

To:
Rt Hon. Claire Perry MP, Minister of State,
Department for Business, Energy and Industrial Strategy
1, Victoria Street, London

Re Decision to permit Cuadrilla to hydraulic fracture at Preston New Road, Little Plumpton, Lancashire.

Dear Minister,

As announced on 24 July 2018, we understand that you have taken the decision to allow Cuadrilla to hydraulic fracture at Preston New Road, Little Plumpton, Lancashire. Approximately 3 days after your announcement, the Air Quality Expert Group (AQEG) report for Defra was published: *Potential Air Quality Impacts of Shale Gas Extraction in the UK*. HM Government had apparently delayed the publication of this important report for three years.

This AQEG report acknowledges *inter alia*:

1. It is certain that the total industrial process of hydraulic fracturing will use and release substances hazardous to health / toxic chemicals.
2. It is certain that the total industrial process of hydraulic fracturing will generate toxic air pollutants.
3. The report states that studies in the US have shown significant adverse impacts on both local air quality and regional ozone formation. In particular, the toxic products of combustion are listed in this report as specific pollutants: PM10, PM2.5, NOx, NO2, PAHs (Poly Aromatic Hydrocarbons) NMVOCs, Sulphur compounds e.g. H2S.
4. The executive summary states that '*a sufficiently improved UK evidence base (of emissions) is only expected to be obtained by studying the establishment and operation of the first commercial wells*'.

Therefore, the only conclusion that can be made is that the Cuadrilla site at Little Plumpton will be used as a prospective observational study to monitor emissions of toxic chemicals, known to adversely impact human health. This experiment is to proceed without the informed consent of the impacted close residents, some of whom live at only 350 meters from the site, closer than the 500 meters recently stipulated for safety by a Yorkshire planning Inspector.¹ Many question whether such an experiment complies with ethical guidelines.

1. This AQEG report was written in 2015, and is out of date, because no references to any medical or scientific research have been cited beyond 2014. There is a dearth of quality medical research in this document.
2. While it is acknowledged that the toxic air pollutants will be hazardous to human health, there is no mention of any biological monitoring or health monitoring for the local population.

3. A named assessor and observer from Public Health England was involved in the production of this AQEG report. This is questionable, because PHE have recently refused to review their own 2014 report on shale gas extraction, stating that no new evidence has come to light.
4. The 2014 PHE report concluded that Hydraulic Fracturing was '*low risk*' to health, if regulated properly. However, the AQEG report acknowledges uncertainty in the level of toxic emissions and the control measures that would be needed.

This is not '*gold-standard*' regulation. Are human receptors (i.e. Fylde residents) to be used as 'guinea-pigs'?

The context of your decision is a consequence of the controversial 2014 Public Health England Review.² The HM Government was then, in effect, granted written permission from a 'trusted medical authority', to proceed with fracking. This document concluded that fracking presented a '*low risk*' to public health, even for this densely populated country. However, the 2014 PHE Review was widely considered by experts to be of questionable credibility and was severely criticised at the time of publication.^{3, 4} One contemporaneous *BMJ* editorial stated that the correct conclusion that Public Health England should have drawn, was that the public health impacts remained undetermined and that more studies were needed. '*More attention should have been paid to drilling in areas that are densely populated. Studies suggest that health risks are modified by geographical distance of residences from active shale gas extraction. Recent evidence suggests a higher prevalence of some adverse birth outcomes for those living in closer proximity.*'⁵ It is notable that the 2014 PHE Review made no recommendation for any regulation of minimum residential setback distance.

The role of the regulatory bodies or agencies, for example, PHE, H&SE, EA, in these decisions remains questionable. The primary purpose of these agencies should be to protect public health and safety, however, PHE refused to update its 2014 report, whilst aware of the substance of this AQEG report.

There has been no consideration for health monitoring of the local population. Without detailed baseline and continuous monitoring of the close residents, any observed adverse impacts on health may be invalid. In parts of the USA, public health authorities have failed to document the adverse health impacts on local residents. Moreover, in return for financial settlement, the fracking industry has enforced non-disclosure of diagnosis on victims and their attending doctors.

In 2018, there is now abundant and accumulating evidence from the USA, of the potential harm, not only from the release of toxic volatile organic chemicals,^{6,7,8,15} but also from breathing in the diesel exhaust micro-particle PM 2.5 emissions from the numerous on-site diesel compressors and associated heavy diesel truck traffic, which are all probable significant contributory factors to the harmful impacts on health from fracking. In general, each 10- $\mu\text{g}/\text{m}^3$ elevation in combustion related fine particulate air pollution may be associated with approximately a 4%, 6%, and 8% increased risk of all-cause, cardiopulmonary, and lung cancer mortality, respectively.⁹

Several high-quality studies, including from the eminent Johns Hopkins Bloomberg School of Public Health, have also indicated that proximity to the industrial activity associated with fracking sites is a determinant of harm, such as exacerbation of asthma,¹⁰ increased acute cardiology and neurology admissions to hospital¹¹ increased dermatological and upper respiratory symptoms¹² low birth weight¹³ and preterm births.¹⁴ The most recently published research sampled ambient air pollutant concentrations for four residential scenarios in Colorado. Air pollutant concentrations, particularly benzene and other volatile organic chemicals (BTEX) increased with residential proximity to fracking, as did the risk for cancers.¹⁵

In April 2017 it was determined that a 300m setback originally proposed in Maryland would not protect residents from unacceptable noise levels.¹⁶ Maryland, like New York State, has now quite sensibly banned fracking. There is also concerning research on harmful levels of carcinogenic respirable crystalline silica (RCS) dust from fracking sand in sites¹⁷ and this may also impact close residents. Many recent air samples from these sites have demonstrated elevated RCS dust above the acceptable occupational exposure limits.¹⁸

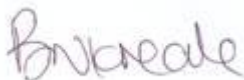
At Little Plumpton, no site-specific emergency evacuation plan has been described or published. Based on historical emergency evacuations in the USA and thermal modelling, people within low setback distances from fracking sites are potentially vulnerable to thermal injury during a well blowout, fire and/or explosion. According to air measurements and vapour dispersion modelling, the same populations are susceptible to carcinogenic benzene vapour and toxic hydrogen sulphide gas exposures above health-based risk levels.¹⁹

Conclusions:

1. We believe that PHE should consider all the high-quality evidence since 2014 and update their report as a matter of urgency.
2. We believe there should be an immediate moratorium on fracking until a transparent review takes place to evaluate all the health, safety and environmental issues.

Prohibiting the development of an industry that is potentially so harmful to the health of close residents, that has doubtful economic viability and runs counter to the direction of the necessary transition to renewable energy, should be regarded as a reasoned and sensible decision.

Yours sincerely,



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