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16 June 2011

Catherine Delahunty MP
Green Party of Aotearoa New Zealand
Parliament Buildings
Wellington

Dear Ms Delahunty

Official Information Act – Hydraulic fracturing

We acknowledge your request for information under the Official Information Act received on 16 May 2011. We have answered your questions in the same order as your request.

By way of background and context for concerns about fracking the Council does not currently require resource consents for the activity of fracking. This is because the activity occurs in oil and gas reservoirs that are between about 2500 and 4500 metres below the land surface. Potable deep ground water resources in the region are about 600 metres and above. Hence the activity is separated by consolidated sediments of thousands of metres in thickness which means the risk of fracking fluids moving upwards and contaminating potable groundwater is very minimal.

Overseas examples of fracking where adverse environmental effects have been observed on groundwater are generally associated with very shallow formations where the separation distance between the formation being fracked and aquifers above is in the order of several hundred metres and the risk of adverse effects is much greater.

The Council regulates the discharge of drilling and other oil industry wastes, including fluids from fracking activities that are returned to the surface, under the Resource Management Act 1991. The Council's Freshwater Plan (2001) sets the rules for activities impacting freshwater and the plan is currently under review.

Question 1
What chemicals are being used in the hydraulic fracturing process in Taranaki?
Set out below is a list of chemicals (and descriptions) supplied to the Council. These were used in recent frack job in the region under a water based frack fluid system:

- Xcide 102 – this is a biocide
- Claytrol – this is a clay stabiliser
- GS-1 – this is a gel stabiliser
- GLFC-1b – this is a gelling agent: natural guar gum

- Inflo-150 – this is a friction reducer
- BF-7LD – this is a borate buffer fluid: potassium carbonate
- XLW-56 – this is a crosslinking agent
- GBW-41L – this is a gel breaker: hydrogen peroxide
- GBW-12cd – this is an enzyme: hemicellulase enzyme
- GBW-5 – this is a gel breaker: ammonium persulphate.

Question 2
How much hydraulic fracturing fluid chemicals are being used in those wells?
The exact volumes of chemicals used varies from job to job and are not known but the chemical component of a frack job is typically below 3 % with the rest being water.

Question 3
How much water is being used in the hydraulic fracturing process in Taranaki and where is that water coming from?

Water use varies depending upon the depth of fracking. Water is sourced from a number of sources: consented municipal supplies (where total volumes are known but not for specific purposes such as fracking); under a permitted activity rule up to 50 cubic metres per day (i.e. no resource consent or abstraction records); or consented takes for oil and gas field use. Hence to give specific water use data is impossible. However, data from the Council's State of Environment Report (2009) is useful to potentially put the matter into perspective. Consented water use in 2008 for hydrocarbon exploration was 9,229 cubic metres per day (2 % total possible water use) but these consents are not all exercised at the same time and a maximum take would be limited to up to 3 rigs working and being consented to take a total of about 400 cubic metres per day. Consented water use for petrochemical processing was 62,239 cubic metres per day (13 % total possible water use). Water use for hydrocarbon processing is included in the latter and is a very small (less than 5 %) percentage of this.

Water use for fracking activities is not a resource management issue in this wet region.

Question 4
How is the water treated before disposal?

Frack fluids typically comprise about 97% water and about 3% chemicals. Chemicals are therefore in a diluted form in any discharge. Minimal treatment occurs. In the case of the frack job described in question 1 these were injected at depth into land (deepwell injection) under a resource consent. The disposal of drilling wastes by this method is common in the region. Drill cuttings and muds, which may include residual frack fluids, may also be discharged to land. Drilling liquids are often recycled by the industry and are not discharged.

Question 5
What depths are each of the known water aquifers in the Taranaki region

Groundwater use for domestic purposes in the region is predominantly from wells that are within 20 metres of the surface and access water from the volcanic and marine terrace aquifers. Some deeper bores tap aquifers in the Whenuakura/Matemateonga formations at depths up to 450 metres. These are generally located on the South Taranaki coastal area (i.e. between Hawera and Waitotara). Natural saltwater levels increase in groundwater aquifers with depth and below about 600 metres are saline and not suitable for use.

Question 6
Has there ever been any leakage of fracking fluid or other drilling fluid into Taranaki aquifers? If so, where and how much and what was done about it?

Injection wells are cased through aquifers so there can be no discharges of fracking fluids to them. There is no known leakage of frack fluids to aquifers or to the surface water in the region.

Yours faithfully
B G Chamberlain
Chief Executive

per: AD McLay
Director-Resource Management