

“Macfarlane says activism is basically strangling the gas supply in the east coast gas market, as politicking and emotive ill-informed comment seems to be winning the argument over science.

Similar to the climate change debate, it seems the noisiest voices and not necessarily the most informed are being heard, he says.” Quote from the Financial Review July 2, 2015.

I am not a highly political individual, but when I see my children’s future and the future of this great land threatened, by foolish and *dangerous* decision making, I am certainly motivated to speak up against it. I am not prepared to sit back and listen to the drivel of “politicking and emotive ill-informed comment” from self-interested politicians such as Ian Macfarlane. He refuses to inform himself of the facts around this issue, so it behoves the Australian people to educate him, because unlike Macfarlane, many of us are capable of doing our **own** research and are not spoon fed by lackeys or colleagues in the mining fraternity, summarising and adding ‘spin’ to reports and science based documents for us. Like many in my rural community, I HAVE looked at the REAL evidence, and I do not like what I am seeing. I also reject Macfarlane’s suggestion that simply because people disagree with his view, they are emotional, ill-informed, or an activist. I have NEVER marched or taken to the street for a cause prior to this CSG threat, and it takes a serious issue to motivate me beyond writing an occasional letter. THIS is a serious issue.

I am opposing unconventional coal seam gas mining, which uses toxic chemicals, and practices environmentally and geologically unstudied and unstable processes. My opposition is based on the now obvious health risks to the environment, animals and humans through the use of toxic chemicals which effect groundwater, human water supply, environmental flows and air viability as well as compromising the earth’s crust by breaking through uncharted rock strata, on land which until fracked, had been stable and safe; the now clearly indicated links between earth quakes, earth tremors and this hazardous industry should be enough of a red flag to indicate we must not commence such operations using the current technology. There is also a need to expose the lie of the myth that CSG is an economically viable and beneficial industry for Australians - e.g. the false propaganda that this will be a long producing industry, when the evidence points towards far shorter term gas production, that workers are at risk, and that communities pay a dire price long term for having ‘hosted’ this industry... the myth of cheaper gas supplies for Australians - once the gas lines are flowing out to the world, and gas is being exported large scale, we will pay what the rest of the world pays - our gas will be part of the global supply, and we will be forced to pay world parity prices, which are generally higher than Australians currently pay. The potential damage this industry will do to our valuable agricultural sector in Victoria (evidence of the harms already mounting in US reports) will destroy our ability to supply safe healthy food to Victorians, and will permanently destroy our growing global reputation as a valuable tourist destination.

I have serious concerns about the health of Victorians if this industry is allowed to proceed, and my concern comes from 12 months of solid reading around this process, and the results of this massive human experiment in other parts of the world. The outcomes are not pleasant for the people, or the environment and the only benefit is a doubtful short term financial gain for a small minority. It is a great concern that our governments might allow this industry to rape and pillage the land and its people for very short term and dubious benefit, whilst guaranteeing long term human health disasters of mammoth proportions. I urge this enquiry to listen to the evidence placed before you by thinking Victorians, take all the time required to research and weigh up the risks which will very obviously be flagged by many people, and recommend the Victorian Government implement a permanent ban on Unconventional Gas Extraction in Victoria. You are in a position to either advocate for our future health, or commit us to spending costs far outweighing any UCG profits, on the inevitable health costs for the next few generations, which will be incurred as the critical effects of this industry increase chronic and acute illness, and pay out damages to those injured physically or economically by the damage. And there will be no excuse, because we have all been forewarned.

According to the *“Compendium of Scientific, Medical, and Media Findings, Demonstrating Risks and Harms of Fracking”* prepared by the organisation Concerned Health Professionals of New York (CHPNY), this industry has now been proceeding long enough in the United States of America and other places, for clear evidence of serious harm to have emerged and be documented, and the mass of data they now have, although far from complete, states very loudly that this is a TOXIC, UNHEALTHY, UNSAFE INDUSTRY, for humans, including workers in the industry, for domestic and wild animals, and for whole communities which have lost their water supply and or health due to fracking.

As this unconventional extraction method (collectively known as “fracking”) has pushed into more densely populated areas of the United States, and as fracking operations have increased in frequency and intensity, a significant body of evidence has emerged to demonstrate that these activities are inherently dangerous to people and their communities. Risks include adverse impacts on water, air, agriculture, public health and safety, property values, climate stability and economic vitality. CHPNY July 10 2014

At this stage, no comprehensive population-based studies of the public health effects of CSG/UCG operations exist. Why not? ***“Despite this emerging body of knowledge, industry secrecy and government inaction continue to thwart scientific inquiry, leaving many potential problems—especially cumulative, long-term risks—unidentified, unmonitored and largely unexplored. This problem is compounded by nondisclosure agreements, sealed court records, and legal settlements that prevent families (and their doctors) from discussing injuries. As a result, no comprehensive inventory of human hazards yet exists.”*** CHPNY July 10 2014

We cannot reasonably assess the health outcomes of unconventional gas operations, because we do not yet have the large database with which to compare health before and after UNG, and governments are complicit in protecting the industry from full disclosure of the harm which they have documented and refuse to make public. Until independent base line health studies are done - funded by the fracking industry proponents hopefully- it is immoral and premature to commence such a risky experiment without a guaranteed safe outcome.

Rather than quote from a number of sources, I feel the *‘Compendium of Scientific, Medical, and Media Findings, Demonstrating Risks and Harms of Fracking’* summarises and collates very well the crux of the case, so I refer you to that document.

“Researching these complex, large-scale industrialized activities—and the ancillary infrastructure that supports them—takes time and has been hindered by institutional secrecy. Nonetheless, research is gradually catching up to the last decade’s surge in unconventional oil and gas extraction from shale. A growing body of peer-reviewed studies, accident reports, and investigative articles is now confirming specific, quantifiable evidence of harm and has revealed fundamental problems with the drilling and fracking. Industry studies as well as independent analyses indicate inherent engineering problems including well casing and cement impairments that cannot be prevented. Earlier scientific predictions and anecdotal evidence are now bolstered by empirical data, confirming that the public health risks from unconventional gas and oil extraction are real, the range of adverse impacts significant, and the negative economic consequences considerable. Our examination of the peer-reviewed medical and public health literature uncovered no evidence that fracking can be practiced in a manner that does not threaten human health.”
CHPNY July 10, 2014

Summary of the evidence of risks, harms, and associated trends demonstrated by this Compendium:

- **Air pollution** – Studies increasingly show that air pollution associated with drilling and fracking operations is a grave concern [not merely ‘a concern’ but ‘a grave concern’]with a range of impacts. Researchers have documented dozens of air pollutants from drilling and fracking operations that pose serious health hazards. Areas with substantial drilling and fracking build-out show high levels of ozone,

striking declines in air quality, and, in several cases, increased rates of health problems with known links to air pollution. GAS SUBMISSION 572

- **Water contamination** – The emerging science has significantly strengthened the case that drilling and fracking inherently threaten groundwater. A range of studies from across the United States present strong evidence that groundwater contamination occurs and is more likely to occur close to drilling sites. Likewise, the number of well blowouts, spills and cases of surface water contamination has steadily grown. Meanwhile, the gas industry’s use of “gag orders,” non-disclosure agreements and settlements impede scientific study and stifle public awareness of the extent of these problems.
- **Inherent engineering problems that worsen with time** – Studies and emerging data consistently show that oil and gas wells **routinely** leak, allowing for the migration of natural gas and potentially other substances into groundwater and the atmosphere. Leakage from faulty wells is an issue that the industry has identified and for which it has no solution. For instance, Schlumberger, one of the world’s largest companies specializing in fracking, published an article in its magazine in 2003 showing that **about five percent of wells leak immediately, 50 percent leak after 15 years and 60 percent leak after 30 years** [meaning that in the life of a mining site, with its many wells, EVERY local community will suffer from a number of environmental breaches from fracking wells, and we have already seen such events in Qld and NSW in a very new local industry]. Data from Pennsylvania’s Department of Environmental Protection (DEP) also confirm these initial leakage rates, with a six percent structural integrity failure rate observed for shale gas wells drilled in 2010, 7.1 percent observed for wells drilled in 2011, and 8.9 percent observed for wells drilled in 2012. Leaks pose serious risks including potential loss of life or property from explosions and the migration of gas or other chemicals into drinking water supplies. Leaks also allow methane to escape into the atmosphere, where it acts as a powerful greenhouse gas. There is no evidence to suggest that the problem of cement and well casing impairment is abating. Indeed, a 2014 analysis of more than 75,000 compliance reports for more than 41,000 wells in Pennsylvania **found that newer wells have higher leakage rates** and that **unconventional shale gas wells leak more than conventional wells** drilled within the same time period. **Industry has no solution for rectifying the chronic problem** of well casing leakage.
- **Radioactive releases** – High levels of radiation documented in fracking wastewater raise special concerns in terms of impacts to groundwater and surface water. Studies have indicated that the Marcellus Shale is more radioactive than other shale formations. Measurements of radium in fracking wastewater in New York and Pennsylvania have been as high as 3,600 times the United States Environmental Protection Agency’s (EPA) limit for drinking water. One recent study found toxic levels of radiation in a Pennsylvania waterway even after fracking wastewater was disposed of through an industrial wastewater treatment plant. In addition, the disposal of radioactive drill cuttings is a concern. Unsafe levels of radon and its decay products in natural gas produced from the Marcellus Shale, known to have particularly high radon content, may also contaminate pipelines and compressor stations, as well as pose risks to end-users when allowed to travel into homes.
- **Occupational health and safety hazards** – Fracking jobs are dangerous jobs. Occupational hazards include head injuries, traffic accidents, blunt trauma, burns, toxic chemical exposures, heat exhaustion, dehydration, and sleep deprivation. **As a group, oil and gas industry workers have an on-the-job fatality rate seven times that of other industries.** Exposure to silica dust, which is definitively linked to silicosis and lung cancer, was singled out by National Institutes for Occupational Safety and Health as a particular threat to workers in fracking operations where silica sand is used. At the same time, research shows that many gas field workers, despite these serious occupational hazards, are uninsured or underinsured and lack access to basic medical care.
- **Noise pollution, light pollution and stress** – Drilling and fracking operations and ancillary infrastructure expose workers and nearby residents to continuous noise and light pollution that is sustained for periods lasting many months. **Chronic exposure to light at night is linked to adverse health effects**, including breast cancer. Sources of fracking related noise pollution include blasting, drilling, flaring, generators, compressor stations and truck traffic. Exposure to environmental noise

GAS SUBMISSION 572

pollution is linked to cardiovascular disease, cognitive impairment, and sleep disturbance. Workers and residents whose homes, schools and workplaces are in close proximity to well sites are at risk from these exposures as well as from related stressors.

- **Earthquake and seismic activity** – A growing body of evidence links fracking wastewater injection (disposal) wells to earthquakes of magnitudes as high as 5.7, in addition to “swarms” of minor earthquakes and fault slipping. In some cases, the fracking process itself has been linked to earthquakes and seismic activity, including instances in which gas corporations have acknowledged the connection. In New York, this issue is of particular concern to New York City’s aqueduct-dependent drinking water supply and watershed infrastructure, as the New York City Department of Environmental Protection (NYC DEP) has warned repeatedly, but similar concerns apply to all drinking water resources. The question of what to do with wastewater remains a problem with no viable, safe solution.
- **Abandoned and active oil and natural gas wells (as pathways for gas and fluid migration)** – Millions of abandoned and undocumented oil and gas wells exist across the United States [as do many hundreds across Australia], according to the U.S. Department of Energy. All serve as potential pathways for pollution, heightening the risks of groundwater contamination and other problems when horizontal drilling and fracking operations intersect with pre-existing vertical channels leading through drinking water aquifers and to the atmosphere. Industry experts, consultants and government agencies including the U.S. Environmental Protection Agency, the U.S. General Accounting Office (now the Government Accountability Office), Texas Department of Agriculture, New York State Department of Environmental Conservation, Pennsylvania Department of Environmental Protection, Illinois Environmental Protection Agency and the British Columbia Oil and Gas Commission have all warned about problems with abandoned wells due to the potential for pressurized fluids and gases to migrate through inactive and in some cases, active wells.
- **Flood risks** – Massive land clearing and forest fragmentation that necessarily accompany well site preparation increase erosion and risks for catastrophic flooding, as do access roads, pipeline easements and other related infrastructure [and some totally uninformed politicians continue to claim this industry can co-exist alongside our agricultural industry in Victoria!]. In addition, in some cases, operators choose to site well pads on flood-prone areas [as they have in Qld] in order to have easy access to water for fracking, to abide by setback requirements intended to keep well pads away from inhabited buildings, or to avoid productive agricultural areas. In turn, flooding increases the dangers of unconventional gas extraction, resulting in the contamination of soils and water supplies, the overflow or breaching of containment ponds, and the escape of chemicals and hazardous materials. In at least six of the past ten years, New York State has experienced serious flooding in parts of the state targeted for drilling and fracking.

Some of these areas have been hit with “100-year floods” in five or more of the past ten years. Gas companies acknowledge threats posed by flooding, and the New York State Department of Environmental Conservation (DEC) has recommended drilling be prohibited from 100-year flood areas; however, accelerating rates of extreme weather events make existing flood maps obsolete, making this approach insufficiently protective.

- **Threats to agriculture and soil quality** – Drilling and fracking pose risks to the agricultural industry. Studies and case reports from across the country have highlighted instances of deaths, neurological disorders, aborted pregnancies, and stillbirths in cattle and goats associated with livestock coming into contact with wastewater. Potential water and air contamination puts soil quality as well as livestock health at risk. Additionally, farmers have expressed concern that nearby fracking operations can hurt the perception of agricultural quality and nullify value-added organic certification.

- **Threats to the climate system** – A range of studies have shown high levels of methane leaks from gas drilling and fracking operations, **undermining the notion that natural gas is a climate solution or a transition fuel.** Major studies have concluded that early work by the EPA greatly underestimated the impacts of methane and natural gas drilling on the climate. Drilling, fracking and expanded use of natural gas threaten not only to exacerbate climate change but also to stifle investments in, and expansion of, renewable energy.
- **Inaccurate jobs claims, increased crime rates, and threats to property value and mortgages** – Experiences in various states and accompanying studies have shown that **the oil and gas industry's promises for job creation from drilling for natural gas have been greatly exaggerated** and that many of the jobs are short-lived and/or have gone to out-of-area workers. With the arrival of drilling and fracking operations, communities have experienced steep increases in rates of crime – including sexual assault, drunk driving, drug abuse, and violent victimization, all of which carry public health consequences. Social costs include strain on municipal services and road damage. Economic analyses have found that drilling and fracking operations threaten property values. Additionally, gas drilling and fracking pose an inherent conflict with mortgages and property insurance due to the hazardous materials used and the associated risks.
- **Inflated estimates of oil and gas reserves and profitability** – **Industry estimates of oil and gas reserves and profitability of drilling have proven unreliable, casting serious doubts on the bright economic prospects the industry has painted for the public, media and investors. Increasingly, well production has been short-lived, which has led companies to reduce the value of their assets by billions of dollars.**
- **Disclosure of serious risks to investors** – Oil and gas companies are required to disclose risks to their investors in an annual Form 10-K. Those disclosures acknowledge the inherent dangers posed by gas drilling and fracking operations, including leaks, spills, explosions, blowouts, environmental damage, property damage, injury and death.

Adequate protections have not kept pace with these documented dangers and inherent risks.

- **Medical and scientific calls for more study and more transparency** – With increasing urgency, groups of medical professionals and scientists are issuing calls for comprehensive, long-term study of the full range of the potential health and ecosystem effects of drilling and fracking. These appeals underscore the accumulating evidence of harm, point to the major knowledge gaps that remain, and denounce the atmosphere of secrecy and intimidation that continues to impede the progress of scientific inquiry. Health professionals and scientists in the United States and around the world have urged tighter regulation of and in some cases, suspension of unconventional gas and oil extraction activities in order to limit, mitigate or eliminate its serious, adverse public health hazards.

With up to 600 different chemicals and heavy metals used in CSG operations, and approximately 50% of these substances not recoverable post-fracking, much of it remains in the ground, ultimately leaching into our groundwater and rising to the surface. These substances are toxic, carcinogenic, mutagenic, allergenic, disrupt the endocrine system, impair immunity, are neurotoxic and affect the sensory organs, respiratory and gastrointestinal systems even in minute quantities.

A recent study of 24 chemicals most commonly used by the fracking industry found that *all* had high levels of endocrine-disrupting chemicals (EDCs.). EDCs have been associated with cancer, infertility and birth defects. Once our groundwater is contaminated, these toxins *cannot be recovered*. Our groundwater will be undrinkable and unusable *permanently*. This will affect our generation and future generations.

The fracking process releases a variety of toxic compounds including hydrocarbons, methane, Naturally Occurring Radioactive Materials (NORMS) and Ground Level Ozone. The health effects of these substances have been linked to leukemia, blood disease, neurological disorders, headaches, throat and eye irritation, high rates of asthma and chronic obstructive pulmonary disease.

UNG operations in Australia will potentially result in *billions* of litres of toxic waste water. In the U.S. disposal into rivers have polluted drinking water supplies – resulting in health advisories to more than 350,000 people. It has shown to be hazardous to local wildlife and livestock. Drilling companies regularly spread waste water onto the road, contaminating local waterways and farmland, and in Queensland this has been done – resulting in quarantine of contaminated livestock. There has also been discussion in Queensland on how to dispose of contaminated waste water; one suggestion being taken seriously, was to irrigate farmland with it!

GAS SUBMISSION 572

Waste water pit failure is common in the U.S. with more than 420 instances of contamination in New Mexico alone. In 2010 over 2300 wells failed mechanically.

Toxic waste water recycled by *water treatment plants* produce substances known to be carcinogenic, cause reproductive and developmental abnormalities.

Furthermore, radium levels 200 x normal have been measure downstream of treatment plants. The Environment America Report concluded that water treatment plants were “not entirely effective”

In Colorado, babies born to mothers with a high exposure to gas wells had a *30% greater prevalence of congenital heart defects*. A recent study (yet to be published) in Pennsylvania found that increased proximity to fracking increased the likelihood of *low birth weight* (from 5.6% to 9%) . Also the chances of a low APGAR score doubled to more than 5%.

If UNG operations proceed, who will provide our community with additional GPs and specialists to meet the increased demands on our health system. How can anyone ensure toxic waste-water will not re-enter our water supply? If it does, who will pay for clean water to be transported to our community as now occurs in some US communities?

Who will provide increased transportation from rural areas to the city for specialist health-care. Who will compensate families of babies born with developmental disorders as a result of CSG operations? Who will provide counseling services to people whose health have been affected ?

Ian Macfarlane claims everyone in Qld stood shoulder to shoulder in support of the industry and now the unconventional gas industry is bringing prosperity to Qld. Poppycock. Firstly, prosperity is not measured only by the bank account of mining giants, and secondly, Southern Queensland is already suffering serious damage as a result of this emerging industry. Qld constituents are beginning to reap the grim harvest of toxic water tables, toxic volatiles in the air, decimated land values, loss of income and loss of health, as a result of this poisonous industry. The reason it was easy for Qld to push their pro-mining policies through, is because no-one had yet seen the damage which would occur, while the foxes of the mining industry wined, dined and charmed ignorant politicians. Fortunately Victorians have SEEN the destruction in the North, and we intend to guarantee a different outcome, ensuring this industry does not wipe out our beautiful, agriculturally valuable State. When there is poor health, and nothing to look at in Queensland which doesn't include a large drill rig site, tourists will flock to Victoria and Tasmania, the clean green states.

The compendium on UCG by CHPNY concludes with this statement.

“All together, the findings from the scientific, medical, and journalistic investigations indicate that fracking poses significant threats to air, water, health, public safety, and long-term economic vitality. Concerned both by the rapidly expanding evidence of harm and by the fundamental data gaps still remaining, Concerned Health Professionals considers a moratorium on unconventional oil and natural gas extraction (fracking) the only appropriate and ethical course of action while scientific and medical knowledge on the impacts of fracking continues to emerge.”

I urge members of the Parliamentary enquiry to take such advice and forward it to the Victorian Government, as another step closer to a Gas Field Free Victoria.

Yours sincerely,

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