The governance of hydraulic fracturing in unconventional resources: the elements, form and effectiveness of the regulations

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Aspects of hydraulic fracturing

Hydraulic fracturing is a process used globally in energy recovery operations to increase fluid conductivity in the rock matrix. It has been used in the oil and gas sector since the late 1940s and also in coal seam gas (CSG) activities in Queensland to a small extent (<10% of wells) since the early 2000s. In combination with horizontal drilling and other advanced technologies, it has dramatically altered access to hydrocarbon reserves in very low permeability strata such as shales and tight sandstones.

The advances in recovery technology brings has seen the sector rapidly develop across the globe. The United States in particular has seen a substantial increase in hydrocarbon recovery in the last 20 years using this technology. However, for various reasons, the term “fracking” has become associated with a social response. Governments have moved to regulate this aspect of the energy sector in response to the social response to the widespread application of this technology. This is because the technology is frequently deployed in clear view of the public, in a landscape previously utilised for agriculture or urban development.

Rule form

A typology of rules was developed identifying nine types of prescription rules, two types of process-based rules, four types of principle-based rules and two types of performance-based rules.

Jurisdictions considered

USA – Colorado, Illinois, Pennsylvania, Wyoming
Canada – Alberta, British Columbia
Australia – Western Australia, South Australia, New South Wales, Queensland
South Africa
Brazil

The inverse relationship between performance regulation and hydraulic fracturing activity

What does it all mean?

- Hydraulic fracturing presents similar potential environmental impacts across the world.
- Regulatory frameworks may involve a number of players (federal, state or local) but the focus is very similar.
- Performance regulation seems to be applied more often to highly engineered aspects and at, or closer to, the well.
- The elected official (minister, governor, supervisor) has a high level of decision-making at the commencement and during the activity of fracturing. Senior professionals (public servants) have a largely bureaucratic role.
- Analysis of compliance data did not resolve the question as to whether prescription or performance regulation is more effective in reducing adverse events.

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