Photo: © Garth Lenz
This picture, taken near Hudson's Hope, B.C., in September 2010, shows a hydraulic fracturing well site, complete with dozens of water trucks, a rectangular pit for fresh water and two circular pits for contaminated water.

Natural Gas and Water

What You Need to Know About Hydraulic Fracturing in B.C.

What is hydraulic fracturing?

Hydraulic fracturing is a process used to extract gas from unconventional deposits, such as shale gas and tight gas formations. It involves pumping vast quantities of water, combined with toxic additives, underground at high pressures to "fracture" the rocks and release the gas. Most of the injected water and chemicals — as much as 50% — will be lost into the well and the surrounding aquifer, meaning that additional water and chemicals are required to complete each stage of fracturing. The water that is recovered is contaminated and removed from the water system.

Where is it happening?

Right now, hydraulic fracturing is taking place all over northeast B.C. as several shale and tight gas formations are being rapidly developed.

How much water is used?

Most water approvals for hydraulic fracturing are done by way of short-term water authorizations, which is an "expedited" approval process through the Oil and Gas Commission, with less evaluation than a water licence. While there are about ten industry water licences in northeast B.C., there are more than 1,000 short term water authorizations for removals out of lakes, streams and rivers in northeast B.C.

Industry estimates that many of the anticipated shale and tight gas wells in northeastern B.C. will require at least 90 million litres of water per well for fracturing purposes — that's about 36 Olympic-sized swimming pools of water. In 2009, the Oil and Gas Commission approved at least 78 billion litres of short-term surface water withdrawals for oil and gas activities. That's about half the amount of water used by the City of Calgary in a year and does not include water licences or private arrangements with landowners.

What chemicals are used?

In B.C., producers are not required to publicly disclose the chemicals and additives used in the process — although drilling fluids are known to include benzene, mercury, diesel and other toxic ingredients that are dangerous to the environment and human health.

There have been persistent calls in the U.S. for disclosure of fracturing chemicals. Wyoming and Colorado now require limited disclosure of fracturing chemicals and the state of New York has put in a place a one-year moratorium on fracturing until a comprehensive study can be completed. A draft U.S. Frac Act would require companies to disclose the chemicals used in operations to the government. The U.S. Environmental Protection Agency is currently conducting a national two-year study on the potential effects of hydraulic fracturing.

What should the B.C. government do?

Concern about hydraulic fracturing is increasing. To ensure water resources are protected, the B.C. government should:

- End short-term water authorizations and require all oil and gas users to get a water licence.
- Require the Oil and Gas Commission to return licensing powers and oversight for all water takings to the Ministry of Environment, whose primary role is environmental protection.
- Stop permitting hydraulic fracturing pending completion of transparent and independent baseline studies that will map aquifer and groundwater flows in places where hydraulic fracturing is being considered.
- Require companies to publicly disclose chemicals and additives used in hydraulic fracturing.
- Undertake an independent audit of all oil and gas water use in B.C., seeking direct information from companies on actual water use and disposal, including untracked sources such as private arrangements with landowners.

Photo: © Garth Lenz
A water truck at a pit near Hudson's Hope, B.C. Many of the shale and tight gas wells in northeastern B.C. are expected to require at least 90 million litres of water — the equivalent of 36 Olympic-sized swimming pools — per well for fracturing purposes alone.

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