TOWN AND COUNTRY PLANNING (APPEALS) (SCOTLAND) REGULATIONS 2013

APPEAL UNDER SECTION 47(2) OF THE TOWN AND COUNTRY PLANNING (SCOTLAND) ACT 1997 BY DART ENERGY (FORTH VALLEY) LTD CONCERNING COAL BED METHANE PRODUCTION, INCLUDING DRILLING, WELL SITE ESTABLISHMENT AT 14 LOCATIONS AND ASSOCIATED INFRASTRUCTURE AT LETHAM MOSS, FALKIRK, AND POWDRAKE ROAD, NEAR AIRTH, PLEAN

(REFERENCES PPA-240-2032 AND PPA-390-2029)

INQUIRY STATEMENT

BY

CONCERNED COMMUNITIES OF FALKIRK
(AND SUPPORTERS)

1. Introduction

1.1. This statement has been prepared on behalf of Concerned Communities of Falkirk ("CCoF") and others for the inquiry sessions to be held in March and April 2014 into the appeal by Dart Energy (Forth Valley) Ltd ("the Appellant") under section 47(2) of the Town and Country Planning (Scotland) Act 1997 against the deemed refusal by Falkirk Council and Stirling Council of its applications for planning permission with references P/12/0521/FUL and 12/00576/FUL respectively.

1.2. CCoF objected to the planning application made to Falkirk Council ("the Application"), made representations to the Directorate for Planning and Environmental Appeals (DPEA) following the lodging of the appeal in June 2013, and at the pre-examination meeting convened by the DPEA on 4 December 2013 expressed their wish to participate in the inquiry sessions.

1.3. This statement and CCoF's case in the inquiry sessions are fully supported by the following community councils in the area of Falkirk Council which also oppose the appeal:

- Avonbridge & Standburn Community Council
- Blackness Community Council
- Bo'ness Community Council
- Larbert, Stenhousemuir & Torwood Community Council
- Reddingmuirhead & Wallacestone Community Council and
- Shieldhill & California Community Council.

They are also supported by the members of the now defunct Grangemouth & Skinflats Community Council (which objected to the Application while still in existence) and by many individual objectors.

1.4. This statement briefly describes the origins of CCoF in connection with the Application.

1.5. It sets out the particulars of the case which CCoF and its supporters intend to put forward in the inquiry sessions.

1.6. It names the witnesses that CCoF intend to lead evidence from in the inquiry sessions, sets out their qualifications and the topics they will cover, and lists the documents to which they will refer in addition to the documents already lodged by and on behalf of CCoF during the course of the appeal to date (listed as *CCoF 1* to *CCoF 107* in a consolidated list of documents submitted to the DPEA on behalf of CCoF and copied to the other parties by Ian Cowan, Highland Environmental Law, with an email dated 17 December 2013). The additional documents to be referred to by CCoF witnesses are listed in the Appendix hereto (numbered *CCoF 108* and so on).

1.7. As an entirely voluntary organisation with no public funding, CCoF has to raise all the funds required to pay for its legal support and representation. As a consequence it is possible that CCoF may have to restrict its case at the inquiry sessions by withdrawing witnesses or parts of their evidence as set out here. Parties will be notified as soon as it becomes clear that such a restriction is necessary due to insufficient funds.

1.8. CCoF have also been unable to confirm whether or not two of their proposed witnesses on cultural heritage will be able to give evidence. One of them is dealing with the recent sudden announcement that her husband is seriously ill. CCoF wish to retain the right to lead evidence from these witnesses at the inquiry sessions if they are willing and able to do so. Parties will be notified as soon as possible, and precognitions will be submitted as appropriate.

1.9. In this inquiry statement:

- "cultural heritage" means a group of resources inherited from the past which people identify, independently of ownership, as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions, including all aspects of the environment resulting from the interaction between people and places through time (as defined in the Council of Europe Framework Convention on the Value of Cultural Heritage for Society);

- "unconventional gas development" or "UG development" means development of natural gas contained in shale or coal formations using dewatering, hydraulic fracturing and/or any other method of well stimulation;

- "dewatering" means abstracting water from shale or coal formations leading to loss of hydrostatic pressure and mobilisation of adsorbed and interstitial natural gas including methane;

- "hydraulic fracturing" means injecting water at high pressure into shale or coal formations in order to fracture them and stimulate natural gas production.

1.10. Straight after the pre-examination meeting, on 5 December 2013, CCoF requested information from Falkirk Council about the exchanges between itself/its consultants (AMEC) and the Appellant/its consultants (RPS) on the sub-surface impacts of the proposed development. All of AMEC's technical notes were provided to CCoF the same day (*CCoF 185*), but none of the other requested information has been, despite a reminder sent at the beginning of January (*CCoF 186*) and the expiry a few days later of the 20-working day deadline for complying with requests under the Environmental Information (Scotland) Regulations 2004. Falkirk Council has written to say it may need until 5 February to comply with the request (*CCoF 187*). Consequently CCoF have been unable to use any of the missing information in the preparation of this statement, as had been hoped and expected. CCoF wish to retain the right to do so in the preparation by their witnesses of their individual precognitions, notwithstanding the absence of any relevant particulars in this inquiry statement.

2. <u>Concerned Communities of Falkirk</u>

2.1. CCoF was formed during 2012 in response to the Application by a group of individuals who had either received neighbour notification of it from Falkirk Council, heard about it at community council meetings or read about it in the media. The group expanded quickly through social media, leaflet drops and other methods of raising awareness.

2.2. On 4 December 2013 CCoF adopted a constitution (*CCoF 108*) as an unincorporated voluntary association with a committee of office-holders and other volunteers.

2.3. The group's objects are:

- to support the communities of Falkirk in opposing and resisting planning applications, or local, national or European government policies, which may be deemed to pose significant risks to the wellbeing of the inhabitants of the area and/or the local environment; and
- to encourage the goodwill and involvement of the wider community in its activities.

2.4. Membership of CCoF is open to anyone who has an interest in assisting the group to achieve its aim and is willing to adhere to its rules.

2.5. CCoF's first representations to the DPEA about the appeal, dated 1 July 2013 (*CCoF 1*) (accompanied by a legal opinion by one of its members (*CCoF 2*), a "Community Charter" adopted by Larbert, Stenhousemuir & Torwood Community Council (*CCoF 3*) and a "Community Mandate" (*CCoF 4*)) state that:

- the Community Charter is a material consideration in planning terms;
- the Community Charter is an expression of cultural heritage, impacts on which must be assessed in accordance with the EU Environmental Impact Assessment Directive; and
- in the absence of local planning policy on unconventional gas development, the decision-maker should apply the 'precautionary principle' and, before granting planning permission, be satisfied that no significant harm would occur as a result of the proposal.

2.6. The Community Mandate, which was produced by CCoF and separately subscribed and submitted by over 2500 individual objectors, called for:

- the adoption by Falkirk Council of an appropriate policy framework for assessing planning applications for coal bed methane (CBM) development;
- the re-assessment of the Application under that framework, applying the precautionary principle;
- the Community and Falkirk Council to be comprehensively and transparently informed and consulted in connection with such assessments; and
- the Community and Falkirk Council to give proper consideration to renewable energy alternatives to CBM development.

2.7. CCoF has firmly and consistently opposed the Application and the appeal, and in bringing together the community councils of the Falkirk Council area in support of its case, can be said to represent the views of a significant majority of the local population.

2.8. CCoF contend that cultural heritage as defined in the Council of Europe Framework Convention on the Value of Cultural Heritage for Society is a material planning consideration having regard to Article 3.3 of the Treaty of the European Union and the Proposal for a Directive of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment.

3. <u>CCoF's case for the inquiry sessions</u>

3.1. CCoF wishes to present evidence on the following matters, as specified in the procedure notice issued by the DPEA on 18 December 2013:

- Geology (potential instability, methane migration and fugitive emissions, naturally occurring radioactive material, old mine workings, potential for hydraulic fracturing)

- Hydrology/hydrogeology (including migration of contaminated groundwater, as well as private water supplies, possibility of drawing water from more than the coal seam, possible dewatering of local aquifers)

- Gas delivery and water treatment facility (including planned and unplanned gaseous emissions, as well as disposal of waste water, gas compression and treatment)

- Air quality and potential health impacts

- Impacts on local communities and their cultural heritage.

3.2. CCoF also wishes to cross-examine the other parties' witnesses on national and local policy (including planning policy), noise, and the benefits of the proposal but, in order to save time, not to lead evidence on those matters.

3.3. CCoF's case starts by describing how the Appellant, despite several requests to provide more information, still appears to have a limited understanding of the geology and hydrogeology of the proposed development area (PDA), and would still have to undertake a number of investigations in order properly to understand and mitigate the risks of the development.

3.4. CCoF will argue that, even if they are properly understood, the nature of the inherent risks of UG development, whether using dewatering or hydraulic fracturing or any other methods, makes them impossible to monitor and regulate effectively.

3.5. CCoF's case then goes on to describe the potential consequences of proceeding with the development in the absence of sufficient geological and hydrogeological information and effective regulation, including the impacts on local air quality and water quality, the consequences for public health and the wider impacts on local communities and their cultural heritage.

3.6. CCoF will lead evidence from the witnesses to cultural heritage regarding the importance to local communities of the Community Charter and Community Mandate.

3.7. CCoF's case will describe the impact of the proposed development on the cultural heritage of the relevant communities. The Community Charter is CCoF's expression of their cultural heritage as defined above. The "Assets" section of the Community Charter expresses the intangible qualities of aspects of community which are important to the residents living there, in order to provide them with the stable

foundations from which to build family and community life and respect for the natural environment.

3.8. CCoF submit that these qualities of community that comprise their cultural heritage have been developed over time through local policies that have supported a shift in Falkirk from an industrial past towards a greener, healthier and more sustainable future. CCoF submit that these intangible assets would be adversely impacted by the proposed development, which would reduce well-being, community cohesion and identity, and the ability, therefore, for communities to thrive.

3.9. CCoF's case will conclude that the range and significance of the potential adverse impacts greatly outweigh any benefits of the proposal.CCoF's evidence will demonstrate that there is potential for significant adverse environmental impacts or alternatively that the Appellant has failed to demonstrate that there will be no significant adverse environmental impacts. CCoF will demonstrate further that there is the potential for significant adverse effects on their health and on their cultural heritage, or alternatively that the Appellant has failed to demonstrate that there will be no such significant adverse effects. The proposal is contrary to the local development plans. The appeal should therefore be refused.

4. CCoF's witnesses

4.1. <u>Professor David Smythe</u>

4.1.1. Professor Smythe is Emeritus Professor of Geophysics, University of Glasgow. Prior to taking up this Chair, he was employed for 14 years by the British Geological Survey, initially as a research officer, ultimately as Principal Scientific Officer. Amongst other things, he served on the British Nuclear Fuels Ltd Geological Review Panel when it was searching for a UK underground nuclear waste repository in the 1990s.

4.1.2. Prof. Smythe's review of the additional environmental information lodged as document G20 in June 2013 by the Appellant in support of its earlier hydrogeological assessment was submitted by CCoF in August 2013 and is listed as *CCoF 13*.

4.1.3. Prof. Smythe will give evidence in response to the 'final version' of G20 which was submitted by the Appellant in October 2013.

4.1.4. He will also give evidence in response to the latest hydrogeological information the Appellant has been permitted by the Reporters to submit, but which it has not yet submitted.

4.1.5. Prof. Smythe's evidence will also cover the following points:

- A long-term baseline study of methane and CO_2 emissions should have been carried out before any development took place.
- The Appellant does not sufficiently understand the geology of the development area.
- The Appellant has no technique for drilling across fault zones.
- The Appellant has no guide image to retain the drill bit within a coal seam while drilling.
- The Appellant has no contingency plans in place to deal with possible contamination incidents from depth.
- The Appellant has ignored the presence of significant geological faults.
- The faults are likely to be conduits for fluid flow rather than barriers to flow.
- There is no reliable caprock above the development area to prevent upward migration of fugitive methane and/or contaminated groundwater.
- Laboratory studies of hydraulic conductivity of all the relevant rock formations should be done using existing core samples.
- *In situ* measurements of hydraulic conductivity should be made in the existing boreholes.
- A high resolution 3D seismic survey is required to image all the faults to a sufficiently precise resolution.
- Cross-borehole fluid flow testing should be carried out between pairs of existing wells to determine the behaviour of the faults.
- 3D modelling of groundwater flow should be carried out using the geological, hydrogeological and seismic data.
- The development poses a significant risk to receptors.
- The cost and duration of work required, as specified above, to identify and characterise the risks, is likely to outweigh the economic value of the methane extracted.
- Therefore the development should not be permitted.

4.2. <u>Dr Mariann Lloyd-Smith</u>

4.2.1. Dr Lloyd-Smith has a Ph.D. in chemical law with 30 years of experience in chemical and waste management and policy. She has been observing and commenting on UG development in Australia for several years, and is Senior Advisor to the National Toxics Network (in Australia).

4.2.2. She will give evidence that if the development goes ahead, in spite of the Appellant's failings and the gaps in information about the potential risks, the experience of coal bed methane production in Australia demonstrates problems with water table drawdown, air pollution, contamination of produced water and waste management, in particular:

- fugitive emissions of coal bed gases on initial drilling;
- fugitive emissions of gases from gas and water treatment infrastructure;
- gas emissions from 'enhanced soil gas exchange processes';
- polluted discharges of produced water;

- groundwater pollution; and
- particulate emissions from trucks, cars and other machinery.

4.2.3. She will also give evidence about the difficulties in obtaining information about names and formulations of drilling chemicals, and volumes used.

4.2.4. She will also give evidence that the Appellant's estimate of the lifespan of its proposed wells is unrealistic.

4.3. Dr Ian Fairlie

4.3.1. Dr Fairlie is an independent consultant on radioactivity. He has degrees in chemistry and radiation biology. His doctoral studies at the Imperial College of Science Technology and Medicine (UK) and at Princeton University (US) examined nuclear waste technologies. Dr Fairlie has acted as consultant to Government Departments in the UK, Canada and the European Parliament. Most recently, he was scientific Secretary to the Government's Committee Examining the Radiation Risks of Internal Emitters (www.cerrie.org).

4.3.2. He will give evidence on the following points:

- Naturally occurring radioactive material (NORM) occurs in all underground rocks and sediments including coal beds.
- The development would result in emissions of coal bed gases including radioactive radon and thoron and their decay daughters. It would also likely result in widespread diffuse emissions into and from soil in the application area.
- Ingestion and/or inhalation of these radioactive entities will result in internal radiation exposures to residents near to and downwind of any proposed facilities. Workers and visitors at these facilities will likely be exposed to both internal radiation and to external gamma radiation.
- These radiation doses should be estimated and their corresponding health risks assessed before any extraction activity occurs.
- Radon monitoring should be carried out in advance of any extraction actitivity.
- In addition, dewatering activities will bring to the surface liquids and solids which are expected to be both chemotoxic and radiotoxic.
- Given the expected volumes of extracted water the amounts of radioactive materials deposited in nearby outfalls could be large and result in the radioactive contamination of nearby outfall streams, mudflats and benthic organisms.
- The concentrations of radioactive materials in extracted water could exceed threshold concentrations for NORM under the Radioactive Substances Act 1993 and its secondary legislation. Any disposals of extracted water could require statutory authorisation under the 1993 Act by the Scottish Environment Protection Agency.

4.4. Dr Geralyn McCarron

4.4.1. Dr McCarron is a general medical practitioner (GP) from Northern Ireland who lives and works in Queensland, Australia. She has been observing and commenting on UG development in Australia for the last 2 years. She has first-hand knowledge of the symptoms reported by residents in areas of UG development.

4.4.2. She will give evidence about:

- the symptoms reported by and significant health impacts suffered by people living in areas of UG development;
- the significant social impacts of UG development;
- some of the toxic chemicals identified on environmental and biochemical testing in areas of UG development;
- gaps in information about chemicals used and wastes produced, about interactions between mixtures of chemicals both in the environment and in the body; and about cumulative health impacts; and
- the developing scientific literature linking these toxic chemicals to cancers and other serious conditions in humans, as well as on the adverse health effects of pollution and exposure to all stages of UG development.

4.5. Professor Andrew Watterson

4.5.1. Prof. Watterson is Director of the Centre for Public Health and Population Health Research and Head of the Occupational and Environmental Health Research Group at Stirling University.

4.5.2. He will give evidence on the following points:

- The documents provided by the Appellant and other bodies such as government departments and researchers do not demonstrate that the risk assessments so far attempted on specific materials involved in CBM extraction and their combinations are sufficient to ensure public health is protected.
- There are many data gaps as well as evidence of the adverse effects of materials at extremely low doses.
- Very recent research also indicates increasing and not diminishing causes for concern.
- Risk assessment should lead to the prevention of potentially major public health adverse effects but the risk-cost-benefit analysis of CBM at local and national level reveals the existence of far greater public health risks than benefits.
- The health impact assessments so far conducted by or on behalf of the Appellant are not proper integrated public health impact assessments and are inadequate.

- The assessments by bodies such as the Royal Society and the UK Government's Centre for Public Health of the public health impacts of UG development are relatively limited.
- Bodies such as the American Public Health Association have indicated why we should ensure proper public health impact assessments are needed.
- The history of public health contains many examples of interventions delayed beyond the point where they could have been effective, because of failure to apply the precautionary principle.
- The European Environment Agency has produced detailed reports on why we should adopt the precautionary principle when dealing with carcinogens and endocrine disruptors because of 'late lessons from early warnings'.
- In this context, it is necessary to scrutinize government and industry statements carefully with regard to firstly the regulation of CBM extraction and secondly its effective management.
- The regulation of UG to a number of reputable international and EU organisations remains flawed and within a UK context the powers, staffing and resources of the various regulatory bodies both north and south of the border have been significantly diminished.
- In addition, the environmental and health and safety management record of some of those UK and international companies engaged in the extraction of oil and gas has been consistently poor, in several instances lethal to its workers and the cause of huge pollution problems.
- Assertions about the safety of processes and materials used in CBM and effective regulation, management and good governance need to be tested against the evidence. Currently they do not stand up to scrutiny.

4.6. <u>David Alexander</u>

4.6.1. Mr Alexander is SNP Councillor for Falkirk North Ward. He was leader of Falkirk Council from February 2001 to May 2007.

4.6.2. Mr Alexander will give evidence on what has been achieved in the Falkirk area, through planning policy and other means, in terms of shifting values and perceptions about Falkirk's industrial past towards a future which promotes quality of life for residents and a greener, more sustainable future. He will give evidence on the support that he and other Councillors have given to the Community Charter, due to its alignment with the Scottish community empowerment agenda.

4.7. <u>Eric Appelbe</u>

4.7.1. Mr Appelbe is the Convener of Larbert, Stenhousemuir and Torwood Community Council.

4.7.2. Mr Applebe will give evidence on the ineffectiveness of the Appellant's consultations and explain why working with CCoF and their Community Charter was important. He will confirm the Community Council's objections remain extant and give evidence of how the input of CCoF gave a voice to residents' needs of a different context and dimension, which were not being met through the manner in which Dart was engaging with its consultation responsibilities.

4.8. Wendy Carey Macartney

4.8.1. Ms Macartney has an MSc in Human Resource Management and is a Chartered Fellow of the Chartered Institute of Personnel and Development. She is the Lead Director of the London-based leadership consulting firm, Holtby Turner. Ms Macartney has been engaged with the development and promotion of 'values' and the 'value ethos' within complex systems like organisations. For the last 5 years, she has been responsible for developing corporate values, as well as the development of groups in some of the UK's largest organisations.

4.8.2. She will give evidence on the importance of values and beliefs within the context of complex systems like companies and communities, the impact of values and beliefs on a group/community, and the measurement of group/community values in a time of change.

4.9. Alison Doyle

4.9.1. Mrs Doyle is a resident of Kinnaird Village in Larbert and is both a mother and grandmother.

4.9.2. Mrs Doyle will give evidence of how, when she came across the development proposals for Kinnaird Village, what was proposed satisfied a very human longing in her to find a place she could call a sanctuary, in order to put down roots for the sake of her children and grandchildren. Mrs Doyle will describe how the Application puts her at risk of losing all that she has sought, and succeeded, in building over the course of her life, in terms of the values by which meaning has been given to her life.

4.10. Leslie Dick

4.10.1. Mr Dick is a farmer and owner of approximately 1000 acres of arable land which has been in his family for nearly a century and which lies within the application boundary. The Application proposes that 5 well sites and a processing site be constructed on his farming land. One exploratory well site already exists there.

4.10.2. Mr Dick will give evidence of the important role the farming community has in giving vibrancy and diversity to the local area, in terms of local businesses it serves as well as through stewardship of the land. He will describe the "Assets" for which he feels

responsible as farmer and steward of the land – helping ensure local food security, a sustainable local economy and a clean and safe environment.

4.10.3. Mr Dick will give evidence of a slow process by which he felt unable to prevent the loss of parcels of land for existing and prospective drilling operations, the cumulative impact of which he believes will lead not only to the loss of the farming tradition he wishes to bequeath to his children, but also to the wider decline of a vibrant farming community on which the future stability and productivity of the region depends.

APPENDIX

List of additional documents to be lodged by Concerned Communities of Falkirk
("CCoF Documents")

CCoF 108 Constitution of Concerned Communities of Falkirk

CCoF 109 *Hydrocarbon Seepage: From Source to Surface* (eds. Aminzadeh, F. *et al.*), Society of Exploration Geophysicists and American Association of Petroleum Geologists, 2013, 244 pp. ISBN 978-1-560-80-310-2 (extracts only; in copyright)

CCoF 110 Queensland Department of Health Report, *Coal seam gas in the Tara region: Summary risk assessment of health complaints and environmental monitoring data*, March 2013

CCoF 111 Entry in National Pollutant Inventory (of Australia): 2011/12 report for QGC Pty Ltd, Windibri Processing Plant (PL201) and Compressor Stations, Condamine, Queensland http://www.npi.gov.au/npidata/action/load/individual-facility-detail/criteria/state/QLD/year/2012/jurisdiction-facility/Q012QGC002

CCoF 112 International Agency for Research on Cancer, WHO, press release no.221, 17 October 2013 http://www.iarc.fr/en/media-centre/iarcnews/pdf/pr221_E.pdf

CCoF 113 Unexplained Cancer Clusters Common Threads, Archives of Environmental Health April 2004; 59,4; ProQuest Page 172

CCoF 114 News article: *Single mother and her two children left out in the cold*, Sunshine Coast Daily, 15 August 2013 http://www.sunshinecoastdaily.com.au/news/single-mother-and-her-two-children-left-out-cold/1985464/

CCoF 115 Article: *Chinchilla: Boom Town*, Mining Life, 11 November 2013 https://open.abc.net.au/projects/mining-life-45gy0yf/contributions/chinchilla-boom-town-11fn9if

CCoF 116 http://dea.org.au/ images/ uploads/submissions/ Review_of_CSG_in_NSW_-_Chief_Scientist_Submission_05-13.pdf

CCoF 117 Australian Medical Association press release: *AMA calls for coal seam gas health checks*, 23 May 2013 https://ama.com.au/ media/ama-calls-coal-seam-gas-health-checks

CCoF 118 Colborn T, Kwiatkowski C, Schultz K, and Bachran M., Natural gas operations from a public health perspective. *Human and Ecological Risk Assessment 2011*; 17(5):1039-56.

CCoF 119 Bamberger, M. & Oswald, R.E., Impacts of Gas Drilling on Human and Animal Health. *New Solutions 2012*; 22(1): 51–77.

CCoF 120 Krzyzanowski J., Environmental pathways of potential impacts to human health from oil and gas development in northeast British Columbia, Canada. *Environmental Reviews* 2012; 20(2): 122-134.

CCoF 121 Steinzor N, Subra W and Sumi L. *Gas Patch Roulette, How Shale Gas Development Risks Public Health in Pennsylvania*. Earthworks Oil & Gas Accountability Project, October 2012

CCoF 122 Centers for Disease Control and Prevention NIOSH Science Blog, *Worker Exposure to Crystalline Silica During Hydraulic Fracturing,* 23 May 2012 http://blogs.cdc.gov/niosh-science-blog/2012/05/silica-fracking/

CCoF 123 Food & Water Watch, *The Social Costs of Fracking: A Pennsylvania Case Study*, September 2013 http://documents.foodandwaterwatch.org/doc/Social_Costs_of_Fracking.pdf

CCoF 124 Human Health Risk Assessment for Battlement Mesa Health Impact Assessment, McKenzie et al (Colorado School of Public Health), September 2010

CCoF 125 Review of evidence on health impacts of air pollution, REVIHAAP project, WHO 2013

CCoF 126 Air pollution and lung cancer incidence in 17 European cohorts: prospective analyses from the European Study of Cohorts for Air Pollution Effects (ESCAPE), Ole Raaschou-Nielsen

CCoF 127 Article from Bloomberg.com, *Study shows fracking is bad for babies*, 4 January 2014 http://www.bloomberg.com/news/2014-01-04/study-shows-fracking-is-bad-for-babies.html

CCoF 128 Hill E (2012) Unconventional Natural Gas Development and Infant Health: Evidence from Pennsylvania. Working paper. WP 2012-12 Dyson School of Applied Economics and Management. Cornell University, USA

CCoF 129 American Public Health Association (2012) The Environmental and Occupational Health Impacts of High-Volume Hydraulic Fracturing of Unconventional Gas Reserves. Policy Date: 10/30/2012 Policy Number: 20125. http://www.apha.org/advocacy/policy/policysearch/default.htm?id=1439 (accessed May 23rd 2013)

CCoF 130 Brophy JT, Keith MM, Watterson A, Park R, Gilbertson M, Maticka-Tyndale E, Beck M, Abu-Zahra H et al (2012) . Breast cancer risk in relation to occupations with exposure to carcinogens and endocrine disruptors: a Canadian case-control study. *Environmental Health*, 11:87

CCoF 131 European Union (2011) Impacts of shale gas and shale oil extraction on the environment and human health. DG Internal Affairs. Policy Department. ENV1 2011. IP/A/ENVI/ST/2011-07. http://www.europarl.europa.eu/document/activities/cont/201107/20110715ATT24183/20110715ATT24183EN.pdf (accessed May 23rd 2013)

CCoF 132 Maule AL, Makey CM, Benson EB, Burrows IJ, Scammell MK (2013) Disclosure of hydraulic fracturing fluid chemical additives: analysis of regulations. *New Solutions 2013*;23(1):167-87.

CCoF 133 Public Health England (2012) Review of Potential Public Health Impacts of the Exposure to chemical and radioactive pollutants as a result of shale gas extraction. PHE, London.

CCoF 134 Royal Society (2012) Shale Gas Extraction: a review of hydraulic fracturing. June 2012. Royal Society and Royal Academy of Engineering, London.

CCoF 135 UNEP (2012) Gas fracking: can we safely squeeze the rocks? UNEP Global Environmental Alert Service. November 2012. http://www.unep.org/pdf/UNEP-GEAS_NOV_2012.pdf (Accessed May 23 2013)

CCoF 136 Watterson A, Little D, Young J, Boyd K, Azim E, Murray F (2008) Towards Integration of Environmental and Health Impact Assessments for Wild Capture Fishing and Farmed Fish with Particular Reference to Public Health and Occupational Health Dimensions. *Int. J. Environ. Res. Public Health* 5, 258-277

CCoF 137 Watterson A. et al (2008) A Report of the International Occupational and Environmental Cancer Prevention Conference. Stirling, Scotland Conference. European Journal of Oncology XIII,(2):15-122

CCoF 138 Watterson A and O'Neill R (2012) Regulating Scotland. What works and what does not in occupational and environmental health and what the future holds. Stirling University, Scotland.

CCoF 139 Commission of the European Communities, Communication on the Precautionary Principle, COM(2000) 1 final

CCoF 140 World Commission on the Ethics of Scientific Knowledge and Technology (COMEST), The Precautionary Principle, UNESCO, March 2005

CCoF 141 European Commission, Proposal for a Directive of the European Parliament and of the Council amending Directive 2011/92/EU on the assessment of the effects of certain public and private projects on the environment, COM(2012) 628 final

CCoF 142 Office for National Statistics (2012) Measuring National Well Being, Life in the UK 2012

CCoF 143 Crompton A et al (2010) Common Cause: The Case for Working with our Cultural Values

CCoF 144 News article: *Katter MP wants probe into CSG links to cancer cluster*, The Chronicle, 12 September 2013 http://www.thechronicle.com.au/news/katter-mp-wants-probe-csg-links-cancer-cluster/2018180/

CCoF 145 Goldstein, B. The Precautionary Principle Also Applies to Public Health Actions, Am J Public Health. 2001 September; 91(9): 1358–1361

CCoF 146 News article: *CSG exploration firm pulls out of Australia after backlash*, Northern Star, 2 April 2013 http://www.northernstar.com.au/news/csg-exploration-firm-pulls-out-australia-after-bac/1814114/

CCoF 147 News article: *Dart Energy withdraws from CSG projects as state ruling bites*, The Australian, 3 April 2013 http://www.theaustralian.com.au/business/mining-energy/dart-energy-withdraws-from-csg-projects-as-state-ruling-bites/story-e6frg9df-1226611207012#mm-premium

CCoF 148 US Environmental Protection Agency presentation, Reducing Air Pollution from the Oil and Natural Gas Industry, 17 April 2012 http://www.epa.gov/airquality/oilandgas/pdfs/20120417presentation.pdf

CCoF 149 Reduce Emissions and Operating Costs with Appropriate Glycol Selection HAROLD O. EBELING, Latoka Engineering, L.L.C., Tulsa, OK, LILI G. LYDDON, KIMBERLY K. COVINGTON, Bryan Research & Engineering, Inc., Bryan, Texas

CCoF 150 http://www.hsph.harvard.edu/research/niehs/files/penning_marcellusshale.pdf

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