regulators/BGS)
- Site-specific monitoring before, during and after operations (operators)
- Monitoring arrangements for abandoned wells need to be developed

Recommendations...



Ensuring well integrity



- Improve UK's well examination scheme
 - 1) Clarify guidelines for independence
 - 2) Review well designs from H&S and environmental perspective
 - 3) Onsite inspections as appropriate
- Submit results of well tests and reports of well examinations to DECC

Mitigating induced seismicity I



- National surveys (BGS or others)
- Site-specific surveys (operators)
- Traffic light monitoring systems
 - 1) Monitor before, during and after
 - 2) Feed back data to allow mitigation

Mitigating induced seismicity II

- DECC should consider how induced seismicity is to be regulated
- Operators should share data with DECC and BGS to establish a national database

Detecting potential gas leakages

- Site-specific monitoring before, during and after operations (operators)
- Submit data to the appropriate regulator, to inform wider assessments (operators)

Integrated water management

- Minimise water use and reduce abstracting pressures
- Recycle and reuse wastewater where possible
- Construction, regulation and siting of any future onshore disposal wells need further investigation

Managing environmental risks

- Environmental Risk Assessment (ERA) should be mandatory for all shale gas operations, involving participation of local communities at the earliest possible opportunity
- ERA should assess risks across entire lifecycle, including disposal, well abandonment and seismic risks

Best practice for risk management

- Goal-based risk assessments according to ALARP principle (operators)
- UK's health & safety and environmental regulators should work together to develop shale gas-specific guidelines
- Industry mechanisms to collect and share data to inform risk assessment

Regulation

- Ensure regulatory capacity
- Ensure regulatory co-ordination – a single body should take the lead
 - 1) Clear roles and responsibilities
 - 2) Integrated ways of working
 - 3) Sharing information
 - 4) Engagement of local communities
 - 5) Learning from best practice internationally

Research priorities

- Public acceptability
- Wider policy context – energy, economy, climate change

To find out more, visit
royalsociety.org

THE
ROYAL
SOCIETY

Emma Woods

Policy Adviser

Emma.woods@royalsociety.org

