

# Myths Versus Realities: ...Getting the facts about

# FRACKING

Hydraulic fracturing, more commonly known as “fracking,” is a technique to extract natural gas from harder to access unconventional sources trapped in rock formations such as shale gas, coal bed methane and tight gas. Millions of litres of water and thousands of litres of chemicals are injected underground at very high pressure in order to create fractures in the rock allowing gas to flow up the well. Fracking for unconventional natural gas is expanding across Canada. But with the release of the award-winning documentary *Gasland*, high profile campaigns, and nearly daily media reports, the negative impacts of fracking are also being put in the spotlight. Industry representatives are responding with their spin to counter growing public concern. While there is often a kernel of truth in what industry representatives say, there are real experiences and additional facts to keep in mind.

Here are some myths and facts about fracks:

**MYTH: Fracking is a proven gas extraction method that has been used for decades.**

**FACTS:** This is a misleading argument often used by industry representatives. While it is true that hydraulic fracturing has been used for decades, this argument overlooks the fact that fracking for unconventional gas – shale gas, coal bed methane and tight gas – is new. Dr. Anthony Ingraffea, a hydraulic fracturing expert from Cornell University, explains: “What they [industry representatives] fail to say is that they’ve had fewer than 10 years of experience on a large scale using these unconventional methods to develop gas from shale.”<sup>1</sup> Fracking for unconventional gas, such as shale, requires much more water, more chemicals, and typically uses horizontal drilling, which increases pressure in the well.<sup>2</sup> Despite industry assurances, the boom in unconventional gas production in both the U.S. and Canada is bringing to light a number of serious health and environmental risks including human exposure to the chemicals used, earthquakes, water depletion and contamination.

*Reality: This form of hydraulic fracturing has only been used for about 10 years.*

**MYTH: Chemicals used in fracking are common and pose no significant risk to human health.**

**FACTS:** A typical fracked well requires the use of between 55,000 and 220,000 litres of chemicals, but the specific combination and

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quantities of chemicals used are considered proprietary trade secrets.<sup>3</sup> While some companies are voluntarily reporting some of chemicals they use, this does not ensure full disclosure. When it comes to public health, this simply doesn't cut it. Fracking companies should be legally required to publicly disclose the chemicals they use under the National Pollutant Release Inventory.<sup>4</sup> The lack of information about fracking chemicals poses a risk to understanding potential health risks and impedes contamination investigations.<sup>5</sup> Research by the U.S. Environmental Protection Agency and the U.S. Endocrine Disruption Exchange Inc. has demonstrated that fracking fluids contain toxic substances known to cause serious health impacts such as cancer and organ damage, and have negative impacts on neurological, reproductive and endocrine systems.<sup>6</sup> Under the Chemicals Management Plan (CMP), Environment Canada reviewed chemicals used in the fracking process in both Quebec and the U.S. Approximately half of the fracking chemicals did not meet the CMP criteria for further investigation, meaning these chemicals have not been assessed for potential risks to the public.<sup>7</sup> Health risks arise when chemicals are used near water, and trucked through and stored in communities. Spills can also happen at disposal pits and wells.

*Reality: Companies do not disclose all of the chemicals used for fracking, or their quantities. Tests have shown that many of the chemicals – the ones we are aware of – used in fracking are known to cause serious health problems such as cancer or organ damage.*

**MYTH: There has never been a proven case of drinking water contamination caused by fracking.**

**FACTS:** Water contamination caused by fracking is well-documented. In December 2011, the US Environmental Protection Agency (EPA) released draft findings that link water contamination to hydraulic fracturing.<sup>8</sup> In two deep water monitoring wells, the EPA detected synthetic chemicals – glycols and alcohols – that are found in gas production and hydraulic fracturing fluids.<sup>9</sup> They also found high methane levels and benzene levels that exceeded the Safe Drinking Water Act. In the private and public drinking water wells, the EPA found that the “presence of these compounds is consistent with migration from areas of gas production.”<sup>10</sup> ProPublica found more than 1,000 cases of water contamination documented by courts and state and local governments in Colorado, New Mexico, Alabama, Ohio and Pennsylvania.<sup>11</sup> Jessica Ernst, a landowner in Rosebud, Alberta, has filed a lawsuit against EnCana, Alberta Environment, and the Energy Resources Conservation Board for negligence and unlawful activities. Ernst’s well water is so contaminated with methane and other fracking chemicals that it can be lit on fire.<sup>12</sup>

*Reality: Well-documented cases of water contamination caused by fracking exist in countries around the world. A 2011 study by the U.S. Environmental Protection Agency confirmed the clear link between fracking and water contamination.*

**MYTH: Fracking occurs hundreds of metres below the water table and is buffered by rock, so it will not cause water contamination.**

**FACTS:** Contamination of fracking fluids from one well to another has been documented in British Columbia. In the report *Fractured Lines*, author Ben Parfitt noted that: “During a fracking operation “a large kick” or “communication” occurred with another well 670 metres away. Sand being pumped underground during fracking at

one well showed up at the other.”<sup>13</sup> On May 20, 2010, the British Columbia Oil and Gas Commission (BC OGC) issued a safety advisory stating that they were aware of 18 fracturing communication incidents.<sup>14</sup> The commission revealed that “large kicks resulted in volumes up to 80m<sup>3</sup> of fluids [being] produced to [the] surface. Invading fluids have included water, carbon dioxide, nitrogen, sand, drilling mud, other stimulation fluids, and small amounts of gas.” The commission warned that the “communications” between wells posed a potential safety hazard.<sup>15</sup> The incidents occurred horizontally from wells that were between 50 metres to 715 metres apart.<sup>16</sup>

The BC OGC’s advisory confirms that fracking fluids can return to the ground surface, which poses a significant threat to water sources as chemicals could leach into nearby watersheds.

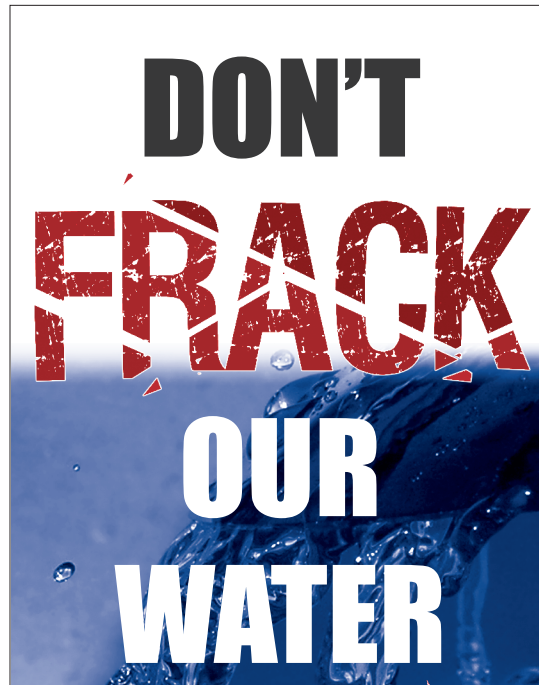
*Reality: Studies have concluded that contamination can occur despite distance between wells, and fracking fluids can come back to the surface, posing the risk of contamination to nearby water sources.*

**MYTH: In some areas, fracking wastewater is recycled; in other areas it is safely injected into underground wells, or stored in impoundments or pools.**

**FACTS:** While recycling fracking wastewater is touted as a “win-win” solution, it still poses significant environmental and

health threats. Brines, resulting from the recycling process, are made up of salts or sludge concentrated with radioactive material and toxic chemicals. The brines need to be disposed of, and have been used to de-ice or suppress dust on roadways.<sup>17</sup> When the snow melts or it rains, the brine can run off the roads, potentially contaminating the local drinking water supply. In the Horn River Basin fracking project in British Columbia, wastewater is injected deep underground into the saline Debolt aquifer. However, in *Fractured Lines*, Ken Campbell, senior hydrologist with Schlumberger Water Services in Calgary, says that “it is highly unlikely that the aquifer will be able to sustain such pressure,” noting that some parts of the aquifer may be good for frack water supply and wastewater injection, while others are poor, and still others “impossible” to use for such purposes.<sup>18</sup>

*Reality: Recycled fracking wastewater has many contaminants and should not be used for other purposes, such as in brines used to de-ice or limit dust on roads.*



**MYTH: There is no link between fracking and earthquakes.**

**FACTS:** While experts continue to debate whether a direct link between fracking and earthquakes exists, real life examples in the United Kingdom and in Oklahoma, Texas and Arkansas in the United States are raising alarm bells. The UK has suspended fracking after a firm admitted their project had caused a number of minor tremors.<sup>19</sup> Fracking has also been suspended in Fayetteville, Arkansas where work has been accompanied by a notable increase in earthquakes.<sup>20</sup> On December 31, 2011, a 4.0 earthquake prompted officials in Ohio to shut down five wells used to dispose fracking fluid. Ohio state officials said that the quakes were caused by deep injection wells where wastewater produced from fracking was kept.<sup>21</sup> The fracking industry can mitigate the risk of earthquakes by conducting seismic surveys. The surveys can cost millions of dollars though – costs that industry representatives do not want to incur because they would cut into profits.<sup>22</sup>

*Reality: This is a fairly new topic of research, so although no conclusions have been published, there are links between fracking and earthquakes that are hard to ignore.*

**MYTH: Natural gas is a clean, green fuel.**

**FACTS:** While natural gas is sometimes described as a transition fuel,<sup>23</sup> there are good reasons to question the boom in unconventional gas production. Briefing notes prepared for Canada's Natural Resource Minister acquired by the Council of Canadians clearly state that shale gas development could significantly contribute to Canadian greenhouse gas emissions.<sup>24</sup> The Horn River Basin in B.C. has particularly high carbon dioxide content. If it were developed, provincial emissions would need to be reduced by almost 50 per cent to meet the province's 2020 reduction target.<sup>25</sup> A review of Canadian economic modelling studies in a Pembina Institute and David Suzuki Foundation report found that if climate policies helped achieve a reduction of emissions 80 per cent below 1990 levels by 2020, less natural gas production would be required.<sup>26</sup> Questions are also being raised about the lifecycle emissions associated with fracked gas. One study published in an academic journal by a professor at Cornell University suggests that fracked gas emissions may be worse than those associated with oil and coal.<sup>27</sup> The climate crisis must be urgently addressed and emissions need to be reduced as equitably and rapidly as possible.

*Reality: From cradle to grave, natural gas obtained through fracking may have higher emission levels than oil or coal.*

**MYTH: Fracking will provide energy security to Canadians.**

**FACTS:** Fracking proponents often refer to the unconventional gas



boom as a way to meet energy security needs. It is important to know that Canada does not have an energy strategy. Since the 1980s our "strategy" has been to allow market forces and free trade rules to determine energy supply and demand, leading to high levels of energy exports to the larger U.S. market. Canada already exports approximately 60 per cent of our natural gas<sup>28</sup> to the U.S., and plans are underway to continue this pattern with unconventional gas. For example, the National Energy Board recently approved a licence to export 200 million metric tonnes of mostly shale gas over the next 20 years from a proposed liquid natural gas (LNG) terminal in Kitimat, B.C. David Hughes, a well known natural gas analyst, believes this is short-sighted. "In just 20 years from the opening of the Kitimat terminal, Canada will experience a supply crunch even without LNG exports ... We won't have enough gas to meet consumer demand."<sup>29</sup> This pattern of putting corporate profit interests ahead of Canadian interests, accompanied by a failure to transition off of fossil fuel reliance, will leave Canadians relying on imports from Africa or the Middle East at higher prices for a fuel that heats more than half of Canadians homes. Western fracked gas will likely go to the tar sands, which rely on mass quantities of natural gas to fuel production. And as we export tar sands bitumen south to the U.S., we will likely send vast quantities of fracked gas there too.

*Reality: Unconventional shale gas will mostly be exported to the United States, and although it will provide some energy within Canada, we need a Canadian Energy Strategy focused on environmentally sustainable options to truly secure our energy future.*

## **MYTH: Fracking will create jobs, benefit the community and the provincial economy.**

**FACTS:** The promise of jobs is appealing, particularly when economic hardships are making global headlines every day. But at what cost is the pursuit of jobs acceptable? There is sufficient evidence of fracking's environmental and social impacts to put a stop on all fracking projects until the industry proves the practice is safe. And there is good reason to question the number of jobs fracking projects actually produce. U.S. based Food and Water Watch recently analysed the jobs projections of a report promoting fracking in New York State.<sup>30</sup> The organization found numerous inaccuracies and methodological flaws that meant only slightly more than one-tenth of the project's job claims were accurate. Even when fracking jobs are created, they can have poor working conditions and pose a risk to workers' health. In a recent briefing titled *Health Implications of Fracking for Natural Gas in the Great Lakes-St. Lawrence River Basin*, Dr. Theo Colborne noted that some workers were required to sign contracts preventing them from ever revealing their hourly wage or health problems. They were not even allowed to call 911 in case of an accident or a spill.<sup>31</sup> Workers who suffered from hypertension, fibromyalgia, chemical sensitivity, memory loss and depression could not get worker's compensation because they could not prove their medical conditions were a result of chemical exposure.<sup>32</sup>

Instead of focusing on possible new fracking jobs, our governments could commit to reducing emissions and encourage a whole different set of jobs including weatherproofing, manufacturing and running renewable power projects, public transit, sustainable agriculture and much more.<sup>33</sup>

*Reality: Despite industry claims, the benefits to communities will be minimal, especially when compared to the health and environmental costs of fracking. There are many other industries that would truly achieve long-term job creation and economic prosperity.*

## **MYTH: Fracking is well regulated in Canada.**

**FACTS:** Oil and gas is primarily a provincial and territorial responsibility and in general, regulations are lagging behind industry growth. One clear problem is that most oil and gas wells are exempted from an individual environmental assessment process; this is notably the case in Alberta, British Columbia and Québec.<sup>34</sup> The fracking industry is most developed in Alberta. Jessica Ernst, a landowner in Rosebud, Alberta, claims that fracking has contaminated her well water and provincial regulators have failed to investigate and enforce their processes.<sup>35</sup> Ernst has launched a legal case against EnCana and Alberta government regulators, which is set to be heard in the provincial court. In British Columbia, frack-

ing is regulated by the B.C. Oil and Gas Commission, which also grants oil and gas permits, short-term water permits, and promotes provincial oil and gas development. There is currently a review of fracking underway in Nova Scotia, and there is a review and partial moratorium in Québec. While provincial and territorial responsibilities are significant, there are also clear federal duties including the regulation of air emissions, chemicals and toxic substances. Protections for water, wildlife and aquatic life are outlined in the Canada Water Act, the Species at Risk Act, and the Fisheries Act respectively. The federal government has commissioned two reviews of fracking, but has not yet considered a moratorium despite the clear link to federal responsibilities.<sup>36</sup> One glaring weakness is the exemption of oil and gas wells from the National Pollutant Release Inventory. This means the disclosure of fracking chemicals is based on voluntary documentation and guess work.<sup>37</sup>

*Reality: Fracking regulations vary widely from province to province. We need a national baseline for regulations that can then be tailored to the needs of the provinces and territories.*

*Note: For a full list of sources of information in this document go to [www.canadians.org/frackfacts](http://www.canadians.org/frackfacts)*

## **Take Action!**

Visit [www.canadians.org/fracking](http://www.canadians.org/fracking) and sign the "Don't frack with our water" petition. Get involved by finding out if fracking is happening in your community. Talk to your local, provincial and federal representatives and use this list of myths and facts to help dispel industry spin on this controversial extraction process. Write to Environment Minister Peter Kent today and ask what the federal government is doing to stop fracking projects given the growing number of documented cases of water contamination, health and environmental concerns linked to them.

## **Join the Council of Canadians**

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