Submission from DON'T FRACK THE COX Community Group

Introduction:

We are a group of residents who live on the beautiful Cox Peninsula, on the west side of Darwin Harbor. Our members live on the rural blocks of Wagait Beach and the indigenous community at Belyuen. We are scientists, artists, professionals, parents, workers and citizens. We are dependent on bore water. We love where we live.

[Image source: http://backofbeyondthent.blogspot.com.au/2010/09/cox-peninsula.html]

Our key concerns:

1. Water security

As communities dependent on bore water for existence. We have serious concerns about the risks fracking poses to water security.

2. Inherent risks in hydrochloric fracturing technology

Experience in other parts of Australia and the world has highlighted some fundamental problems with the technology. There are several inherent problems as we see it.

1. Fracking requires enormous quantities of water. Each well will use an estimated average of 15 million litres of water [see Frogtech, 2013]. This is clean water to start with which could be used for any number of other purposes.

2. Once it has been assigned to be used in fracking it is contaminated with a cocktail of chemicals, which may include methanol [Vapours can cause eye irritation, headache and fatigue, and in high enough doses can be fatal. Swallowing may cause eye damage or death], benzene [known human carcinogen. Long time exposure can cause cancer, bone marrow failure, or leukaemia. Short term effects include dizziness, weakness, headache, breathlessness, chest constriction, nausea, and vomiting], toluene, xylene & ethylbenzine [all have harmful effects on the central nervous system]; lead [particularly harmful to children's neurological development. It also can cause reproductive problems, high blood pressure, and nerve disorders in adults]; hydrogen fluoride [Fumes are highly irritating, corrosive, and poisonous. Repeated ingestion over time can lead to hardening of the bones, and contact with liquid can produce severe burns. A lethal dose is 1.5 grams]; naphthalene [Inhalation can cause respiratory tract irritation, nausea, vomiting, abdominal pain, fever or death]; sulphuric acid [Corrosive to all body tissues. Inhalation may cause serious lung damage and contact with eyes can lead to a total loss of vision. The lethal dose is about 1 teaspoonful]; crystalline silica [Dust is harmful if inhaled repeatedly over a long period of time and can lead to silicosis or cancer]; formaldehyde [Ingestion of even 30 millilitres of liquid can cause death. Exposure over a long period of time can cause lung damage and reproductive problems in women].

   These are just some of the 650 chemicals used in fracking. Many fracking fluids contain chemical components that are listed as 'proprietary' or 'trade secret.' In many instances, the oil and gas companies were unable to identify these 'proprietary' chemicals, **suggesting that the companies are injecting fluids containing chemicals that they themselves cannot identify** [U.S. House of Representatives Energy and Commerce Hydraulic Fracturing Report, 2011].

   Industry lobbyists often argue that the percentage of chemicals to water is ‘low’ [Approx 98% water to 2% chemical cocktail], and therefore ‘safe’. Given the toxicity of the chemicals involved, and the nature of contamination in fluids this defies logic. It is made more problematic by the considerable volumes of both involved in fracking [14,700,000 million litres of clean useable water to 300,000 litres of highly toxic chemicals per average well].

   Once the water has been contaminated with chemicals it is now called fracking fluid. The water, all of it, is now highly toxic.

3. It is then pressure injected deep into the earth causing shale rock to crack, creating fissures where natural gas flows into the well. During this process, minerals that were stable in the earth may also dissolve out of rock formation. These minerals can include arsenic and uranium [NT has large uranium deposits]. The water is now called produce water. It is potentially now even more toxic and also radioactive.

4. Most of this contaminated, saline, toxic and potentially radioactive water [about 11.5 million litres per well] is returned to the surface. Unusable for any other purpose it now needs to be stored.

5. A significant proportion [the most conservative estimates come from the industry itself and are around 30%] of this contaminated, toxic and potentially radioactive produce water [on average about 4.5 million litres per well] is not recovered during the mining operation.

6. This leaves us with 2 potential sources of water contamination. There is the potential for contamination above the surface [such as has happened in fracking sites in the Pillager Valley in QLD where due to leaking storage dams the uranium levels in the groundwater are now 20 times the Australian Drinking Water Limits]. While deep below the earths surface enormous quantities of contaminated water are being left behind by each individual well. The cumulative impacts of this are still unknown.

7. Another source of potential water contamination is the methane gas itself contaminating aquifers such as has been well documented in the Marcellus shale fracking sites in Pennsylvania where 75% of wells sampled had methane contamination. [See Osborn et al, 2011].

8. It is impossible to ensure the integrity of each individual well. Where gas is found, well sites are located every kilometre of so in lines. This increases the risks to water security by ensuring that multiple wells, and multiple contamination risks may impact any aquifer.

9. This arrangement of drill sites also impacts the surface of the earth. The Land clearing fragments the landscape for roads, exploration, pipes, wells and tailings dams. There is damage to bush land, agricultural land, cultural sites, fishing, National Parks. The beauty of our land and sea is destroyed by ugly gas industrialisation.

3. Particular risks in the Wet tropics

1. **Added risks in containing contaminated, toxic and potentially radioactive wastewater in the wet tropical Top End.**
   The NT has too many of its own examples of catastrophic water contamination as a result of leaking tailings Dams and failed wastewater containment systems. Two examples that spring to mind are the horrors of Red Bank, which the NT Government has acknowledged as an environmental disaster. In addition there is Ranger, uranium mine surrounded by a world heritage listed national Park. As recently as the last wet there was accidental release of contaminated water. Both of these are large operations. They had multiple employees working on site when mines were active. The current regulatory and compliance systems failed to protect local water systems. At Ranger the eyes of the world are on how they are managing wastewater. If they couldn't manage contamination risks, how are multiple unmanned well sites with an average of 11.5 million litres of contaminated water going to be safely contained each and every time?

2. **Risks of trucking waste off site.**
   It seems to us, there are equal risks to trucking waste off site. With roads cut across much of the Top End during the wet season what happens when access to the sites is not possible? We also have concerns about who will be carting around these enormous volumes of contaminated toxic and potentially radioactive water. Ask anyone hiring 'out bush', finding conscientious, safety conscious employees willing to work in remote NT is extremely difficult. We fear that the role could be subcontracted out to those without the training and skills to ensure safety [think National Home Insulation Scheme but with a lot less scrutiny]. And where are they trucking it to? 1 gas field will generate hundreds of millions of litres of highly toxic water that will be carted across the NT to unknown wastewater disposal sites. And then what? There are vast quantities of contaminated, toxic and potentially radioactive water that needs to be securely [and permanently?] stored.

4. Inability of NT Government Departments to adequately assess, monitor and ensure compliance

The regulatory framework within the NT is extremely weak and needs strengthening. But within the operation of the current system there is an enormous and troubling reliance on the mining companies themselves to provide quality monitoring, data and reporting. In effect, they are required to ensure their own compliance. Given that this

often goes against their dominant interest, it is not an effective system. It invariably results in disasters such as the recent oil spill from the offshore Montara Well. Further evidence of the failure of the Petroleum Act to provide adequate environmental protection.

5. Flawed risk v benefits analysis

We recognise there is a strong argument for fracking in the NT. This revolves around the money that will be made. The chief proponents of this argument are the wealthy and extremely strategic mining companies and a cash strapped NT Government. So let's unpack their logic because we see some basic flaws in the risk v benefits argument that is relentlessly presented.

Firstly, lets recognise that mining companies are driven by one dominant interest. Their dominant interest is not to protect water resources in the NT. Their dominant interest is not to empower Aboriginal economic development on country. Their dominant interest is not the health of the NT economy, ecology or community. Their dominant interest is maximising profit. Profits that will largely leave the NT.

The NT is an extremely attractive option for these companies because they see the benefits of doing business somewhere with a stable first world government, but without the environmental checks and balances that often go with that.

For the government, who'll take 10% of the gross value at the wellhead of petroleum products + licensing + fees, a cut of these mega profits will make a significant contribution to treasury.

The problem is that the nature of fracking means that the greatest profits are to be made in the early part of a wells life when most of the gas is easily accessible. These wells may have a 40-year lifespan but only be highly profitable in the first 10 years.

Even if you could set aside the clear risks [exacerbated by a weak regulatory and compliance framework] what you then have are gas fields with declining production, and sharply declining profits. This means less royalties for governments but will also lead to the divestment of these marginally producing assets to smaller operators. And by the time the well is exhausted, the owners may be unable to fund effective reclamation of the site.

Fracking is inherently unsafe. The contamination of vast quantities of clean useable water with toxic chemicals and heavy metals, radioactivity, and methane is a problem.

The only thing that keeps this highly contaminated water from poisoning nearby precious water supplies is the integrity and careful maintenance of each individual well and storage facility, during its life and after production ceases. In addition, all the pipes and roads that will connect up this vast network of wells must be maintained. The integrity of this infrastructure cannot be guaranteed.

Risks increase as wells and infrastructure age and degrade.

Who then bears the cost of water contamination? It won't be the companies who are not required to pay environmental bonds that match expected liabilities. They may have divested their interests by then. They may no longer exist.

It seems insane to build such a high-risk industry almost entirely reliant on those who will profit 'doing the right thing'. Where is the evidence that this is an effective strategy for guaranteeing the safety of the most precious resource we have; clean, useable water? Where are the examples from elsewhere that the fracking industry will pioneer best practice resource management requirements without compulsory environmental impact assessments and a tight regulatory and compliance framework [including environmental bonds that match reclamation costs]? Where is the modelling that shows how the NT government plans to pay for the responsibility of clean ups they have excused mining companies from?

It is an insult to the intelligence of the people of the NT to argue that it will be too difficult and expensive to require Environmental Impact Assessments for each fracking site. Projected profits from fracking will be in the billions in the NT. One of the costs to companies and government who wish to profit from our resources need to be understanding and ameliorating known risks at the site the resource is coming from.

If understanding and protecting against the risks at each drilling site is too hard for both the industry and government, then we are not ready for this extremely high risk technology in the NT.

We know who will profit from fracking in the NT and where that profit will go.

But where is the very real risk of water contamination in the risk benefit analysis? And where is the modelling that shows who will pay?

We call for

1. The NT government to ensure water resources on the Cox Peninsular are secure in perpetuity.

2. Moritorium on Fracking while proper & comprehensive independent scientific risk assessment is carried out.

3. Mining companies to bear the onus of proof in demonstrating the safety of fracking at proposed sites. They must be required by law to respond to the criteria for environmental impact assessment as per any other significant development.

4. Mining companies must obtain free, prior and informed consent from all landholders as per best practice management.

5. Water use by mining companies must come under the Water Act so that companies taking water for fracking are required to apply for a water extraction licence.

6. Proper resourcing of monitoring and compliance bodies such as the EPA and Department of Mines and Energy. These bodies must be equipped to monitor both short and long term impacts of fracking.

7. Mining companies must bear the financial and moral responsibility for any negative impacts caused by fracking. There must be environmental bonding requirements that match reclamation requirements.

8. The NT Government cease the use of taxpayer dollars to provide subsidies and incentives to mining companies for the purpose of exploration and extraction.

[Submission prepared by Ally Richmond for Don't Frack the Cox]

References

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