

FAQs – Hydraulic Fracturing (Fracking)

What is hydro fracturing?

Hydraulic fracturing, also called “fracking” is a process used to extract oil and gas. By injecting a fluid comprised of water, sand and a small percentage of chemicals at high pressures, fractures can open up in tight rock formations. This process has been used for decades, can reduce the number of wells needed and can extract gas from rock formations far less permeable than conventional drilling.

What are the chemicals used in hydro fracturing?

The chemicals used in fracking fluid vary from case to case. That is why government is requiring that industry disclose the contents of fracking fluid before any operations go forward, which will then be made public.

By volume, chemical additives typically account for 1% of hydraulic fracturing fluids; the other 99% consist of water and sand. Most of the chemical additives used are also found in common household products. The toxicity of a chemical is determined by the amount and concentration of exposure.

Specific compounds used in a given fracturing operations will vary depending on company preference, source water quality and site-specific characteristics of the target formation.

There are many different options regarding the chemicals used in the process. The safety of these chemicals will be evaluated on a case by case basis.

Will Fracking deplete New Brunswick’s water resources?

The amount of water used during a fracking procedure varies from well to well. Industry states water volumes range between 250 and 4,000 cubic meters per treatment. It is not currently known how much water a typical shale gas well in NB would require. Hydraulic fracturing at a well pad for horizontal shale gas wells is not a “one shot” process. It is performed in stages. Because the length of the wellbore can exceed one kilometre, it is usually not possible to maintain pressure sufficient to stimulate (frac) the entire length of a lateral in a single stimulation (frac) event. As such, there could be as many as 10-20 stages (fractures) per well.

Each stage requires approximately 4,000 m³ of water to hydraulically fracture using current technologies. Some of this water is returned to surface and can be recycled for use in subsequent stages. It is unknown at this time how many wells could be drilled in the province if sufficient reserves are found through exploration. To put the amount of water used in context, the City of Fredericton consumes on average 23,000m³ per day, largely for domestic use.

How many times is a well typically fraced?

Generally, shale gas wells are fraced once at the beginning of the process and this can be done in multiple stages in order to ensure sufficient pressure to stimulate the entire length of a lateral. As such, there could be as many as 10-20 stages (fractures) per well.

What happens to the fluid during the process?

A small percentage (between five and 20 per cent) returns to surface with the extracted shale during the initial period of the project. Further amounts are collected over the life of the well. The remainder of the fluid stays in the ground, trapped by the same layers of earth that trapped the natural gas in the first place. Returned facing fluid will be treated at an appropriate facility as any waste water from an industrial operation routinely is.

What is Gas Migration or Stray Natural Gas Migration?

In improperly operated, poorly constructed or deteriorated wells, natural gas may move from the wellbore. This is called gas migration. Migrating gas can affect water supplies, as well as potentially accumulate inside or next to structures such as residences, businesses and farming operations. This could create a risk of a fire or explosion. Gas migration may become a threat to the health, safety and welfare of the public. The key to avoiding migration is to have stringent industrial guidelines and environmental standards in place.

What is Casing and Cementing?

Casing is a steel pipe inserted in the well to keep gas or oil in the well. It is made out of a series of metal tubes installed in the newly drilled hole. Cementing is the practice of pumping cement down between the casing and the wellbore wall to hold it in place and prevent gas from leaking.

How will you ensure that groundwater is not contaminated by hydraulic fracturing?

The concern for most people is that hydraulic fracturing fluids may contaminate drinking water aquifers by being pushed toward the surface along fault lines and fracture planes. The likelihood of this occurring is remote given the depth at which hydraulic fracturing for shale gas is typically occurring and the distance to drinking water aquifers.

Shale gas deposits currently being exploited in NB are at a depth of approximately 2,000 metres below ground surface. The limit of freshwater aquifers in NB is around 200 m depth. The intervening rock contains multiple layers of tight rock formations which would help to prevent the upward migration of water/fluids to drinking water aquifers.

How will you ensure that groundwater is not contaminated by surface activities?

Reported cases of groundwater contamination associated with shale gas have been linked to casing failures due to poor well construction or over-pressurization of wells (especially older wells with less rigorous standards). Industry uses high-strength steel pipe, which is cemented in place and tested at higher pressures than used during drilling or stimulation. These measures ensure that freshwater resources are protected during the drilling, completion, and production processes.

NB's current regulations and directives set out requirements to set surface casing well below groundwater, cement to surface and pressure test. There are also requirements for intermediate casing (where installed) and production casing. Requirements to repair inadequate cementing jobs and/or abandon wells have also been set out.

Abandoned oil and gas wells in the Stoney Creek area of NB have been thoroughly studied, accounted for and properly decommissioned.