



National Science Foundation
WHERE DISCOVERIES BEGIN



**Joint US-UK Workshop on Improving Understanding of Potential Environmental Impacts
Associated with Unconventional Hydrocarbons**

Announcement of Workshop

Washington DC, United States 5-6 November 2015

The deadline for applications is 16:00 on Wednesday 9th September.

The Natural Environment Research Council (NERC) and the United States National Science Foundation (NSF), along with the Environment Sustainability and Energy Division of the Royal Society of Chemistry (ESED), are inviting applications from UK scientists to attend a jointly organised workshop on Improving Understanding of Potential Environmental Impacts Associated with Unconventional Hydrocarbons in Washington DC on 5–6 November 2015.

The deployment of hydraulic fracturing technology to exploit shale oil and gas reservoirs in the USA and now potentially in the UK has raised a number of environmental concerns. This workshop brings together researchers in the USA and the UK to learn from each other to identify the areas of major environmental uncertainty, the focused scientific research questions that need to be addressed, and the opportunities for innovation and translation of existing research within this area.

Key Objectives of the Workshop:

- To discuss the key science challenges related to potential environmental impacts associated with shale oil and gas exploration and extraction, and associated industry and policy/regulatory challenges related to this.
- To facilitate networking, discussion and enable researchers to share ideas on key research questions relevant to the topic.
- To explore a whole systems approach to examining the use of unconventional hydrocarbons in the energy system.
- To analyse the current state of knowledge on the conditions under which hydraulic fracturing may challenge the economic and social vitality of communities in the context of diminished or degraded water supply, increased greenhouse gas and other atmospheric emissions, increased seismic concerns and impacted environmental health and community services.
- To analyse and define knowledge gaps, focused scientific research questions and opportunities for translation of existing research needed to support innovations in managing the potential environmental consequences of hydraulic fracturing.

The outcome from the workshop will be a report on the critical data and analyses which would enable end-users (the public, regulators, policymakers and industry) to make better-informed decisions. The report would be open access. Opportunities for translation of existing research will also be identified.

Background US-UK Joint Workshop

Through technological innovation related to hydraulic fracturing and horizontal drilling techniques, oil and natural gas production in the United States has been transformed. Other countries, including the UK, have recognised the potential of this energy resource. However there have been significant environmental and public health concerns raised relating to the growth in this method of extracting domestic oil and gas. The major environmental concerns associated with shale oil and gas production and in particular hydraulic fracturing include: water availability, impacts on groundwater and surface water quality, atmospheric impacts of greenhouse gases and toxic chemicals/particulates, seismic activity, ground motion and the environmental impacts of infrastructure and operations associated with and required by fracking operations and then the processing and use of the produced fuels¹.

This workshop will enable UK researchers to formulate the research questions to provide impartial evidence to government and the public.

UK/US Unconventional Hydrocarbons Workshop

The workshop will explore the aforementioned environmental concerns and define research needed to better assess the potential environmental hazards, to understand the processes that can cause environmental hazards and to better understand how such hazards can be mitigated. Attendees from the US and the UK will be brought together to understand both current activities and their relevance to the UK. The conflicts, opportunities and trade-offs being experienced in the US will help to inform some of the issues that we are likely to face in the UK, but with an understanding of the critical differences between the two countries. The workshop will explore both the similarities and the differences, e.g. those relating to the human and environmental geographies.

The workshop will focus on identifying research needed to assess, understand and mitigate potential environmental consequences of hydraulic fracturing. The concerns about the environmental consequences of hydraulic fracturing are largely observed in five areas:

1. Water availability
2. Water quality
3. Air emissions of toxics and greenhouse gases
4. Seismic activity associated with water disposal
5. Community impacts associated with industrial development in new areas

Due to the interconnected political, economic, social, technological, legal and environmental (PESTLE) considerations associated with this new technology, a whole systems approach is required². To this end applications are invited from researchers from a variety of fields including: geology, geophysics, biogeochemistry, atmospheric science, hydrogeology and ecology.

The workshop's outcome will generate ideas for future areas of research collaboration and inform development of any future funding calls in this area. There is no guarantee that any research funding will result directly from this workshop. Attendance at the workshop does not automatically enable

¹ Hays J, Finkel M, Depledge M, Law A, Shonkoff SBC. 2015. Considerations for the development of shale gas in the United Kingdom. *Science of the Total Environment*. 512-513: 36-42

² A working definition of whole systems energy research aims at a better understanding of the energy landscape incorporating environmental, socio-economic, physical, natural and biological systems at all spatial and temporal scales. It addresses complexities, interactions and interdependencies within the landscape and with other systems. Whole-systems energy research necessarily draws upon a wide range of disciplines and methodologies.

project bids to be submitted or guarantee funding for any future calls. Conversely, absence does not preclude bidding into any such calls.

The Workshop – How to Apply

To attend the workshop you must complete the expression of interest (“Eoi”) form, following the instructions provided on the form. The form, together with a CV of no more than two sides of A4, should be sent to slhay@nerc.ac.uk by 16:00 on Wednesday 9th September. Invited participants will be notified by Friday 18th September. Submission of these documents will be taken as indicating availability on the dates of the workshop.

Applicants should outline their relevant area of expertise, any current overseas collaboration and links, any industrial/policy collaboration links, and their personal rationale for being involved in the workshop. They should also state in which of the workshop themes they have a specific interest. Please note that the total number of participants from the UK is limited and NERC will try to ensure a balance of different disciplines/expertise and the number of attendees from the same institution. It is expected that up to 12 (tbc) UK academic participants will be invited.

NERC will cover all reasonable travel and accommodation expenses for UK participants attending the workshop in line with NERC policy on recovering travel and subsistence.

For further information please contact:

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