

## FAQs – Hydraulic Fracturing (Fracking)

### **What is hydraulic 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, to open up fractures in tight rock formations. This process has been used for decades and reduces the number of wells required and can extract gas from rock formations bypassed during conventional drilling.

### **What are the chemicals used in hydraulic fracturing?**

The chemicals used in fracking fluid vary depending upon formation characteristics. This is main reason why government is requiring that industry disclose the contents of fracking fluids before any operations go forward, which will then be made public after the operations are completed.

By volume, chemical additives typically account for 0.1% of hydraulic fracturing fluids; the other 99.9% 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 or concentration and the level of exposure.

Specific chemical compounds used in hydraulic fracturing operations will also 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 and the safe use and treatment 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 operation varies from well to well. Industry states water volumes per hydraulic fracturing stage can range between 250 and 4,000 cubic meters. It is expected a typical shale gas well in NB would require amount nearing 4,000 cubic meters per stage. Hydraulic fracturing at a well pad for horizontal wells is not a "one shot" process. It is performed in stages because the length of the wellbore can exceed one kilometre, and it is usually not possible to maintain pressure sufficient to stimulate (frack) the entire length of a lateral in a single stimulation (frack) event. There could be as many as 10-20 stages per well.

Some of this water is returned to surface and can be recycled for use in subsequent stages. It is unknown how many wells could be drilled in the province if sufficient reserves are found through exploration.

### **How many times is a well typically fracked?**

Natural gas wells are typically fracked once and this can be done in multiple stages. Wells can be fracked again depending upon numerous reasons including production level or missed previous potential.

### **What happens to the fluid during the process?**

A percentage (between five and 50 per cent) returns to surface with the extracted natural gas. Water is continually produced 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. Returned fracking and produced fluid will be treated and disposed.

### **What is Gas Migration or Stray Natural Gas Migration?**

In improperly operated, poorly constructed or deteriorated wells, natural gas may move from the wellbore to the ground surface outside the wellbore. This is called gas migration. Migrating gas can affect water supplies, and 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 gas migration is to have stringent industrial guidelines and environmental standards in place regarding wellbore integrity.

### **What is Casing and Cementing?**

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

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

The concern 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 natural gas formations and the vertical distance from drinking water aquifers.

Natural gas deposits currently being exploited in New Brunswick are at a depth of approximately 2,000 metres below ground surface. The limit of freshwater aquifers in New Brunswick is around 200 metres in depth. The rock contains multiple intervening layers of non-permeable rock formations which would help to prevent the upward migration of water and fluids into drinking water aquifers.

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

Reported cases of groundwater contamination associated with natural 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 fracking. These measures ensure that freshwater resources are protected during the well life cycle.

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