fracking inquiry

From: Jason trevers [redacted]
Sent: Wednesday, 14 February 2018 1:08 AM
To: fracking inquiry
Cc: [redacted]
Subject: Response to the Final Report
Attachments: respnse to final draft of the fracking enquiary.docx

Dear Panel and Justice Pepper

There are photos being taken of people out the front of your public forums with people having black tape over there mouths as a sign that they feel they have not been heard. I also feel I have not been heard. My observation is that you have missed your target your main aim, to find out what the real risks are report back to the public and see if they can be mitigated to acceptable levels. After more than 1 year of running the inquiry and printing the final draft you are not certain as to how often a well is likely to leak or how often the ground water is likely to be contaminated. I and many others have given you lots of evidence literature peer reviewed scientific articles and data. The evidence and data from all these sources are consistent and say new wells leak at a rate of about 5% and older well leak more as they degrade 30 -50%. After a single weekend of research I was able to gather this information and share it with you on your first consultation round. You have a team of hand picked scientists and consultants and a large budget. You have been blind to the depth of scientific literature facts and evidence laid out before you. You are still being gullible to the industry and the rubbish propaganda figures they produce. Or are you intentionality siding with the industry and turning a blind eye to the mounding scientific evidence disputing the industry's claims, and your claims of being independent are sham. Personally I do not believe the later to be true but I am confused. I wonder if there is a conflict of interest most of the panel has a background from the industry sector?

As Pennsylvania has the worlds toughest regulations on the fracking industry and uses industry best practice and latest technology, it would be a great test case. I have a request to make at the 11th hour that you do some proper research and find certainty and clarity of the risks.

1 Contact Pennsylvania Department of Environment Protections and go to there website. Find out how many wells are leaking through their infringement reports. Look at how old they are what category they are built too percentage rates of failure. Also look for water contamination rates how the water was contaminated.

2 Contact Cornell University get a copy of Ingraffea's peer reviewed paper and see if he has continued his Data mining and mapping of PDEP data. This could save time though it is always good to go to the source.

3 Contact CSIRO and ask them why there figures do not match world wide data sets and peer reviewed papers.

4 Make the amended adjustments to your final report.

5 Contact me by Friday and convince me that you are actually committed to achieving your aim of informing the public of the actual risks. If not I will take my findings and evidence to the media local national international and social media. It is a hot topic I'm sure it will create allot of interest.

Dear Panel I was extremely disappointed to see in your interim report that you chose to print APPEA's statistics as a believable fact and reality when you where given so much evidence to say APPEA's leakage rates of 0.004% 1 in 20,000 is not close to reality. That is a 1000 fold differential to what world wide data sets, scientifically peer reviewed papers that you where given as submissions. When there is that bigger differential in the facts some one is telling serious porkies. What would be the motive of APPEA to tell you lies? What would be the motive of dozens of scientists researches academics to tell lies? What are the risks and rewards APPEA as a reward might get the green light as having such a clean record risk if they where found to be lying they would lose no credibility as they have non gas industry is often caught out misrepresenting facts. What would the scientist reward risk be? I'm not sure what reward they would get, but they would risk their credibility. Did you look into the sources of where these statistics came from and check their references and see how data the was obtained used and interpreted? I had a look APPEA got there statistics from Society of Petroleum and Engineers. I was unable to access the information APPEA where referring too but I found documents produces buy SPE referring to industry data showing Zone-al isolation failure Leaking at 35%. (refer to the last video I sent you last night called Lethal Gas Oil wells.)

Here is my response to your interim report.

Well integrity failure has been a continual problem for the industry and a couple of extra layers of cement and steel in the upper most section of the well, scientifically had made no difference at all to well failure rates. The rest of the world is averaging between 5-7% at best (1.9% where there is insufficient data) well integrity issues.

But some how APPEA convince the *Scientific Enquiry into Fracking* to believe their delusional statistics (0.004% 1 in 25,000 well integrity failure compared to 5% 1in 20) that are coming from an industry that is well known to be unregulated or under regulated.

After giving you these rubbish figures APPEA say "and is most commonly attributed to slow leakage of methane around the external casing and can be re-mediated by additional cementing and pressure testing." This is also complete rubbish and by you printing it in your report is demonstrates that you have no idea of the reality of the issues or problems. Gas and other contaminates are migrating from the shale beds through water the aquifer(s) to the surface. The only place cement can be placed is on the surface of the well head. A band aid approach to make the well

appear not to be failing. The well may be failing from superficial layers of shale deposits and may not fail a pressure test.

The the reality is failing well will continue to get worse loosened cement particles sand blast the path way making it bigger exposing the corroding steel. The gas will then follow the path of least resistance through the water aquifer and find another path to the surface possibly the next water bore. To the best of my knowledge a leaking well can not be fixed and eventually every well will fail.

http://www.refine.org.uk/media/sites/researchwebsites/1refine/papers/Davies%20et%20al.,%20Well%20integrity,%202014.pdf

Refine.Org.uk published an article titled "*Oil and Gas Wells and their Integrity Implications for Shale and Unconventional Resource Exploration*."

This peer reviewed article written by 9 scientists from 5 different university's or institutes, compiled from 25 reliable data sets from around the world including Australia.

The Data sets of more than 4 million on shore hydro carbon wells varied considerably from 1.9% to 75% instances of well integrity failure.

APPEA's data must have missed this extensive study. Another well documented fact is that the rate of well failures increases with age steel and cement degradation is an unsolved problem. 30 -50% of wells are failing at the end of their life. When a well is capped or plugged it will continue to leak on the outside layer where degradation continues rapidly eventually the steel and cement will decay completely leaving an large open path way from the shale to our water and our air. One could

use a corrosion resistant resin polymer that would be flexible instead of cement but it might not be economically viable.

https://www.youtube.com/watch?v=Dxis-vYGM_M

This talk shows a lot of data proving that in Pennsylvania where the worlds toughest regulations are being used, and the most modern well construction methods are being used, Wells are leaking more not less than the older wells. Also that hundreds of peoples water wells have been polluted, and a prediction of thousands of wells likely to be polluted. This relevant scientific data contradicts your statement on Page 6 “These issues have been addressed overseas by implementing strict regulatory controls and technological improvements to reduce the risk of detrimental impacts form shale gas development.”

In my last presentation I was in, I quoted Dr Anthony Ingraffea’s statistics of well failure and submitted a couple of his u tube presentation links here is what I sent you. It appears that you did not see it or failed to see that it is current and relevant scientific data and highly regarded literature.

So I was greatly disappointed again to see in the final Draft that none of my work had been integrated in to the final Draft. The facts, the statistics, the peer reviewed articles, world wide data sets, industry data, data from Pennsylvania Department Environment Protection and Environmental agency's. It was given no credibility no weight not even analysed and assessed for it’s credibility.

The Independent Panel charged with the responsibility to assess the risks and report to the public decide to side step this integral issue and appoint the Commonwealth Scientific and Industrial Research Organisation. Wikipedia say the Chief role of CSIRO is to improve the economic and social performance of industry. CSIRO in recent times has had $115,000,000 budget cut. It is not about to produce information statistics that are contrary to the will of the Commonwealth and economy. The same

commonwealth government that is saying to NT Frack the territory or you not get your GST share. So it is no surprise that CSIRO's statistics do not match world wide data and credible peer reviewed scientific articles, 0.1% 1 in 1000 well integrity issues compared to 5% 1 in 20 a 50 fold differential. CSIRO also failed to acknowledge a well documented problem in the industry that the wells failure rate increases as they degrade over time. CSIRO found some study that seemed to ascertain that cement should remain intact for 1000 years! CSIRO used statistics from unregulated gas companies. I'm sure the statistics that the CSIRO used did not show the collapsed well at dingo gas field or the falsely fracked well at Lucy creek where the casing was salvaged after a Frack went badly, or the product water from palm valley that had been dumped in large quantities in a local salt lake. CSIRO relied on information from the gas industry alone in preticular a report Stone et al. The oil and gas industry run 2 sets of statistics one for the public regulators fracking inquiry's and one of the actual factual statistics that is kept within industry circles.

Justice Pepper in my presentation to the panel asked me So you do not believe the CSIRO to be independent? Well my answer is no on 4 accounts:

*1 buy the misleading statistics being provided that do match any of the research or findings that I have found to be credible. I have not come across 1 peer reviewed article in the CSIRO's research.

*2 They are reliant on the funding they receive from the commonwealth.

*3 It is in their name Commonwealth Scientific Industrial Research Organisation.

*4 CSIRO are by nature closely associated with the Oil and gas industry they exist to support industry and economy. When the CSIRO call their buddies at the Oil and Gas industry asking for statistics for well integrity for the fracking inquiry, the Oil and gas industry had a choice supply the real figures or the propaganda figures designed for this purpose. I find it worrying that the panel unquestionably place so much respect and credit in CSIRO work. When the CSIRO's findings and statistics for well integrity failures are 50 fold lower than multiple Peer reviewed articles reliable data sets from 4 million wells across the world, industry Data and statistics from Pennsylvania Department of environment. As with APPEA's unbelievable statistics in the Interim Report, Panel take the CSIRO's findings as fact and do not look at or analyse the credibility of either side.

When I questioned the panel about The difference in statistics from the CSIRO and the scientific literature I have provided I was told that it is like comparing apples and pairs there is a lot of data out containing statistics of single failure and that is not an issue as the gas is contained by the remaining protective barriers. The Panel sent ACIL Allen back to the drawing board when they had concerns about an aspect of his report. Why not give the CSIRO the peer reviewed articles and videos that contradict their findings and say please explain?

Page 54 of the Final Draft states:

CSIRO (Table 5.1),

largely using data sets from the US, found that the rate of well integrity failures that have the potential to cause environmental contamination is in the order of 0.1%, with several studies finding no well integrity failures, while the rate for a single well barrier failure was in the order of 1-10%.

I find this bizarre as it would be difficult to test for a single barrier failure and why would you bother if a well is pressure tested to be OK. Why would the industry and the environmental departments keep records of single well failure? This showed me that the panel paid a lot more time and attention to the CSIRO's report than the information I had given them. Dr Anthony Ingraffea is a world renowned authority on the topic of fracking with a PHD in rock fracture mechanics and has worked at Cornell University for 4 decades during his time there he worked as a consultant and a researcher for the oil and gas industry for decades. In his utube presentation Lethal gas Oil wells

https://www.youtube.com/watch?v=Dxis-vYGM_M

(which I submitted to the Panel during consultation after Interim report was released) Ingraffea presents the information that he had Peer reviewed through the Cornell University (the first peer reviewed paper on Well integrity). The leaks that he was researching from industry data and Pennsylvania Department of Environment, where not single barrier failure. Industry terminology for a leaky well sustained casing Pressure loss, zone-al isolation failure vent flow or gas migration. Ingraffea was clear that his study was done on wells leaking methane into the atmosphere. Within his presentation Ingraffea presented data sheets from Society Petroleum Engineers

(the same place where APPEA got their well failure rate statistics of 0.004) they surveyed 340,000 wells in Canada and found Modern deviated well failed at a much greater rate than conventional wells. He had another 2 separate articles from SPE (the place where APPEA got statistics of 0.004% well integrity failure) showing a well failure rate of 35% one was an average of 1.8million wells, the other showing Well degradation leaking more as they aged. Ingraffea then presented his findings when he went to the Pennsylvania Department of Environment and created a data base of over 75,000 inspection and violation records for over 41,000 oil and gas wells drilled in Pennsylvania. Mined the Data to identify all wells with well-bore integrity problems. He found unconventional wells leaked more than conventional at a rate of about 13%. Wells post 2009 leaked more than pre 2009, the rate went from 12% - 13% even in Pennsylvania with the toughest regulations in the world and leading edge technology. Confirmed through the Pennsylvania Department of Environment after drilling 6800 wells 100's of families have had their drinking water contaminated. Based on the finding of the final Draft I am certain that if I had of asked the panel in my presentation reviewing the final draft what the well leakage rates where or the amount of families that had lose their drinking water in Pennsylvania no one would have known even though I had provided them the information.

Lets have a brief look at an article I sent the Panel during the interim report.
http://www.refine.org.uk/media/sites/researchwebsites/1refine/papers/Davies%20et%20al.,%20Well%20integrity,%202014.pdf

This is a heavy weight scientific peer reviewed article compiled from 9 scientists from 5 different institutions from UK and America. Within it it refers to a mountain of references containing other peer reviewed scientific articles, findings and reliable Data from a wide variety of sources. The resulst are varied but show well integrity failing between 1.9 and 75%. As the study contains information for conventional and non-conventional wells, it can be assumed that the lower range of 1.9% leakage would be for conventional wells as conventional wells are well documented as having less well integrity issues than unconventional regardless of age. Again this article was read archived and ignored. NO questions where asked when CSIRO produced the figures of 0.1 well failure rate?

Lets look at water contamination!

It is the Panels view that if a well dose fail that only the methane gas will contaminate the water and as it is a flammable non toxic gas it is more of a greenhouse gas issue than an water contamination issue. Granted I have seen industry based evidence suggesting that methane is the only contaminate that escapes when a wells integrity is lost. But I am not convinced highly toxic product water under great pressure from the shale bed gets pushed 3-4kms up a 100mm vertical production pipe to the surface in significant quantities (around 4,500 litres per day per well). When a wells integrity fails it cant be fixed and it degrades and leaks more at what point dose the migrating path way of the gas get large enough to carry product water? Product water seems to take the path of least resistance up the production pipe what happens when the well is closed for maintenance or when the well is decommissioned and abandoned? It is the panels view that ground water contamination risk is low and more likely to happen from the surface storage ponds, pipes or human error on the surface. In my first presentation to the panel I submitted http://ec.europa.eu/environment/integration/energy/pdf/fracking%20study.pdf A detailed document of the study of the risks of fracking undertaken for the European Commission. A great recourse for the panel so they do not have to recreate the wheel. There findings found the risk to ground and surface water high. Again this document was archived and disregarded.

Not a single gas field has completed it's life span without polluting the surface or ground water. There have been countless instances where the oil and gas industry have polluted ground and surface water some have been reported and many have not. For example Palm Valley dumped product water illegally in Lake Lewis for years. Well degradation is a well documented fact of the oil and gas industry the older wells get the more often and the more they leak. But not one that the panel like to acknowledge. The older a gas field gets the more it is likely to leak risking water contamination and green house gas release. It is industry best practice to use tanks instead of liners but you have not recommend to ban the use of liner ponds.`

As members of the panel you will all be well aware of the process and construction of a well you would know it is imposable to drill a well without contaminating the local aquifers. Drilling the well contaminates the aquifer with the local soil contaminates (potentially containing uranium) and drilling mud which is pumped at pressure in large quantities into the aquifers as the initial well is drilled. Drilling mud contains chemicals toxic to human and animal health. More layers of steel and cement means larger drill holes which means more contamination to the aquifer. Multi wells compounds the local contamination to the aquifer 10 fold. Multiple layers of steel and cement are added as a protection around the shallow aquifer but often the deeper aquifers are not protected by additional layers of cement and steel.

Not only are there often multiple layers of aquifers there are also multiple layers of shale shallower than the target layers containing pressurised hydrocarbon gasses. While the production casing is being drilled the hydro carbons have free access to lower unprotected aquifers. CSIRO did a $6.25M study into the great artesian basin GABWRA taking 2.5 years to complete. There finding demonstrates that ground water has a greater potential to move vertically between aquifers than first thought. It can not be assumed that the deeper aquifers and superficial aquifers are not connected.

Water use figures are greatly underestimated. The figure of 1,000 -1,200 well for three companies over 25years is extremely low. In Marcellious basin they drill 2,000 a year. In Queensland between 2013 and 2014 1634 wells where drilled in a single year. The Beataloo basin is said to be Australia's richest shale deposit containing 70% of the territory harvest-able shale gas at an estimated 169Tcf. 1,200 well have the capacity to harvest 2,4% of the estimated 169Tcf over 25 years. These companies are not well known for sustainable harvesting.

Another fracking fact that the panel have ignored is the fact the industry commonly refrack the wells. Well access gas that over millions of years has made it into fine cracks the fracking makes this available gas accessible. Commonly after the first year or two of good production the production rate decreases exponentially. To increse the performance of a poorly performing well it is refracked often with more water and more chemicals and more pressure than the initial frack. It is not uncommon for a well to be refracked 10 times in its life I have heard of well in North Dakota being refracked 30 times. This seriously alters the water use and waste water management figures

Greenhouse gas release in the form of methane which is a potent green house gas it has 86% more atmospheric warming capacity than carbon over 20 years. If 3.3 % of the methane is leaked it is more harmful to global warming than burning coal.
http://www.atkinson.cornell.edu/Assets/ACSF/docs/attachments/Howarth-EtAl-2011.pdf

This is the first peer reviewed article on fugitive methane emissions from the unconventional gas production. It concludes that an average gas well will have fugitive gas emissions of 3.6 to 7.9% of total production over it's life. The panel using industry data unsurprisingly have significantly lower figures for fugitive emissions as well of 1.6 -1.9% emissions for the life time of the well.
https://youtu.be/Jx-jWcRzndw Shows evidence of large methane emissions in Queensland. North Dakota has been affected by large scale fracking it used to be pristine wilderness like here now it is an polluted industrialised landscape. I have seen before and after photos before Fracking crystal clear sky's as far as the eye can see, after fracking a constant thick haze from all the venting and flaring methane. Marli Banks in her presentation after the interim report showed a NASSA photo of America from space at night the light from the flaring methane burning in sparely populated north Dakota was brighter than large city's in central and Southern America. How the industry can claim less than 2% Methane fugitive emissions over the life time of a well is ludicrous. How the panel can

believe these figures after being presented with all the evidence to the contrary is scary and greatly concerning. The Panel on page 30 of the summary of the final draft say that the application of available emission reduction technology's can reduce methane emissions by 31% using polly pipes is one of these technologies. The Tennant Creek Mt Isa pipe line is currently being built with steel considered an legacy issue as it by design will leak, with the approval of our misinformed and under informed government.

Table 5.1:

Summary of published well integrity data specific to shale gas resource

On page 18 of the of the interim report under Methodology and Assessment of risk it is written Having regard to the most current and relevant Scientific Literature (and not, as is too often the case out of date studies from other jurisdictions) the Panel MUST identify collect analyse and distil the available scientific evidence concerning each risk and issues it has identified.

Honestly panel how well do you think you have gone in following your own methodology in assessing the risks? What was your process? I have been assured that my work has been read and documented in your directory. Who read it? How was it analysed? How was it distilled? It seems that more time and effort has been invested in to updating your data base than actually finding out what the risks really are via distilling the evidence finding the actual facts? Through the interim report and final draft the panel have shown complete bias and favouritism towards the gas industry regardless of scientific merit or creditability. There has been no effort to distil the truth between the 2 opposing sides when there is 1000 or 50 fold differential between them.

On page 4 of the interim report draft Purpose of the Inquiry. The Panel is required to assess and determine the nature and extent at the risks associated with hydraulic fracturing of onshore unconventional shale reserves and it's associated activities on the environment. This is first and most important step of the inquiry. More than 1 year in to the inquiry with final draft written and weeks to the dead line the panel are not sure what the risks are. It should have been your first step see what the industry is saying see what the environmental groups are saying and find the evidence. Go to the source environmental protection agencies in America and the world look for environmental violation reports. Find out how many wells have been drilled how many wells have been leaking how often water contamination has occurred. When water contamination has occurred how did it happen from the surface or from a leaking well? How old was the well what category was the well built to? What was the regulating regime? Pennsylvania would be a perfect county to inspect as it has the most stringent regulations in the world using industry best practice procedures. I handed this information to you on a platter on the 17th of August 2017 in the Ingraffea video mentioned above. It was watched archived and disregarded. In the presentation Ingraffea mentioned that the information was publicly available on the Pennsylvania Department of Environmental Protections website. He also mentions that the information he was presenting in 2013 was about be Peer reviewed through the Cornell University. To my mind that sound like some great leads for an large scale inquiry.

Conclusion The Scientific Inquiry into Hydraulic Fracturing can not be relied upon to inform the public to the risks and facts of fracking as they have been blind to see it when repeatedly presented before them. Instead they have shown unquestionable bias and favouritism towards the oil and gas industry. They have ignored solid scientific evidence and accepted the industry's ridiculous claims without scrutiny. Judging from the final draft the panel do no know what the risks really are.