

UCG Inquiry submission

Helen Lewers, [REDACTED]

Dear Committee members,

I am a semi-retired maths teacher, who lives in the bush south of Ballarat and who values highly the clean water, air and soil of my home, considering it the basis of good health. I hold a B/Sc(Hons) degree from Melbourne University, where my area of specialisation was Organic Chemistry. (Note – not Pharmacology). My studies and subsequent work (Walter and Eliza Hall Institute of Medical Research) made me very aware of the severe, adverse health impacts of most organic chemicals, and certainly those employed in the unconventional gas extraction industries. It is well known that Chemists, and specially Organic Chemists, have the shortest life expectancy of almost any profession due to the organic chemicals they work with. So I am appalled by the sorts of chemicals the industry is putting into our environment, effecting almost all life forms. Exposing our children to these chemicals is morally unacceptable.

The report prepared by The National Toxics Network Inc¹ states

“Australia[n] Research on fugitive emissions* used atmospheric radon (²²²Rn) and carbon dioxide (CO₂) concentrations to measure fugitive emissions in the CSG fields of the Tara region, Queensland. They measured a 3 fold increase in maximum ²²²Rn concentration inside the gas field compared to outside and also a significant relationship with the number of wells. They suggest that CSG activities may change the geological structure and enhance diffuse soil gas exchange processes, helping gases to seep through the soil to be released to the atmosphere. The presence of ²²²Rn and CO₂ suggests the release of other gaseous substances, such as VOCs, [volatile organic compounds] which can be very harmful to human health”.

*Douglas R. Tait, Isaac Santos, Damien Troy Maher, Tyler Jarrod Cyronak, & Rachael Jane Davis Enrichment of radon and carbon dioxide in the open atmosphere of an Australian coal seam gas field
Environ. Sci. Technol.
<http://pubs.acs.org/doi/abs/10.1021/es304538g>

¹ “Toxic Chemicals in the Exploration and Production of Gas from Unconventional Sources, http://www.ntn.org.au/wp/wp-content/uploads/2013/04/UCgas_report-April-2013.pdf

I do not support any form of unconventional gas mining, whether that is coal seam gas, tight gas, shale gas or underground coal gasification. I recommend that Victoria ban all unconventional gas drilling permanently. Without unconventional gas mining, Victoria can continue to promote itself as an attractive place for investments in agriculture and clean industries such as tourism and renewables. More long term jobs will thus be created in sustainable industries.

Terms of Reference:

1. the prospectivity of Victoria's geology for commercial sources of onshore unconventional gas;

It would be simply wrong to put Victoria's environment, farmland, community health, food security, water and jobs in sustainable industries at risk, for little or no financial gain.

2. the environmental, land productivity and public health risks, risk mitigations and residual risks of onshore unconventional gas activities;

Water and air in the immediate area and further away becomes polluted as we have seen in New South Wales and Queensland and people have reported very serious health effects.

Consider the report by Dr Geralyn McCarron² MB BCh BAO FRACGP, which documents an investigation during February and March 2013 by this concerned general practitioner in relation to health complaints by people living in close proximity to coal seam gas development in SW Queensland.

"In all age groups there were reported increases in cough, chest tightness, rashes, difficulty sleeping, joint pains, muscle pains and spasms, nausea and vomiting. Approximately one third of the people over 6 years of age were reported to have spontaneous nose bleeds, and almost three quarters were reported to have skin irritation. Over half of children were reported to have eye irritation. A range of symptoms were reported which can sometimes be related to neurotoxicity (damage to the nervous system), including severe fatigue, weakness, headaches, numbness and paraesthesia (abnormal sensations such as pins and needles, burning or tingling). Approximately a third of the all the 48 children to age 18 (15/48) were reported to experience paraesthesia. Almost all the 31 children aged 6-18 were reported to suffer from headaches and

² <http://www.ntn.org.au/wp/wp-content/uploads/2013/05/Symptomatology-of-a-gas-field-An-independent-health-survey-in-the-Tara-rural-residential-estates-and-environs-April-2013.pdf>

for over half of these the headaches were severe. Of people aged 6 years and over, severe fatigue and difficulty concentrating was reported for over half. Parents of a number of young children reported twitching or unusual movements, and clumsiness or unsteadiness.”

In the US, McKenzie³, using data on 124,842 births in rural Colorado between 1996 and 2009, reported that maternal residence within 10 miles of UNGD was associated with a significantly higher risk of several birth defects including congenital heart defects and neural tube defects (defects of the brain, spine, or spinal cord).

The health impacts are likely to be worse in Victoria than Queensland, since it is comparatively more densely populated.

3. the coexistence of onshore unconventional gas activities with existing land and water uses, including —
(a) agricultural production and domestic and export market requirements;

The former Victorian Department of Environment and Primary Industries⁴ (now DELWP) believes that in addition to Victoria's temperate climate our **high quality soils** and **clean water** support our world-class agriculture industries. The gross value of agricultural commodities produced was \$11.6 billion in 2012-13.

I've lived on my 2 Ha property for 25 years, and in that time my average sized dam has never been without water. It will probably run dry this coming summer, going by the low volume of water it now contains. This is reflected by many farm dams south of Ballarat. Water is becoming a scarce item in this part of the world, and we know that Victoria is heading for an El Nino style drought. It would be wrong to allow unconventional gas industries to use up our underground water reserves, in addition to polluting them.

- Other problems include the contamination of water (causing it to become flammable) with toxic chemicals, leading to poisoning of livestock and contamination of our high quality agricultural industry products; increase in groundwater and soil salinity and sometimes depletion of groundwater; waste disposal problems of huge volumes of contaminated water and other solvents and blowouts due to gas explosion

³ McKenzie LM, Guo R, Witter RZ, Savitz DA, Newman LA, Adgate JL. Birth outcomes and maternal residence proximity to natural gas development in rural Colorado. *Environmental Health Perspectives* 2014; In Press

⁴ <http://www.depi.vic.gov.au/agriculture-and-food>.

**(b) the legal rights of property owners and the impact on property values;
and**

Unconventional gas industries have rights which overturn the legal rights of property owners. This goes against the principles of democracy. It is also greatly concerning that my property would sharply decrease in value were the companies to be granted licences here.

(c). any implications for local and regional development, investment and jobs;

As an older person approaching retirement, the adverse health effects of unconventional gas would directly affect my ability to continue teaching, something I must avoid at all costs. I want to continue to be a productive member of society, not a drain on it due to health burdens.

4. The ability of potential onshore unconventional gas resources contributing to the State's overall energy sources including —

(a) an ability to provide a competitive source of energy and non energy inputs for Victorian industries;

Victoria has abundant wind as an energy source and solar works well here too (as I can attest, having solar power panels) so unconventional gas is unnecessary. We want to avoid putting more carbon (from the gas and burnt gas) into the atmosphere, so we should instead put funds into the development of clean renewable energy. Unconventional gas cannot be "competitive" as it contributes so significantly to climate change.

(b) an affordable energy source for domestic consumers; and

Unconventional Gas is a fossil fuel. By definition, unconventional gases are harder to extract than conventional gas. Because they need to be fracked to release the gas from the coal seam or rock, the energy cost of the gas is high compared with conventional LNG. Additionally, with the government plans to export massive volumes of gas through ports in QLD, Victorian consumers will be competing with international energy prices in coming year. So UCG is unlikely to be an affordable energy source for consumers. A much better option is to look at ways we can reduce our need to use gas (for instance through ensuring better energy efficiency standards in new homes and a government funded energy efficiency retrofit program for existing houses, and of course lots of assistance for the renewable energy industries).

(b) carbon dioxide emissions from these sources;

The CSIRO report, "What-is-unconventional-gas⁵" states:

"Methane is a very powerful greenhouse gas, with about 27 times the greenhouse warming potential of carbon dioxide.

⁵ from <http://www.csiro.au/en/Research/Energy/Hydraulic-fracturing/What-is-unconventional-gas>

Releasing fugitive emissions of methane during extraction of coal seam gas can therefore have a negative impact on global warming. According to the Department of Environment's latest estimates (2012-13), fugitive emissions from the fossil fuel industry account for 8 per cent of Australia's national greenhouse gas inventory."

On this account alone, unconventional gas mining should not be countenanced.

The report states further that "methane has a higher potential to warm the atmosphere than carbon dioxide." Leakage of methane from wells and other infrastructure is a serious issue. A paper published in Scientific American⁶ reports:

"In 2013, emissions of methane, a potent greenhouse gas and the primary component of natural gas, from the oil **and gas sector rose to the top spot** [of methane emitters in the US]. That's despite fewer wells being drilled that year, according to U.S. EPA's greenhouse gas inventory released yesterday⁷". [My emphasis].

To give an idea of the scale of the methane emissions, the article states:

"The lost methane from the energy industry is "enough to meet the needs of 5 million households, and packs the same climate punch over the first 20 years as the CO2 emissions from more than 160 coal-fired power plants," Mark Brownstein, associate vice president at the Environmental Defense Fund (EDF), wrote in a blog post⁸".

5. the resource knowledge requirements and policy and regulatory safeguards that would be necessary to enable exploration and development of onshore unconventional gas resources, including —

This industry has failed to be proven safe elsewhere⁹.

⁶ Gayathri Vaidyanathan and ClimateWire, April 16, 2015, <http://www.scientificamerican.com/article/methane-leaks-from-oil-and-gas-wells-now-top-polluters/>

⁷ <http://www.epa.gov/climatechange/ghgemissions/usinventoryreport.html>

⁸ <http://blogs.edf.org/energyexchange/2015/04/15/methane-emissions-from-oil-gas-are-on-the-rise-confirm-latest-epa-data/>

⁹ Tuesday 7 January 2014 05.27 The Guardian Newspaper "Fracking contamination more common than US states report, says new review."

<http://www.theguardian.com/environment/2014/jan/06/drilling-pollution-complaints-state-reports-pennsylvania>

“In at least four states in the US that have nurtured the nation's energy boom in unconventional gas, hundreds of complaints have been made about well-water contamination from oil or gas drilling, and pollution was confirmed in a number of them, according to a review that casts doubt on industry suggestions that such problems rarely happen.”

More evidence that workers near Chinchilla west of Brisbane were make ill from exposure to chemicals used in Underground Coal Gasification¹⁰ (UCG)

“Mining company Linc Energy is alleged to have exposed workers to dangerous gases at an experimental plant in Queensland. According to an internal government briefing document seen by the ABC, an investigation has backed claims by workers that they have suffered ill health as a result of a series of "uncontrolled releases" of gas at the plant between 2007 and 2013.

A medical expert commissioned by the department reviewed workers' statements and medical records and found that "the symptoms presented are consistent with exposure to the known chemical constituents of syngas".

Syngas, or synthesis gas, was produced at the plant near Chinchilla west of Brisbane, by burning subterranean coal seams in a controversial process called Underground Coal Gasification (UCG)”.

The industry has had a long time to prove that their practices are safe and yet have been unable to do so. However much the industry can reduce its risks by regulation it will always pose a risk and any risk is too great.

I strongly urge the committee to ban all unconventional gas drilling permanently. Apart from allowing some companies to make money in the short term, there is no good reason to allow it, and a multitude of reasons why it shouldn't be countenanced, only some of which I've alluded to here. On human and animal health, community and environmental grounds, it would be a disaster for Victoria. Moreover, communities wouldn't stand for it and there would be ongoing trouble, complaints and campaigns against, should the committee allow it.

¹⁰ <http://www.abc.net.au/news/2015-03-16/linc-energy-allegedly-exposed-miners-to-dangerous-gases/6322024>