

## **Submission to:**

### **WA Scientific Inquiry into Hydraulic Fracture Stimulation in WA 2017**

#### **1. Introduction**

My name is Carmelo Sgro and I am a landholder and concerned community member residing in Bullsbrook in the City of Swan. I hold qualifications in Applied Sciences (Laboratory Techniques), BSc (Population, Resources & Technology) and Education (Grad DipEd).

I have been motivated to make this submission due to the overwhelming evidence against unconventional gas extraction and my concern for the health and welfare of West Australians, the effects on our environment, groundwater and the negative impacts on landholders including the loss of agricultural productivity due to the development of unconventional gas fields. My own small acreage property is also covered by such a mining lease. Therefore I have concerns for the health of my family and the value of our land as this will be negatively affected should unconventional gas extraction proceed in our area.

The experience of farmers and landholders in Queensland where unconventional gas extraction is well underway is enough to inform the community and government that this should not be allowed in any guise in Western Australia. The argument is even more convincing if we examine the effects of unconventional gas extraction on communities in the US states of Oklahoma and Texas.

In preparing this submission I have used a number of credible sources to support my argument that unconventional gas extraction, which includes hydraulic fracture stimulation, should be permanently banned in Western Australia.

#### **2. Summary of Key Points**

- Evidence suggests that there are serious health effects from air pollution associated with fracking.
- Our precious groundwater is at risk from activities associated with fracking.
- There is solid evidence to support an increase in seismicity from activities associated with fracking.
- There is a negative effect on property values due to proximity to gas wells and the rights of landowners suffer in relation to denying access, getting loans, insurance and in being lumbered with rehabilitating land affect by fracking activities.

#### **3. Effects on Health due to Air Pollution from Fracking**

A growing body of new research points to the health effects from unconventional oil and gas development and fracking in particular. Five health effects have been identified from fracking related air pollution alone. These are: respiratory problems, birth defects, blood disorders, cancer and nervous system impacts. The following is from the press release on the report - *Fracking Fumes: Air Pollution from Hydraulic Fracturing Threatens Public Health and Communities* referenced below.

**Respiratory Problems:** Impacts can include asthma attacks, shortness of breath, difficulty breathing and lung disease. Levels of pollutants high enough to cause respiratory problems, particularly for vulnerable populations such as children, have been found both close to fracking sites and in regions with intense oil and gas activity. Workers have been found to be at risk of permanent lung damage caused by exposure to silica fracking sand.

**Nervous System Impacts:** Exposure to these pollutants, such as VOCs and hydrogen sulphide, can cause neurological problems ranging from dizziness and headaches to seizures and loss of consciousness. Multiple studies have measured benzene levels close to fracking sites that are higher than the thresholds set to protect people from these impacts.

**Birth Defects & Harm to the Developing Foetus:** A number of VOCs and polycyclic aromatic hydrocarbons (PAHs) have been found to interfere with foetal and child development resulting in harm to the developing heart, brain and nervous system. Because even short-term exposures to these pollutants at critical moments of development can result in long-lasting harm, health experts have identified this as a threat for communities living in close proximity to fracking sites.

**Blood Disorders:** The levels of benzene measured in multiple studies were high enough to raise concerns about permanent damage to blood-forming organs, resulting in harm to bone marrow and anaemia, if there were repeated or chronic exposures.

**Cancer:** Cancer-causing pollutants like benzene, formaldehyde, diesel particulates and PAHs, have also been found in the air near fracking sites. Repeated or chronic exposures to these pollutants can cause an increased risk of cancer.

(Tanja Srebotnjak, Miriam Rotkin-Ellman, December 2014)

In south east Queensland new research has shown a link between the number of hospital admissions and a massive increase in air pollution most of which can be attributed to the unconventional gas industry.

Between 2007 and 2014 “.....acute circulatory admissions increased 133% and acute respiratory admissions increased 142% while at the same time coal seam gas industry emissions increased substantially” and “As acknowledged by the Darling Downs Public Health Unit (DDPHU) health impacts associated with Coal Seam Gas have been a major community concern. Since 2008 DDPHU has received a variety of health complaints related to this industry (including headaches, sore eyes, nosebleeds, rashes, respiratory symptoms, and paraesthesia).”

Over this period “..... nitrogen oxides went up 489% to 10,048 tonnes; carbon monoxide was up 800% to 6800t; particulate matter was up 6000% to 1926t; volatile organic compounds went up 337% to 670t and formaldehyde went up from 12 kg to over 160t.” (Geraldyn McCarron, 2018)

Whilst this correlation cannot be ignored, since no health impact assessment is required for gas fracking under WA legislation, and no baseline health studies are required in communities before fracking is approved, it makes it very difficult to explore connections between fracking and any future health impacts, should such impacts occur. The health effects and costs to individuals, communities and the government will be felt when it is too late.

More on the harms of fracking can be found here: <http://concernedhealthny.org/health-impacts-of-shale-gas-extraction-and-production/>

#### 4. Groundwater Pollution from Fracking

Aquifers can be contaminated by fracking through water seeping from leaking wells; from faults induced by fracking; from surface spills of produced water involved in the fracking process or contaminated water from the gas source per se.

The following is courtesy of Jody Atkinson's submission to the enquiry and forms part of my own:

In addition to water pollution from well integrity failure, water sources can also be demonstrated to have been contaminated from legal release of "treated" waste water, illegal dumping of waste waters into rivers and sewers, rock formations fracturing contrary to prediction, spills and leaks from holding ponds, pipelines and tankers in normal operations and spills due to uncommon but expected flood events. Research and monitoring are hampered by industry secrecy and compliance issues. Regulation and "best practice" has not prevented these harms.

"Substantial evidence shows that drilling and fracking activities, and associated wastewater disposal practices, inherently threaten groundwater and have polluted drinking water sources, as confirmed by the U.S. Environmental Protection Agency's 2016 final report on the impacts of fracking on the nation's drinking water. Repudiating industry claims of risk-free fracking, studies from across the United States present irrefutable evidence that groundwater contamination occurs as a result of fracking activities and is more likely to occur close to well pads" (Concerned Health Professionals of New York, 2018).

In their COMPENDIUM OF SCIENTIFIC, MEDICAL, AND MEDIA FINDINGS DEMONSTRATING RISKS AND HARMS OF FRACKING (UNCONVENTIONAL GAS AND OIL EXTRACTION, The Concerned Health Professionals of New York using more than 1300 sources including peer reviewed academic research papers, government reports and investigative media reports, document the many hundreds of incidents of ground water contamination from fracking operations. They have demonstrated that water contamination occurs at every stage of the process, that spills and leakages whether accidental or illegal are frequent and that regulation cannot and has not prevented this from happening.

A small sample of the documented evidence includes:

- groundwater depletion in Texas (Collins, 2017),
- illegal disposal into rivers and streams including those that feed drinking water sources for communities and cities (Liberatore, 2017; Hopey, 2014),
- "clear evidence of direct water contamination from fracking" in North Dakota from accidental spills affecting streams and soils where inorganic pollutants remain at persistently high levels after more than 4 years (Nicholas School of the Environment, Duke University, 2016)
- a regulatory "mix-up" that allowed toxic fracking wastewater to be injected into drinking water sources in California (Sommer, 2017),
- High levels of "fracking-related chemicals that include radium, barium, strontium, and chloride, as well as endocrine-disrupting and carcinogenic compounds" in river sediments where "treated" fracking wastewater had been legally released, (Burgos, 2017; Johnston, 2017),
- fracking related contaminants (including methane, benzene, toluene, salts, organic chemicals and arsenic) in many drinking water sources near fracking operations in the US often in levels "high enough to affect human health" (McMahon, 2017; Hill, 2017; U.S. Agency for Toxic Substances and Disease Registry, 2016; Banerjee, 2016; Jordan, 2016; CBS/AP 2013),
- unacceptably high rates of surface spills of up to 16% of wells in any 1 year and approximately 5% of all fracking waste water (Patterson, 2017; Kuznetz, 2017; Konkell, 2016),
- plumes of fracking chemicals and wastewaters from overturned tanks, inundated wells and swamped waste ponds entering rivers and streams during flood events in Texas (Schladen, 2016)
- A study of more than 44 000 gas wells in the US found vertical fractures extend upwards to a

much greater extent than assumed (more than 2000 feet) posing a much greater risk to groundwater aquifers than industry assumptions. (Jackson, 2015)

- 20% of 11,000 public drinking water wells in California are contaminated with toxic contaminants affecting 18% of the state's population. The contaminants were those commonly used in fracking. The study did not examine whether the contaminants came directly from oil and gas extraction or from the fracking waste water used to irrigate agricultural crops although farm irrigation was demonstrated to leach into groundwater.
- Widespread drinking water contamination in Northern Texas from fracking the Barnett Shale region including 19 hydrocarbons, including benzene (carcinogen) and toluene (reproductive toxicant) and "strikingly high" levels of ten metals (Hildenbrand, 2015; Fontenot, 2013)
- Investigations over the last decade in the US by the Environmental Integrity Project have found that prohibited additives continue to be used in fracking operations, despite denials from industry. Suppliers, including Halliburton continue to market and supply prohibited additives to gas companies for use in fracking (Greene, 2015)
- An international team of researchers have found that treatment of fracking waste water can actually make it more toxic as chemicals used to "treat" the water (e.g. chlorine and bromine) react with carbon-based compounds creating highly toxic byproducts. (European Commission, 2015). Other studies concur (Parker 2014).
- Numerous studies note that research into the area of water risk is hampered by industry secrecy whereby chemical formulations of fracking fluids are protected as proprietary business information. The range of possible additives is large so non-disclosure seriously impedes independent monitoring or research and makes proof of responsibility for harm almost impossible. (Stringfellow, 2014; Robinson, 2014; Sadasivam, 2014; US Government Accountability Office, 2014).
- Industry secrecy also hampers research as many landowners who claim their water has been damaged by fracking are offered out of court cash settlements or property buyouts which come with non-disclosure agreements preventing the landowners from reporting or commenting on the contamination and allowing the industry to continue to claim that no harm has been caused. (Efsthathiou, 2013; Environmental Protection Agency, 1987)
- A Stanford University research team working in the Pavillion gas basin in Wyoming documented that fracking in shallow layers of bedrock, including those that serve as drinking water aquifers, is not uncommon. This finding overturns the industry claim that oil and gas deposits targeted by fracking operations are located at much greater depths than underground drinking water sources and are isolated from them by hundreds of feet of impermeable rock. (Banerjee, 2014)
- At least half of known fracking related spills in Pennsylvania were not reported by the companies despite state law requiring them to proactively seek and report them. The inquiry concluded it is likely a large percentage of actual spills remain unreported. (Hamill, 2014)
- Fracking fluid and fracking wastewater can mobilize previously deposited chemical contaminants in soil particles in ways that could potentially exacerbate the impacts of fracking fluid spills or leaks. The Cornell University research team concluded that, by interfering with the ability of soil to bond to and sequester pollutants such as heavy metals, fracking fluids may release from soils an additional repository of contaminants that could migrate into groundwater. (Sang, 2014)
- The Pennsylvania Department of Environmental Protection determined that fracking wastewater that had leaked from a storage pit contaminated groundwater and rendered a natural spring used for drinking water in Greene County undrinkable. (Niedbala, 2018)
- In Arkansas, researchers found that water withdrawals for fracking operations can deplete streams, threaten drinking water supplies, damage aquatic life, and impact recreation. (American Chemical Society, 2018; Enterkin, 2018)

In Pennsylvania, the closer you live to a well that is used to hydraulically fracture underground shale for natural gas, the more likely it is that your drinking water is contaminated with methane. (Proceedings of the National Academy of Sciences USA, July 2013).

The experience in Pennsylvania of methane contaminated groundwater is now deemed serious enough that it may sound the end of the gas fracking boom. (Fischetti, 2013). In Queensland similar findings of methane in ground water have been made.

Vogwill R., 2017 makes an excellent case for what we can expect the environmental risks to our ground water to be in Western Australia. In WA we have every opportunity of preventing harm to our most precious natural resource if the correct decisions are made now. I call upon the WA government to make the right decision.

## **5. Increased threat of seismic activity from fracking and wastewater re-injection**

There is no doubt that there are unintended consequences of dealing with the waste water produced from the sinking of wells for hydraulic fracture stimulation. One of these consequences is an increase in seismic activity ranging from minor tremors to quite strong earthquakes. It is interesting that homeowners in Oklahoma can now sue the oil and gas industry for injuries and property damage arising from earthquakes.

<https://www.nytimes.com/2015/07/01/us/oklahoma-court-rules-homeowners-can-sue-oil-companies-over-quakes.html>

Although it has been debated for many years it has now been proven that there is a direct link between fracking and an increase in earthquake activity. Increased seismic activity in Oklahoma has been directly correlated by the Oklahoma Geological Survey to the injection of produced water into disposal wells.

*“Based on observed seismicity rates and geographical patterns of migrating seismicity in Oklahoma, which follow major oil and gas plays with large amounts of produced water, these rates and patterns of seismicity are very unlikely to represent a naturally occurring rate change and process. The rate of magnitude 3+ earthquakes has increased from 1 ½ per year prior to 2008 to the current average rate of 2 ½ per day, a rate that is approximately 600 times the historical background. The Oklahoma Geological Survey (OGS) considers it very likely that the majority of recent earthquakes, particularly those in central and north central Oklahoma, are triggered by the injection of produced water in disposal wells. The primary source for suspected triggered seismicity is not from hydraulic fracturing, but from the injection/disposal of water associated with oil and gas production.”* Andrews R.D, Holland, A. Dr. (2015)

Also see:

<http://abcnews.go.com/US/oklahoma-admits-oil-gas-industry-responsible-dramatic-rise/story?id=30502267>

It is not isolated to one country's geology. The problem has also been experienced in other parts of the world where fracking has taken place. Hydraulic fracturing in western Canada has also led to increased seismic activity and this seismicity can last for months, (Xuewei Bao, David W. Eaton, *Science* 17 Nov 2016).

Another example is in the Sichuan Basin in China where shale-gas hydraulic fracturing has also been correlated with a high number of earthquakes. (Lei X1, Huang D2, Su J3, Jiang G2, Wang X4, Wang H2, Guo X4, Fu H5, *Sci Rep.* 2017 Aug 11).

Research conducted by the Victorian government also conceded that there can be induced seismic activity associated with fracking. (Research Paper, Unconventional Gas: Coal Seam Gas, Shale Gas

and Tight Gas, (Dr Catriona Ross, Paige Darby No. 2, December 2013, Research Service, Parliamentary Library, Department of Parliamentary Services).

In 2015, the New York State Department of Environmental Conservation stated ‘there is a risk that well integrity can fail, especially over time, and questions have arisen about whether high-volume hydraulic fracturing can cause seismic changes which could potentially result in fracturing fluid migration through abandoned wells or existing fissures and faults. Thus, high-volume hydraulic fracturing could result in significant adverse impacts to water resources from well construction and fracturing fluid migration.’ (New York State Department of Environmental Conservation. “*Final supplemental generic environmental impact statement on the oil, gas and solution mining regulatory program: regulatory program for horizontal drilling and high-volume hydraulic fracturing to develop the Marcellus Shale and other low-permeability gas reservoirs, findings statement.*” (2015, June 30))

Increased seismicity can affect well integrity leading to contamination of ground water and leakage of uncontrolled hydrocarbons to the surface. Increased seismicity will also have an impact on local communities as demonstrated by the Oklahoma experience.

## **6. Property Values and the Rights of Landowners**

It is not a stretch to see that properties affected in WA with wells on the land or in close proximity to them will lose value. Who wants to live close to wells that may damage their health, contaminate their ground water or drinking water, and affect their ability to grow crops for home or sale, pollute the air and visually pollute the landscape? I do not and neither will anyone else. Property values will undoubtedly suffer and people may be forced to move, if they can, or suffer because they cannot afford to. A study conducted by Duke University in December 2015 found that home values decline steeply when fracking occurs in neighbourhoods that use well water.

The following is courtesy of Jody Atkinson’s submission to the enquiry and forms part of my own:

The development of the onshore unconventional gas industry puts unacceptable burden and risk onto land owners. We face grave risks to our health and financial security and disruption to our lives, businesses and community.

Onshore unconventional gas devalues land and can make it unsaleable at any price. This has been demonstrated in Australia (Rabobank, 2011; Robertson, 2016,) as well as internationally (Radow, 2014; Daily Real Estate News, 2013; Conlin, 2013; Downing, 2013). It has been demonstrated in banks refusal to loan against the value of land, due to the presence of gas wells (Commonwealth Bank in 2016) and in the many personal accounts of landowners in Australia and the United States. The fact that banks are reluctant to loan due to uncertainty or devaluation of gas field affected land impacts not just farmers needing crop loans, as was the case with Commonwealth Bank in 2016, but anyone wanting to sell land affected by proximity to gas wells - most buyers will need a loan where the value of the land is the collateral (Radow, 2014; Peters, 2013). In the US at least 8 local and national banks (as of 2011) will no longer issue mortgages on property subject to a gas lease. (Urbina, 2011).

Land owners of gas field affected properties in Queensland are finding their ability to get insurance is affected by gas production on or close to their properties. Insurance companies have refused to insure against risks associated with unconventional gas extraction, both in Australia and in the USA. In the USA, homeowners can be confronted with uninsurable property damage for activities that they cannot control (New York State Bar Association Journal, 2011; Radow 2014).

In the north west of NSW, farmers have been refused insurance cover for risks and contamination associated with unconventional gas extraction (Caskey, 2015).

Landholders are concerned they may be liable for any negative impacts caused by hydraulic fracturing. In 2014, the NSW Chief Scientist released a report, which concluded that the CSG industry was markedly under-insured and that landholders were likely to bear a substantial risk as a result (NSW Chief Scientist and Engineer, 2014).

Meat and Livestock Australia has advised there is a genuine risk that landholders may ultimately be responsible for liabilities arising from unconventional gas activities if they lead to personal injury, property damage, or contamination (Meat and Livestock Australia, 2014).

The Rural Industries Research and Development Corporation cite a case study in Queensland where a landowner was advised by their supply chain partners that they would be liable for any contamination caused by coal seam gas activities. Neither the CSG Company nor the insurer would agree to indemnify the landholder against that risk (Clarke, M, 2013). Legal advice indicated:

- Gas companies are refusing to include provisions in access agreements to accept liability for any contamination that may occur.
- Gas companies in Australia are under-insured and do not have adequate insurance to cover the types of risks that CSG activities bring.
- Some graziers have reported that insurers have examined the risk to them of unconventional gas contamination and found it too high to offer insurance.

While all the examples so far have pertained to farm businesses, the issue of insurance is also of grave concern to residential land owners, as a large number of small acreage residential properties in City of Swan and Shires of Chittering and Gingin are covered by gas leases. We are personally concerned that the presence of gas wells in our area will greatly increase our risk from bushfire both the potential of flaring well heads to start fires and the likelihood that firefighters will be unable to or have reduced ability to safely defend our property due to the presence of gas infrastructure (which vents methane by design, and regularly leaks methane as shown above) which not only puts us at increased personal risk but will affect our ability to insure our property or may allow our insurer to fail to honour a claim.

We would also be at increased risk of uninsurable damage from contaminated water affecting our land or home in the event of spills, leaks or storms. Onshore unconventional gas works produce large amounts of contaminated waste water which is usually stored in holding ponds at the well site. In the 7 years we have lived in our home, we have had 3 "hundred year" storm events directly impact our property where intense rain in our immediate area overwhelmed the storm water drains causing large amounts of water to flow over the land and into homes. Our damage was limited to fences (insurable), damage to land and pasture (not insurable) and a great deal of sludge, debris and mess to clean up (not insurable). Cleaning up was messy and exhausting but mud and organic debris is not particularly hazardous. It would have been a completely different story had the storm water been contaminated with spill from fracking operations. We currently cannot insure for the cleanup that would be required in and around our house or decontamination of our pasture, orchards and food gardens (if effective decontamination is even possible). The cost of paying someone to undertake cleaning up contaminated debris would be crippling and too hazardous for untrained householders to undertake themselves. To put us and all other affected land owners at risk of large costs for activities that we cannot control and that cannot be insured for is outrageous and completely unacceptable.

As a landholder I also have grave concerns about the responsibility for long term management of abandoned gas wells. There is substantial evidence as documented above that a large percentage of gas wells start leaking during their productive life, and that leakage and failure become increasingly likely over time. Once production ceases, once the wells are decommissioned and capped, who is then responsible for the monitoring and maintenance of this abandoned infrastructure? Casing materials are not stable in subsurface conditions in the long term (Vogwill, 2017) and existing older oil and gas wells can be shown to have completely corroded casings (e.g. Perdika/Great Artesian Basin in NT) demonstrating that as could be expected, steel and concrete degrade over time and abandoned wells can and do leak. Unmonitored abandoned wells pose a health and safety threat, and some have even exploded (Zoffos, 2018). Who is responsible for this in the long term? If the current behavior of mining companies operating in our state is typical, it apparently won't be them.

Evidence given to a Senate Inquiry held in Perth in March 2018 demonstrated that despite regulation

requiring it, and despite regulation requiring money be set aside by mining companies to rehabilitate mining sites, this is not happening. Mining Industry representatives were unable to supply a single instance where rehabilitation had occurred to the required standard. The Inquiry heard evidence that it is common practice for companies to avoid paying for any rehabilitation by making use of a legal loophole that absolves them of any responsibility by going insolvent, leaving the West Australian taxpayer to pick up the bill. (Young, 2018). The current minister for Mining and Petroleum, Bill Johnston, is quoted as saying this is a problem limited to "rogue operators" who put the costs onto "the rest of the industry" (Young, 2017) demonstrating that the current government is in denial of the extent of this problem, and is misrepresenting who ultimately pays the cost - the taxpayer.

The current and previous governments of Western Australia are not, and have not created sufficient and appropriate regulation to ensure the rehabilitation of mining sites is achieved or that the mining companies pay for it. There is no reason to believe that anything will change. It is bad enough for this to happen on publicly owned land. The onshore unconventional gas industry has leases over large areas of privately owned land, and there is nothing to protect the land owners from being left with the legacy of abandoned infrastructure.

To leave the responsibility for the cost of managing the aging and failing infrastructure, leaking wells and crumbling, polluted waste ponds to the people of Western Australia is unacceptable. To leave it to the individual landowner who had gas wells forced upon them against their will, received no benefit from the development and already suffered significant loss through devalued land is completely outrageous and cannot be allowed to occur.

Onshore unconventional gas developments on or close to private land pose a range of substantial risks to the land owner. To force land owners and communities to bear these risks for developments they do not want, actively reject, but have forced upon them is completely unacceptable in any civilised society. The government must act to protect the rights of private individuals to protect themselves and their property from risks and harms that they have no control over and cannot insure against. The WA government must enact law to allow private landholders and communities to refuse access to lease holders. To do anything other is a grave violation of the human rights and property ownership rights of the land owner.

## **7. Conclusion**

Due to constraints of time in preparing this submission, I have only focussed on 4 key areas but I believe the evidence presented, even within the narrow scope of this enquiry, is enough to inform the government that allowing hydraulic fracture stimulation in Western Australia is not in the best interests of the Western Australian community and must be permanently banned.

We have a great state and a great country. Do not let the interests of a minority invested in short term gains cripple our state with long term problems, some of which may be irreversible and insurmountable. Look at the evidence, and if there is not enough evidence, make certain that mechanisms are in place to gather that evidence, scientifically and impartially.

Thank you for reading and considering this submission.

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**From:** io .  
**To:** [info@frackinginquiry.wa.gov.au](mailto:info@frackinginquiry.wa.gov.au)  
**Subject:** Additional submission to the fracking inquiry  
**Date:** Monday, 19 March 2018 3:37:33 PM

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I have already submitted to the fracking inquiry, however I wish to send an additional submission following the release of this paper today.

McCarron, G. (2018) Air Pollution and human health hazards: a compilation of air toxins acknowledged by the gas industry in Queensland's Darling Downs. International Journal of Environmental Studies. 75(1).  
<https://www.tandfonline.com/doi/full/10.1080/00207233.2017.1413221>

The above paper examines the health impacts of the unconventional gas industry on the surrounding community in the Darling Downs area of Queensland. While this paper examines the coal seam gas industry, as opposed to shale and tight gas which is proposed for development in WA, it does show the real world application of regulatory frameworks in the management of risks and harms of the unconventional gas industry in an Australian context.

The results are extremely concerning. Following the development of the unconventional gas industry in this region

- air pollution rose markedly increasing hundreds to thousands of percentages points depending on the pollutant measured
- at the same time hospital admissions for respiratory and cardiac illnesses rose sharply and the rises could not be accounted for by changes in demographics in the time period.
- a large number of community members have reported a variety of complaints linked to the unconventional gas industry
- Despite regulation requiring companies to report emissions, reporting is haphazard and inconsistent.

Yet despite these concerns, little investigation has been done and the state government allows the industry to largely self regulate. According the paper

"controls to limit exposure are ineffectual. The burden of air pollution from the gas industry on the wellbeing of the Darling Downs population is a significant public health concern."

Please do not insult the WA public by pretending that our state has any better regulation, enforcement of regulation or ability of regulation to reduce risks and harms than Queensland. The health complaints, increased hospitalisations, increased air pollution and lack of enforcement of regulation / inability of regulation to prevent harm are repeated in every part of the world where unconventional gas developments occur in close proximity to populated areas. All claim to have stringent regulations and "best practice". It is the same in Texas, Colorado, Pennsylvania and Canada. It will be the same in WA if you allow this industry to go ahead.

We want our community to remain healthy. We do not want to see ourselves, friends and neighbours sick, hospitalised and dying before our time to make a foreign company that does not even pay it's taxes here rich. The evidence is clear - unconventional gas developments close to populated areas pose a serious health risk and regulation does not prevent it. Not in Queensland. Not in North America. Not here in WA either.

No unconventional gas in the Mid West - farming is sustainable, gas is not.

No unconventional gas near populated areas. Australian people are more important than gas companies.

No unconventional gas over major aquifers. The Yarragadee and Canning aquifers are too important to risk polluting.

I call on the West Australian government to do the right thing by the people of Western Australia and permanently ban unconventional gas developments and all associated activities in Western Australia.

J. Sgro