attachment 3

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Look forward

Tony McCarthy
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Seven West Media WA

By Email tony.mccarthy@wanews.com.au

RE: Response to complaint received by West Australian Newspaper Group from APPEA

Dear Tony,

Thank you for your email and the opportunity to respond to the complaint sent to you by Michael Bradley on behalf of APPEA.

We consider the complaint to be vexatious and motivated by a desire to suppress the true nature of the gas fracking industry. Many of APPEA's contentions appear to be semantic in nature. Indeed it is a hallmark of this industry to use semantic and technical definitions to obscure the fact that fracking operations can and do cause serious and irreversible environmental damage.

As you may be aware, CCWA is volunteer-based a representative organisation and our advocacy agenda and priorities reflect issues of concern to our members and the broader WA community. We believe that gas fracking presents one of the greatest environmental challenges that Western Australian communities have ever faced.

For over 45 years CCWA has operated as Western Australia's peak independent environment group. Our policies and the information we provide is evidence-based and is respected as such by responsible industry, government agencies and the Western Australian community. We are proud of our reputation for rigorous defense of the environment supported by rigorous research, analysis and scientific information.

APPEA's complaint is centered on three statements which they find objectionable. I will deal with these statements and respond to APPEA's contentions in turn:

Statement 1: ***"Shale fracking, the process of extracting gas by using toxic chemicals to crack deep rocks, can turn our water into a dangerous chemical cocktail.***

1. While APPEA chose to define 'fracking' as a particular part of the process of unconventional gas extraction, the term 'fracking' in its general, common use, used to describe collectively the process of extracting unconventional gas, inclusive of the drilling, flaring, hydraulic fracturing, wastewater handling and re-injection, and various other activities associated with this industry. It is this common-use meaning of the word that CCWA has adopted, rather than the narrow technical definition used by APPEA in their own materials.
2. APPEA does not have the sole right to determine the meaning or usage of the word 'fracking', or to decide whether it is used as a noun, a verb, an adjective or adverb. The term fracking is often used as an umbrella term to encompass *all or any* of the processes and procedures that are utilised to create the product of 'gas'. The

complexities of the process have caused the necessity of an umbrella term, just as the word 'mining' is used as an umbrella to describe many different processes that result in the extraction of metals.

1. The online Oxford dictionary defines 'fracking' as "*The process* (emphasis mine) of injecting liquid at high pressure into subterranean rocks, boreholes, etc. so as to force open existing fissures and extract oil or gas". (http://www.oxforddictionaries.com/definition/english/fracking) and Dictionary.com defines 'fracking' as "*a process* (a process) in which fractures in rocks below the earth's surface are opened and widened by injecting chemicals and liquids at high pressure: used especially to extract natural gas or oil". (http://dictionary.reference.com/browse/hydraulic%20fracturing) Similarly CCWA have chosen to use the word 'fracking' to refer to "*the process* of extracting gas by using toxic chemicals to crack deep rocks".
2. According to the Western Australian Government's Department of Mines and Petroleum "Shale and tight gas **requires** hydraulic fracture stimulation (also known as hydraulic fracturing or fraccing) to fracture the gas-bearing rocks to create a path for the natural gas to flow"[1].
3. Toxic chemicals are used in fracking operations; according to the WA Department of Health's submission to the WA Inquiry on Unconventional Gas, their preliminary health risk assessment found 195 'chemicals of concern' associated with fracking fluid and the fracking process[2].
4. These chemicals include acids used to help break down minerals and initiate fissures[3] (e.g. to help 'crack deep rocks') and chemicals to act as biocides (to kill bacteria).
5. As the volume of water used is so huge, the total volume of chemicals is significant. According to CSIRO's Damian Barrett's interview on the ABC, "the amount of hydraulic fracturing fluid that goes into a well can be anywhere between 10 and 25 million litres[4]", which means at 0.05% of volume, between 50,000 and 125,000 litres of chemicals used for each well.
6. According to the WA Department of Health, their Preliminary Health Risk Assessment "produced a list of 195 chemicals of concern. Some are known as suspected carcinogens and some have been reported to have possible developmental or reproductive toxicity[5]".
7. The Department of Health further add that "many of the chemicals do not have a health guideline value for oral intake[6]" meaning that there is not currently a safe limit defined in this country for these chemicals.
8. Internationally, many of the chemicals used in fracking operations have been banned, including BE-9, listed as a biocide which Buru Energy plan to use in their fracking operations in the Kimberley[7]. According to Halliburton, this chemical is Tributyltetradecylphosphonium chloride[8] which was recommended in Canada to be banned for use, processing, offer for sale, sale and importation into Canada[9]. The Canadian Government concluded that "The substance has been determined to be toxic under CEPA as it may enter the environment in quantity or concentration or under conditions that may have an immediate or long-term effect on the environment.[10]"It was also found to be harmful if swallowed, irritating to eyes and skin and toxic to aquatic organisms. This chemical has not been assessed by NICNAS, the Australian National Industrial Chemicals Notification and Assessment Scheme.

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[1] Government of Western Australia, Department of Mines and Petroleum, "Natural Gas from Shale and Tight Rocks - An overview of Western Australia's regulatory framework" February 2014

[2] Government of Western Australia, Department of Health's submission to the WA Parliamentary Inquiry into Unconventional Gas http://www.parliament.wa.gov.au/Parliament/commit.nsf/%28Evidence+Lookup+by+Com+ID%29/9D7EF06DA3B8A9C348257C40000FA2F2/$file/ev.fra.131004.sub.107.+wa+department+of+health.pdf

[3] See http://fracfocus.org/chemical-use/what-chemicals-are-used and also APPEA's website http://www.appea.com.au/oil-gas-explained/operation/hydraulic-fracturing-fraccing/

[4] http://www.abc.net.au/science/articles/2013/12/04/3861669.htm

[5] Government of Western Australia, Department of Health's submission to the WA Parliamentary Inquiry into Unconventional Gas http://www.parliament.wa.gov.au/Parliament/commit.nsf/%28Evidence+Lookup+by+Com+ID%29/9D7EF06DA3B8A9C348257C40000FA2F2/$file/ev.fra.131004.sub.107.+wa+department+of+health.pdf

[6] Ibid.

[7] Buru Energy Environmental Management Plan Summary, page 33 http://www.buruenergy.com/wp-content/uploads/Summary-EP-Tight-Gas-Pilot-Exploration-Program.pdf

[8] Material Safety Data Sheet on BE-9 http://www.santos.com/library/Halliburton%20MSDS%20-%20BE-9.pdf

[9] Canada's Final Regulatory Actions on this substance: http://archive.pic.int/ch/demo/embed/view_displayFRA.php?id=114

[10] Ibid.

9. APPEA's contention that "extensive layers of impermeable geological formations form efficient natural barriers between fresh water and gas resources" does not stand up to scrutiny. In the case of the Drover-01 well near Green Head in the State's Mid-west, the fractured Kockatea Shale separates the base of the aquifer from the fracking zone. The proponents groundwater study notes that "*The hydraulic properties along faults in the area are difficult to assess without specific investigations which have not been undertaken ... Faults that cut the strata are potential conduits for vertical movement of fluids.*" [11]
10. Advice from the Department of Water regarding this fracking proposal notes that: *Methane leakage arising from a poorly constructed well or well failure is hard to assess. Regulators must be reliant upon the information provided to them by the operators. It is suspected that adverse findings would not be reported as these may have negative effects on the ongoing viability of the project.*[12]
11. In this Drover-01 fracking well, fracking is planned at a depth of 1600metres (not 2-4km as claimed by APPEA). The vertical separation distance from the groundwater aquifer is less than 1000 metres.

Statement 2: **"Research in the US has found that 6% of fracking wells leak into ground water in their first year"**

1) There is extensive documented evidence of fracking well barrier failure and subsequent leakage (of gas and fracking chemicals) into groundwater. For example, the most recent comprehensive study of well failure and leakage rates in onshore gas development published in the Journal of Marine and Petroleum Geology has found well barrier or integrity failure rates of up to 75%.[13] The same report also found barrier or integrity failure in 6.7% of wells in the Marcellus Shale in Pennsylvania.
2) Assertions from the gas industry that fracking operations have not cuased contamination of aquifers are highly spurious and misleading. These statements rely on 1) a particular narrow definition of the word 'fracking' designed to exclude well casing failure, surface spills, wastewater re-injection and other common causes of groundwater contamination due to fracking processes.
3) This particular statement was based on findings by Professor Ingraffea from Cornell University – one of the world's leading research institutions in the area of petroleum geology.
4) We have reviewed the report and agree with APPEA to the extent that Professor Ingraffea's findings related to well barrier or casing integrity failure which does not *necessarily* mean that leakage into groundwater has occurred in all cases. On further consideration, a more accurate statement would perhaps be that "*6% of fracking wells leak into groundwater, surface water, soil or air in the first year*"
5) We reject the assertion from APPEA that this statement is an irresponsible over-statement of the environmental risks associated with fracking. We could have said that "*up to 75% of fracking wells fail*" – a statement which would have been fully supported by scientific evidence (see above). Instead, we chose to refer to shale gas wells in the USA which are the closest analogy to those that would be drilled in Western Australia in terms of geology and regulatory environment. We will employ best endeavors in future to ensure that no such confusion can arise as a result of any advertising material we produce.

Statement 3: "**Once our water is contaminated, it will be forever**"

1. Once fracking chemicals, hydrocarbons, or other foreign chemical material enter into underground water bodies, the chemical properties and constitution of these groundwater resources will be permanently and irreversibly altered.
2. Remediation of groundwater contamination does not restore groundwater to its original un-altered condition. In some cases it may make it useable again for particular purposes (even drinking) however it does not return to its unaltered state.

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[11] Drover-1 Groundwater Study (Rockwater Pty Ltd.)
[12] Advice to the EPA from DOW released via FOI
[13] Marine and Petroleum Geology, Volume 56, 2014 *Oil and gas wells and their integrity: Implications for shale and unconventional resource exploitation*, Davis et.al. http://www.sciencedirect.com/science/article/pii/S0264817214000609

3. Remediation measures do not exist for all of the chemicals and substances which could pollute groundwater.
4. Where remediation measures are available, they will be employed only to the extent that either a) finances allow or b) regulations dictate. It is likely that in the case of water contamination, it will be cheaper to provide alternative sources of uncontaminated water than to undertake groundwater remediation. Certainly, gas companies in USA[14] have decided rather than remediate contaminated groundwater, they will provide residents with external sources of drinking and cooking water to residents of gas fields there, and advised that if they wish to use their showers, they should ventilate the area in order to avoid methane accumulation leading to explosions.
5. In a recent meeting with CCWA, WA's Water Corporation (who have recently amended their monitoring regime to allow for testing for fracking chemicals in their Green Head and Leeman borefield) said that in the event of an aquifer contamination from fracking, they would be forced to abandon the source and either seek an alternate water source or build a desalination plant, at a cost of $10's of millions of dollars, as remediation would not be possible or practicable.
6. There are no regulatory requirements in Western Australia for contaminated groundwater to be remediated or returned to its pre-contaminated state. The Western Australian *Contaminated Sites Act* provides the main regulatory framework in this regard. The Act requires partial remediation in some instances to allow water to be used for particular purposes, and provides classification for various levels of contaminated sites that have restrictions applied to their use due to residual or un-remediated contamination. APPEA's suggestion that groundwater would be remediated to its pre-contaminated state is not supported by any of the Western Australian regulatory bodies, and is not reflected in any commitments made by gas fracking industry operators.

Thank you for the opportunity to respond to APPEA's complaints. I trust that the information we have provided is sufficient for you to dismiss the complaint.

Sincerely

Piers Verstegen

Director

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