

Hi my name is Esther Nunn. I am a Registered Nurse living and working in Central Australia for the past ten years. I currently work in the Emergency Department in the Alice Springs Hospital and as a Chronic Disease Care Coordinator for Western Desert Dialysis working with Indigenous Australians with Chronic Kidney Disease.

I am here today as a concerned resident of Central Australia and am also representing Health Professionals Against Fracking NT. This recently formed group is an independent, self-funded collection of Health Professionals working in all fields of Health Care Provision who are concerned about the negative health impacts of the Fracking Industry and the Government-lead processes which allows this industry to invade our landscapes and communities without our consent, without appropriate Health Impact Assessments and against the growing evidence that supports a total ban on this disastrous Industry.

I am grateful for the opportunity to contribute to the Scientific Inquiry into Hydraulic Fracturing in the Northern Territory and acknowledge the vital importance of the Community Consultation Process. When decisions like this are being made that impact on our lives and pose such complex risks to our future health and wellbeing, our voices deserve to be heard.

I would also like to acknowledge the Aranda people of Mparntwe by recognising that we are on land that was stolen from them, and that the impacts of colonization continue to negatively affect indigenous people's health and wellbeing. And I feel ashamed that the Fracking Industry is yet another looming burden of colonization.

The Inquiry has already mentioned the majority of people who will be affected by the introduction of Fracking into the NT are the indigenous population living in remote areas. It is vital the Panel understand the NT is not a vast wasteland that can be exploited; it is a living country, kept alive through culture and connection.

I became a nurse because I care about people, and I want to spend my time and energy improving the health of our community. The Fracking Industry makes me feel angry and cheated because instead of being able to help people directly by promoting health, I am having to spend my time and energy protecting my community from harm.

However, my practice is motivated and inspired by *The Code of Ethics for Nurses* as outlined by The Nursing and Midwifery Board of Australia. Using principles and standards set by the United Nations and World Health Organization towards a commitment to respect, promote, protect and uphold the fundamental Rights of People, they help guide ethical decision-making and best practice, and indicate to the community the human rights standard and ethical values it can expect nurses to uphold (1).

There are eight Value Statements in the Nursing Code of Ethics and I would like to read out the one which I feel is most relevant to this presentation:

Value Statement 8 - Nurses value a socially, economically and ecologically sustainable environment promoting health and wellbeing

‘Nurses value strategies aimed at preventing, minimising and overcoming the harmful effects of economic, social or ecological factors on the health of individuals and communities. Commitment to a healthy environment involves the conservation and efficient use of resources such as energy, water and fuel. Nurses value and contribute towards strategies aimed at preventing and overcoming problems such as environmental pollution and degradation, and how they contribute to ill health in the community, as well as working at minimising their harmful effects.’

This statement demonstrates we as Health Professionals have a moral, ethical and even legal obligation to our communities and the environment to ensure they are protected from harm. And it is this that motivates me to be standing here today.

It is heartening to note the opening line of the Scientific Inquiry’s Interim Report - Chapter 10 - acknowledges the rapidly growing number of Scientific Literature into the Risks to Human Health associated with the Fracking Industry (2). It is disheartening however, to note the report also states it has only read a select few of the some 700 papers into the health impacts of the Industry. I would like to know exactly how many the Panel consider enough to get an accurate understanding of this Industry’s impacts on our health and wellbeing. When making recommendations to the Government that will impact on our lives forever, I would hope you would seriously consider them all!

For those in the audience, a categorical assessment of 685 peer viewed literature published in 2016, found 84% of the public health studies indicate risks to public health, 69% of water studies show actual or potential water contamination, and 87% of air quality studies indicate elevated air pollution (3). It would seem in Layman’s terms “A No-Brainer” that the Fracking Industry poses far too many risks to the health of humans and the environment to be suitable for anything besides a total ban!

However, I am grateful the Gunnar Government called for a moratorium and this Scientific Inquiry which buys us precious time to provide the proof required to ram our point home and save us from the Fracking Industry. But it does seem ridiculous somehow when there are already states in Australia and entire countries in the world who have been through all this and come to the same conclusion we are pushing for - to ban Fracking.

Below is a list of health-related organizations and experts who have already provided strong Scientific Evidence stacking up against the Industry, and who Health Professionals Against Fracking NT align themselves with:

Doctors for the Environment – who describe Fracking as an uncontrolled health experiment, and that the rush to exploit this resource has outpaced regulations to protect public health and the environment and to adequately assess the health impacts (4).

The Australian Medical Association – who urge governments use rigorous and independent health risk assessments (5).

Australian Nursing and Midwifery Federation in Victoria and NSW - who called for a permanent ban on the Industry (6).

Melissa Haswell - Professor of Health, Safety and the Environment, whom you are all aware is regarded as an Australian expert on the topic of potential health risks and impacts of Fracking (7).

Public Health Association Australia -who urges the government to use the Precautionary Principle (which I will describe shortly) (8).

Unions Against Fracking – who are coordinated by Trade Unions for Energy Democracy and have released an inspiring statement calling for a global moratorium on Fracking (9 & 10). They have an extensive list of Union affiliates across the globe which includes Global Nurses Against Fracking and Unions NT.

Physicians, Scientists and Engineers for Healthy Energy – who urge the government for a ban on fracking (11).

The 1,000 Health Professionals in the US who delivered a letter to Barack Obama in 2014 - urging for a ban on Fracking (12).

Physicians for Social Responsibility, who put together an extensive Compendium of Scientific, Medical, and Media findings Demonstrating Risks and Harms of Fracking and have outlined a powerful summary (13).

It is very important to note here that that this is a relatively new Industry, and when attempting to determine the extent of the risks to humans and the environment both now and into the future, it is impossible to evaluate long-term data which cannot exist until the Industry has been operating for a time that could be considered long-term. We only have reliable data that dates back perhaps 20 years from when the Industry took off in the US. The impacts and risks can only be measured by the evidence emerging now, so we need to make sensible decisions based on what we are seeing, what can be predicted and use extreme caution. Because of the potential for long-term effects of even low doses of toxicants and the cumulative impact of exposure to multiple chemicals by multiple routes often with incomplete information from Fracking companies not legally obliged to disclose all the ingredients used in the process, coupled with no known understanding of the

immediate or long-term consequences of these interactions, only time, and research will tell (3). And this is exactly why Health Care Professionals are increasingly calling for bans or moratoria until the full range of potential health hazards from fracking are understood (13).

We are calling for the Northern Territory Government to follow the Victorian Government's applaudable decision in passing legislation to *'ban any fracking in the state because of the unknown and unquantifiable risks to the safety and security of public health, water and agriculture industries'* (27).

Although the evidence is mounting, without the Baseline Health Assessment you say you require (mentioned in the Interim Report) I have to pose the question back to you, are you actually saying that in order to obtain the data you need to prove the extent of the health risks associated with the Fracking Industry, that you would require baseline 'Before and After' Data from specific sections of the population who would have Fracking operations move into their communities? It seems is what you are inferring. Who would put their hand up to be a Guinea pig to test the health impacts of this Industry? Besides that, it is completely unethical.

I will now continue my presentation by addressing the four main Potential Risks to Public Health categories, as identified in the Interim Report (2).

1. Impacts associated with contamination of Aquifers

Fracking threatens drinking water and contaminates aquifers (13 & 14).

Well casings extend kilometres down through aquifers to reach areas of gas extraction. They can and do leak, contaminating aquifers due to corroding, faulty construction and repeated fracturing. One study suggests 6-7% of well-casing fail immediately, increasing to possibly 50% over 20 years as well-casings naturally corrode and degrade (14). If there are no long-term studies available to a relatively new Industry, how can we feel comfortable with these statistics into the unknowable future?

Methods for handling and disposal of the millions of litres of chemical laden wastewater that are brought to the surface in Fracking operations remain problematic. In fact, Professor Haswell points out there are NO demonstrated long-term solution for this hazardous wastewater management! (7). There are already instances where spills and failures of holding dams containing contaminated wastewater have happened in Australia. This poisons the environment directly and can contaminate waterways and aquifers (4 & 27).

When the Fracking Industry tries to tell us about the tiny percentage of chemicals used in Fracking Fluid, they frequently omit the over-all volume they are talking about. If one

fracking operation which commonly uses 15 million litres of water, and only 0.5% -2% is chemicals, that still equates to 80-330 tonnes of chemicals! (15).

And these chemicals aren't just found in household products as the Industry likes to tell us. The tiniest amounts of some of the toxic chemicals commonly used in Fracking operations are enough to cause harm to human health (7). They include carcinogens, neurotoxins, irritants, sensitisers, and reproductive/endocrine disruptors (16). Endocrine disrupter chemicals (EDC's) interfere with the body's reproductive system and have been found in water at heavily drilled sites at concentrations high enough to adversely affect humans and animals (3 & 17). In one US study on several herds of cattle that were directly exposed to Fracking Fluids or wastewater, farmers reported increased reproductive problems such as failure to breed, failure to cycle, abortions, still births and birth defects far above what they had ever seen in their many years of raising cattle (18).

Unborn babies and children are at increased exposure risk from Fracking from things like EDC's. Studies on foetus and babies are easy to conduct because of vital records maintained by State Health Departments showing a clear picture of the health children are born with, and they show babies born in close proximity to Fracking operations demonstrate alarming statistics with low birth weights, preterm births and birth defects. A study on over 100 000 live births reported babies has a 30% greater prevalence of congenital heart defects and marked increase in neural tube defects if their mothers were pregnant within ten miles of Fracking wells (19). One study showed still births and infant deaths six times above the average in non-fracking areas over a three-year period (18).

Can you possibly imagine the distress you would experience if your baby was born dead? And worse still if you lived close by Fracking operations where statistics suggest it could be attributed to this industry but the industry is allowed to omit any responsibility because there supposedly isn't enough conclusive evidence and is set up so that you have to prove it!

To me it would seem then, that the only way to guarantee our aquifers and our communities can be safe from Fracking Operations is to ban the industry completely.

2. Impacts associated with fugitive emissions and airborne chemicals

Climate Change has been termed the most important Public Health Issue of the 21st Century (8).

Unconventional Gas is predominantly methane which is 85 times more potent in trapping heat than carbon dioxide over a 20-year period which is a critical period for emission reductions (7). Around 7.9% of gas extracted is released straight into the atmosphere (7).

Haswell suggests that to continue this industry may accelerate the severe health impacts of climate change. The Public Health Association Australia has stated that we need to focus on fulfilling our obligation to the Paris Climate Convention to mitigate climate change by urgently reducing fossil fuels, and methane emissions as part of the Fracking Process need to be examined with the utmost urgency (8).

Drilling and fracking emissions contribute to toxic air pollution and smog (ground-level ozone) (13). Increased levels of which are known to have the following negative impacts on the health of those living near Fracking operations:

Respiratory symptoms such as sore/burning nose and throat, stuffy noses and coughs, exacerbation of asthma and COPD, chronic bronchitis and wheezing, and difficulty breathing

Vascular symptoms like nosebleeds and stroke

Dermatological conditions like rashes, and hair loss

Gastrointestinal symptoms like vomiting, diarrhoea, cramping,

Neurological symptoms like headaches, dizziness, difficulty concentrating, short term memory loss, skin numbness and tingling sensations, incoordination, inability to stand, and seizures (18).

Queensland data, though minimal in amount due to the short time Fracking has been operating in the state, show similar symptoms (20).

Imagine if you began suffering strange symptoms that doctors couldn't put their finger on to give you answers, relief or help? And again, it could be attributed to an industry which omits transparency and responsibility?

Is it *really* worth the risk to wait and see what emerges in the health and wellbeing of our communities when the picture is looking pretty bad so far?

3. Impacts associated with increased road traffic

The Fracking Industry will dramatically increase road traffic in the NT. It requires the use of heavy vehicles in all aspects of the industrial process to transport equipment, chemicals, sand, and water needed for well construction, fracturing and management of waste products. One study reports up to 1000 truck trips for an average multistage well (21).

The NT already has the highest road toll in Australia; at least 4 times the National average (22 & 23), and heavy vehicles are around six times more likely to be involved in fatal and serious injuries in Australia (24). The Bureau of Labour Statistics also states that a third of all fatalities for oil and gas workers were due to traffic accidents (21). The Texas Department for Transportation reported a 40% increase in fatal vehicle accidents during a 3-year period

of Fracking operations across 20 countries in the US compared to before Fracking operations began in those areas (21).

And also important to note that these trucks are often carrying highly toxic Fracking fluids or flow-back water this also has the potential for catastrophic environmental damage (21).

It is noted in the Interim Report that some industry submissions say driver training and promotion of safe work practices is a priority for the industry in addressing this potential risk. That sounds lovely on paper, but it does nothing to reassure us as road users in the NT, as no amount of promoting safe workplaces is going to stop the inevitable as ACCIDENTS DO HAPPEN.

From a health perspective, our hospitals are already understaffed and overcrowded. This inevitable increase can only increase pressure on the health system, including staff stressors, longer wait times for patients in ED Waiting Rooms and longer stays in ED beds as staff attend to high priority injuries such as those seen in MVA's.

I cannot understand how the panel claim in the Interim Report they are unable to draw any conclusions about this specific risk when surely a great increase in road use and truck traffic on top of the worst National Road Toll Statistics would point in only one direction.

4. Impacts on social cohesiveness, mental health and wellbeing

I note the Panel has been unable to find any firm evidence that supports an evaluation of the magnitude of this risk, and that available studies of physiological impacts of this industry only allowed the evidence to be graded as either insufficient or failing to show an association!

It is insulting and upsetting to hear this because we feel it ourselves, and we can see the impact it is having on other members of the wider community, such as in Queensland where Fracking has taken hold with disastrous consequence for rural communities. A study of 239 Southern Queenslanders describes how the Fracking Industry negatively impacts mental health with increased depression and anxiety about health impacts, loss or contamination of water supplies, falling property values and the polarization of families and entire communities in "For and Against" (7).

When people can smell strange things in the air, and they are experiencing strange health symptoms, how can you expect anxiety to not increase when we know how little is actually known as to the ingredients and interactions of these potentially toxic substances we are breathing in?

Even reports of suicide have emerged in Australia directly linked to pressure from the Fracking Industry on Farmers and their distress in seeing their livelihoods ruined (7). Can this evidence be insufficient or failing to show an association?

Solastalgia is a term referring to the distress people experience by environmental change in their home environment (8 & 25). Exacerbated by a sense of lack of control over unfolding change, Solosalgia was the main finding highlighted by the Queensland Department of Health assessment of the population with regard to Fracking operations in their area (20).

I will now read an excerpt from a Submission to the Fracking Inquiry in March this year by Dr. Rosalie Shultz who spoke on behalf of the Public Health Association of Australia. Here she describes the Precautionary Principle being of extreme importance with regard to the Fracking Industry.

‘The Precautionary Principle describes when an activity raises threats of harm to health and the environment, precautionary measures should be taken even if some cause and effect are not conclusively established. In this context, the proponent of the activity, rather than the public should bear the burden of proof. Considering the uncertainties about health, environment, local, social, global warming potential and economic implications, it would seem prudent to be doing more research and do delay any development until we’ve got more data.’ (26).

This sentiment has been repeated in many Scientific Health related papers, and considering the Issues the Panel have described in the Interim Report being:

“Whether any of these public health impacts can be attributed to specific causal factors in the environment resulting from activities associated with hydraulic fracturing in the NT.”

It would seem obvious the Precautionary Principle be imperative so the Panel can make informed decisions and draw accurate conclusions which will affect us all.

No matter how many different ways the Fracking Industry tries to reassure us they have the capacity to adequately monitor and respond to the many hazardous chemical, social, mental, and physical health risks posed by the Industry’s operations, there is so much uncertainty, so many unknowns, we cannot accept this level of risk to our water, our air, our land and our communities. The Government and the Fracking Industry will never be able to convince us that Fracking is safe – EVER.

The Fracking Industry in the NT will only increase the burden of health our communities face and place increased pressure on health services that we already struggle to staff.

I will conclude with a quote from a nurse from an Emergency Department in NSW, in response to the Fracking Industry in her community:

“Health, health promotion and disease prevention starts at the environmental level. There’s no point patching people up if we’re contaminating them at the source”

Angie Gittus (RN).

Thankyou

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