Agenda item 6

DERBYSHIRE HEALTH AND WELLBEING BOARD

30 August 2017

Report of the Director of Public Health

DERBYSHIRE PUBLIC HEALTH POSITION STATEMENT ON UNCONVENTIONAL OIL AND GAS AND HIGH VOLUME HYDRAULIC FRACTURING

1. Purpose of the report

To inform Health and Wellbeing Board partners of the Director of Public Health position in relation to the process of Unconventional Oil and Gas and High Volume Hydraulic Fracturing (commonly referred to as fracking).

2. Information and analysis

The preference from a Public Health perspective would be to move swiftly to a sustainable energy system based on renewable sources. As Hydraulic Fracturing (HF) maintains a carbon based system of energy production it does not align with Public Health priorities. This is a Derbyshire Public Health position and is not in any way linked to the Planning Authority which must assess each individual proposal on its own merits. Should permission be granted for HF within Derbyshire, then the Public Health division would strongly recommend that a pro-active approach to community engagement is undertaken by the operator including working together with the local community and key stakeholders to develop acceptable mitigation measures where necessary.

3. Next steps

Ensure that the Public Health Division conducts regular literature search and evidence review updates on publications related to the process of Unconventional Oil and Gas and High Volume Fracturing and impact on population health outcomes.

4. RECOMMENDATION

The Health and Wellbeing Board is asked to:

- Note the Derbyshire Public Health position statement on Unconventional Oil and Gas and High Volume Fracturing.

Dean Wallace
Director of Public Health
Derbyshire County Council

Derbyshire Public Health position statement on Unconventional Oil and Gas and High Volume Hydraulic Fracturing

The preference from a Public Health perspective would be to move swiftly to a sustainable energy system based on renewable sources (1). As Hydraulic Fracturing (HF) maintains a carbon based system of energy production it does not align with Public Health priorities (1). This is a Derbyshire Public Health position and is not in any way linked to the Planning Authority which must assess each individual proposal on its own merits. Should permission be granted for HF within Derbyshire, then the Public Health division would strongly recommend that a pro-active approach to community engagement is undertaken by the operator including working together with the local community and key stakeholders to develop acceptable mitigation measures where necessary.

(1) Introduction

This report has been prepared by Derbyshire County Council Public Health Division in response to public concerns about a planning application to explore shale gas reserves near Eckington, Derbyshire.

The Director of Public Health is an independent advocate for the health of the population and provides system leadership for its improvement and protection (2). As such, this report is an independent statement of the Derbyshire Director of Public Health.

This report aims to provide:

- A brief overview of Unconventional Oil and Gas (UOG) and HF.
- An overview of the extent of reports and findings in relation to Public Health.
- Recommendations for further action.

(2) What are Unconventional Oil and Gas and hydraulic fracturing?

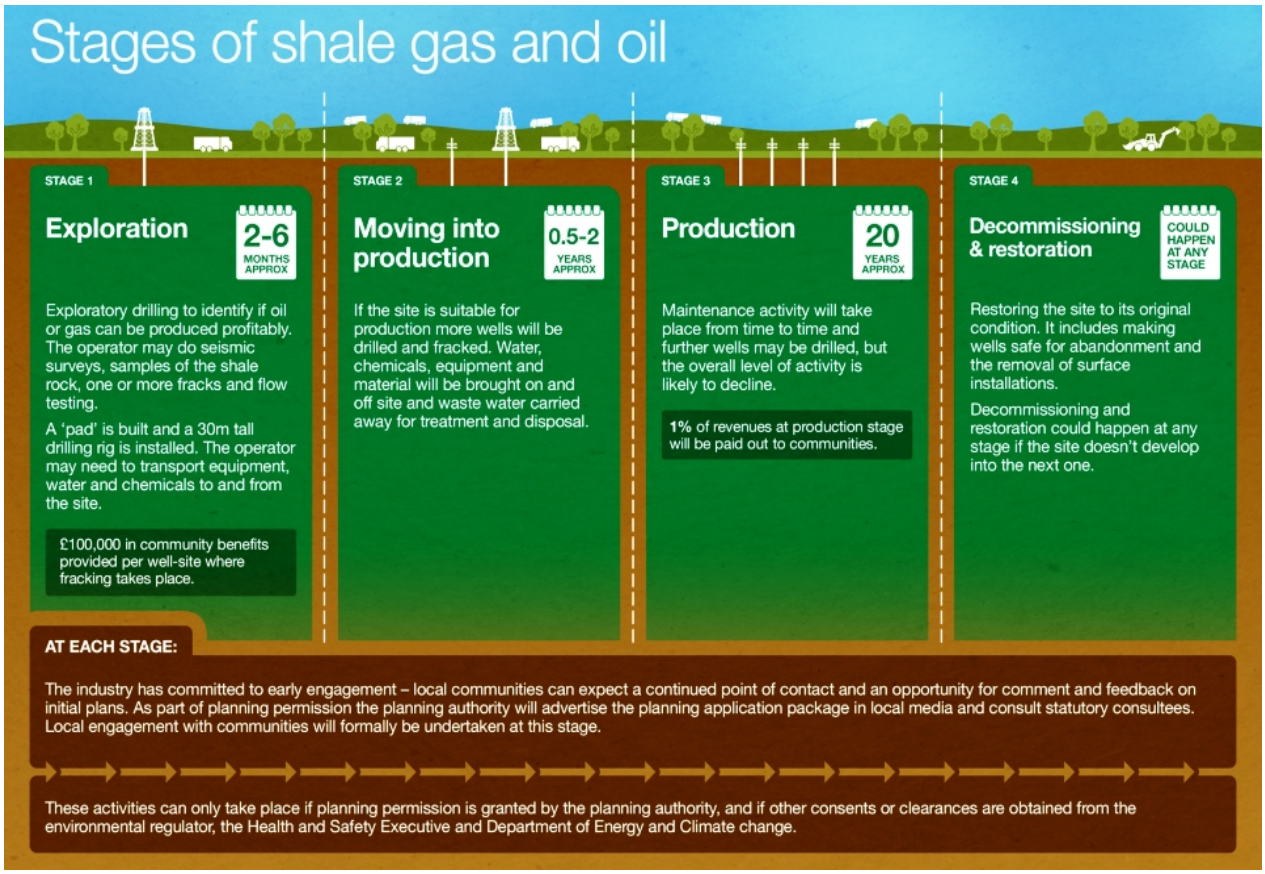
The term UOG refers to oil and natural gas held in rocks that cannot be exploited using conventional methods of extraction (3). Techniques such as horizontal drilling and HF (otherwise referred to as fracking) have been developed to access and recover the oil and natural gas contained within the rock (3).

Drilling of wells and boreholes and extracting shale oil and gas, whether for exploratory or commercial purposes, broadly involves four separate stages, which can be summarised as follows and shown in figure 1 (3).

(1) Developing a well pad and drilling and constructing a borehole to the target shale formation. This can involve horizontal drilling in a number of directions;
(2) HF of the shale formation to extract the oil or gas;
(3) Capture and processing of the returning oil or gas (during the exploratory phase this may involve flaring or venting the gas), including the storage, treatment and disposal of flowback water and other wastes;

(4) Decommissioning of the borehole and well pad.

Figure 1: Stages of Shale Gas and Oil (A Health Impact Assessment of UOG in Scotland)



(3) Methodology

A literature review was undertaken to provide background information, context and understanding of the public health impacts of UOG and HF.

After an initial search, a series of six reports commissioned by the Scottish Government were identified, covering the potential impacts on health of developing shale oil and gas and coal bed methane (known as UOG). These included a Health Impact Assessment (HIA) of UOG (3), published in November 2016, which detailed a wide ranging and extensive literature search. The Scottish HIA of UOG, as the latest high level evidence was used as a baseline for the literature search. Databases were then searched, using the databases listed in appendix 1 from 2015 to November 2016 to find any further evidence since the Scottish HIA of UOG.

In addition to the six reports commissioned by the Scottish Government, over one hundred studies or reports were gathered or received from:

- Sheffield City Council. Policy, Performance & Communications – Office of the Director of Public Health
- Public Health Specialty Registrars
- Eckington Against Fracking; Dronfield Against Fracking; Mosborough Against Fracking
- Public Health England (PHE)

(4) Findings

The public health effect of HF is a high profile and controversial issue with a myriad of published reports, studies and research from all perspectives. As such, it is challenging to determine the precise level of risk associated with HF in the UK because:

- *HF is a relatively new activity in the UK.*

In the UK, HF is a relatively new activity. The most advanced exploratory site to date in the UK has been at Preese Hall Farm, Weeton, Lancashire operated by Cuadrilla Resources. Planning permission for an exploratory drill site was granted in October 2009 (4), with drilling completed in December 2010 and HF conducted from January to May 2011 (5). Preston New Road (Lancashire) and Kirby Misperton (North Yorkshire) are proposed shale gas exploratory sites with planning permission for drilling, HF and testing the flow of natural gas at each site.

- *Site specific factors that are context specific exist (6).*

Site specific factors that are context specific include the scale and intensity of HF, the size and composition of local populations, the nature of local communities and pre-existing economic activities (6). These will determine the extent to which the social, cultural and economic disruption caused by HF will impact on local communities (6).

- *Of few epidemiological studies, which are of variable quality and can be characterised by contradictory and inconsistent findings* (3).

There are relatively few epidemiological studies on UOG (3), and these are of variable quality and can be characterised by contradictory and inconsistent findings (3). The evidence reviewed on the wider implications on health in the Scottish HIA was primarily qualitative (3). Findings of the Scottish HIA are discussed in the following sections.

- *Some research in the US has been compromised by an over-reliance on data collected by the industry and is often hindered by the use of non-disclosure agreements* (6).

Medact's report suggests that some research in the United States may have been compromised by an over reliance on data collected by the industry and hindered by the use of non-disclosure agreements that have concealed information from public scrutiny (6).

- *Of conflicting opinions on the regulatory framework*

Medact cite regulatory concerns about a) gaps in the regulatory framework b) an over reliance on self-monitoring by the industry and c) large staff and budget cuts that have impacted the Environment Agency, Health and Safety Executive, and local government planning and public health departments (6). PHE, on the other hand, state that the potential risks to public health from exposure to the direct emissions associated with shale gas extraction will be low if the operations are properly run and regulated (7).

The HIA commissioned by the Scottish Government concluded that "the evidence considered was 'inadequate' as a basis to determine whether development of shale oil and gas or coal bed methane would pose a risk to public health, if permitted in Scotland" (3). 'Inadequate' evidence was defined

as where the published evidence was judged not to be of adequate quality, consistency or statistical power to demonstrate a hazard or health risk. The Scottish HIA considered a "broad range of health" implications arising from UOG, including topics relevant to the wider determinants of health (3). These are described in more detail in the following sections.

For further on the Health Protection Scotland HIA can be found at http://www.hps.scot.nhs.uk/resourcedocument.aspx?resourceid=3102

The PHE assessment of the currently available evidence indicated that the potential risks to public health from exposure to the direct emissions associated with shale gas extraction will be low if the operations are properly run and regulated (7). The review did not include other considerations such as climate change and greenhouse gas emissions, sustainable use of water resources, nuisance issues such as noise and odours, traffic (apart from vehicle exhaust emissions), occupational health and visual impact, many of which are covered in the Scottish HIA.

HF is a potential method of energy production that could provide the UK with greater energy security, growth and jobs (8, 9). However, people in communities with UOG activities identify economic benefits but express concern about how these are distributed (3). Potential health impacts identified in the HIA Scotland include increased seismicity, potential exposure to hazardous materials and pollutants including water and ground contamination and airborne exposures, additional traffic and traffic accidents, issues with housing shortages and rent increases, increased demand on local services and noise, light and nuisance odours (3). These health impacts are assessed using a standardised approach and categorised as being 'sufficient', 'limited' or 'inadequate', as a basis to establish associations between UOG-sourced hazards and potential health impacts (3).

People living in communities with UOG activity also report:

- a sense of loss and powerlessness over a perceived change in their way of life and community identify;
- community conflicts due to differing opinions on UOG; and
- low levels of trust in the industry.

This may negatively impact on social capital and consequently on health (3).

Evidence suggests direct emissions from shale gas extraction are low if operations are properly run and regulated (7). Effective environmental monitoring in advance and during operations is therefore essential to assess the potential impact on health (7). Whilst direct emissions from individual well pads are anticipated to be low and unlikely to have an impact on local air quality, the cumulative impact of a number of well pads against existing background levels should be considered (7).

The Faculty of Public Health (FPH) advocates for a rapid move to a 100% renewable energy production and a zero based carbon energy system (1). Whilst it is acknowledged that some evidence suggests the extraction of shale gas has the potential to produce less greenhouse gases to that of traditional coal burning energy sources, the Committee on Climate Change finds that the implications of UK shale gas exploitation for greenhouse gas emissions are subject to considerable uncertainty and concludes this is not compatible with UK carbon budgets, or the 2050 commitment to reduce emissions by at least 80% (10). The Derbyshire County Council Public Health division

would therefore not support measures that result in a further reliance on non-renewable energy sources.

Stakeholder engagement

It is accepted that operators applying for planning permission are not compelled to undertake consultation with, or involve, potentially affected communities prior to submission of any proposal, although it forms part of the planning determination process carried out by the Planning Authority and the Environment Agency permitting process. However, the shale gas industry has set its commitment to community engagement in its Charter. This Charter sets out what communities can expect from companies developing shale in their areas. Operators will engage communities in advance of any application for planning permission and then again at each stage of development. The Charter can be found at the link below;

http://www.ukoog.org.uk/images/ukoog/pdfs/communityengagementcharterversion6.pdf

The need for engagement with communities and other stakeholders is recognised in best practice guidance specifically relating to UOG activity in the UK and internationally (3).

The Ladder of Citizen Participation (Arnstein, 1969) is a well-established modelling of the various levels of community involvement, and offers a useful benchmarking tool for planning authorities. https://lithgow-schmidt.dk/sherry-arnstein/ladder-of-citizen-participation.html

This model can be used to assess the effectiveness of any action to engage with potentially affected communities.

(5) Recommendations

The Derbyshire County Council Public Health division does not support further reliance on non-renewable energy sources. This position statement will be updated in light of new evidence but based on the current evidence we recommend that:

1. Operators should develop baseline environmental monitoring to facilitate the assessment of the impact of shale gas extraction on the environment and public health. Data should be openly accessible to permit public scrutiny.
2. Community engagement should be carried out.

- Potentially affected communities should be directly and actively engaged/involved in the design of mitigation measures to help ensure that their concerns are addressed and that they are adequately protected by these.
- Operators should develop and agree communication measures and mechanisms with stakeholders in order to report operational and development progress.
- Site hazard monitoring systems should be developed with stakeholder participation and agreement, creating openly accessible data to stakeholders of operational activities and conformance to agreed safety standards.

(6) References

(1) Faculty of Public Health. START WELL LIVE BETTER a manifesto for the public's health. SMaRT Design & Print (2014). Available at http://www.fph.org.uk/uploads/FPH_14073_FPH%20Manifesto%20A4_6.pdf

(2) Association of Directors of Public Health. What is a Director of Public Health (DPH)? ADPH 2016. Available at http://www.adph.org.uk/wp-content/uploads/2016/10/Role-of-a-Director-of-Public-Health.pdf

(3) A Health Impact Assessment of Unconventional Oil and Gas in Scotland. Health Protection Scotland (2016). Available at http://www.hps.scot.nhs.uk/resourcedocument.aspx?resourceid=3102

(4) Lancashire County Council. Shale Gas Developments in Lancashire. Available at http://www.lancashire.gov.uk/council/planning/major-planning-applications/shale-gas-developments-in-lancashire/current-activity-and-applications.aspx

(5) Broderick. J., et al. Shale gas: an updated assessment of environmental and climate change impacts. A report commissioned by The Co-operative and undertaken by researchers at the Tyndall Centre, University of Manchester (2011). Available at http://www.mace.manchester.ac.uk/media/eps/schoolofmechanicalaerospaceandcivilengineering/newsandevents/news/research/pdfs2011/shale-gas-threat-report.pdf

(6) Medact. Shale Gas Production in England. An Updated Public Health Assessment. Medact 2016. Available at https://www.medact.org/wp-content/uploads/2016/07/medact_shale-gas_WEB.pdf

(7) Public Health England. Review of the Potential Public Health Impacts of Exposures to Chemical and Radioactive Pollutants as a Result of the Shale Gas Extraction Process. Crown Copyright 2014. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/332837/PHE-CRCE-009_3-7-14.pdf

(8) Shale gas and fracking: examining the evidence. Gwen Harrison, Stuart Parkinson and Gary McFarlane. Chartered Institute of Environmental Health (2014). Available at http://www.sgr.org.uk/sites/sgr.org.uk/files/SGR-CIEH-Shale-gas-bfg.pdf

(9) Department for Business, Energy and Industrial Strategy. (2017). Guidance on fracking: developing shale gas in the UK. Available at https://www.gov.uk/government/publications/about-shale-gas-and-hydraulic-fracturing-fracking/developing-shale-oil-and-gas-in-the-uk

(10) Committee on Climate Change. Onshore Petroleum. The compatibility of UK onshore petroleum with meeting the UK's carbon budgets. (2016). Available at https://www.theccc.org.uk/wp-content/uploads/2016/07/CCC-Compatibility-of-onshore-petroleum-with-meeting-UK-carbon-budgets.pdf

Appendix 1

Databases searched: NICE Evidence, Cochrane Library, TRIP, Biomed Central, Science Direct, NICE HDAS databases, Greenfile, Environmental Science and Pollution Management, Social Care Online, SocINDEX, Google

Keywords: hydraulic fracturing, unconventional natural gas, unconventional oil and gas, UNG, UOG, shale gas, fracking, hydrofracking, hydrofracturing, mental health, mental illness, psychol*, well being, health, Public Health, ill*, environment*, light, traffic, noise, pollution, water, earthquake, seism*, social, commun*, impact, hous*, HIA, report*, benefit*

*denotes any ending