

Quick Facts on fracking and unconventional gas extraction

What is fracking?

Fracking is a mining process used to extract gas deposits from shale and tight sands rock formations deep underground. Fracking involves pumping large volumes of water, chemicals and sand into a gas well under extreme pressure to force the rock to fracture and release trapped gas.

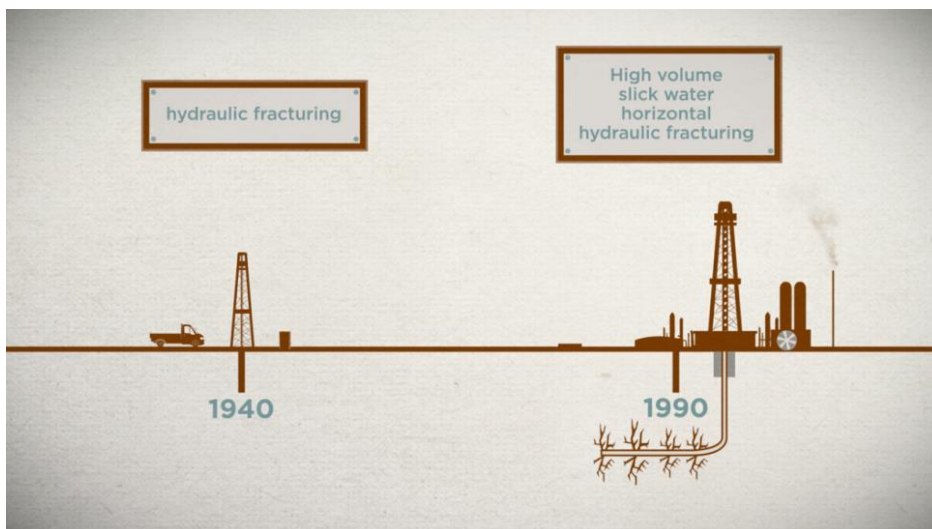
Shale and tight gasfields also require the industrialisation of entire landscapes with hundreds or even thousands of gas wells, plus vast networks of roads and pipelines, compressor stations, processing plants, wastewater holding dams and treatment plants.

How long have fracking processes been in use in Western Australia?

The risks of fracking are often downplayed by the gas industry and the WA Government with the rhetoric that 'hydraulic stimulation has been used in the oil and gas industry in Western Australia for the past 50 years' and that hundreds of wells have been fractured in WA without 'observed or reportable adverse consequences'.

In fact, historically in WA, hydraulic fracturing has mainly been applied to enhance production in *conventional* oil and gas reservoirs utilising vertical wells. Exploratory fracking for shale and tight (*unconventional*) gas in Western Australia only commenced in the last decade and only a handful of wells have been fracked in that time.

Fracking for unconventional gas is vastly different to the historical techniques used in conventional gas extraction, and usually involves high volume "slickwater" (ie. chemical and water fluid mixes) hydraulic fracturing as well as horizontal drilling. This modern fracking technique was pioneered in the 1980's in the USA and has only been implemented on a commercial scale in the United States since the 1990's, and commercially in Eastern Australia (in coal seam gas operations) since the early 2000's. **Modern fracking technology has never been deployed on a commercial scale in Western Australia.**



Modern slickwater fracking for shale and tight gas, utilising horizontal drilling, is a very different process to older vertical conventional gas fracking in several ways and these attributes make it a much more risky process:

- Modern fracking uses very large quantities of a variety of chemicals, many of which are known to be toxic or their toxicity is as yet unassessed (a typical 15 million litre fracturing operation would use from 80 to 330 tons of chemicals) (1);

- Modern fracking processes require massive volumes of water and produce large volumes of toxic wastewater (according to a 2015 water study from the United States, horizontal shale gas fracking uses the most water, requiring *up to* 36.6 million litres of water per well, or around 1200 truckloads of water for just one fracked well) (2);
- Much higher pressures must be applied to the well to undertake a frack in modern processes, increasing risk of well failure. New horizontal drilling techniques also make effective and secure well construction much more difficult to achieve.

Do modern gas wells leak?

The WA Government and the gas industry claim that fracking can be done safely if it is regulated appropriately and ‘best practice’ well construction guidelines are followed. However there is growing evidence to show that even strict regulations are simply not capable of preventing harm and that ‘world’s best practice’ well construction just isn’t enough to stop wells leaking.

Studies consistently show that oil and gas wells routinely leak, allowing for the migration of natural gas and potentially other substances into groundwater and/or the atmosphere. Recent research suggests that the act of fracking itself may induce pathways for leaks. Leakage from faulty wells is an issue that the gas industry has identified and for which it has no solution.

According to Schlumberger, one of the world’s largest companies specializing in fracking, about five percent of wells leak immediately, 50 percent leak after 15 years, and 60 percent leak after 30 years. Data from Pennsylvania’s Department of Environmental Protection (DEP) for 2000-2012 show over nine percent of shale gas wells drilled in the state’s north eastern counties leaking within the first five years. (3)

Leaks pose serious risks including potential loss of life or property from explosions and the migration of gas or other chemicals into drinking and agricultural water supplies with resultant health & safety implications.

Are the chemicals used in fracking really harmless?

The gas industry claims that most of the chemicals used in fracking can be found in household products, thereby inferring they are safe. While it is true that some chemicals used in fracking can also be found in products commonly used in the home, this statement overlooks the fact that they may not be safe for humans, livestock or the environment if these substances make their way into water supplies, soils etc. This is particularly so given the large quantities of chemicals required and the various untried and untested chemical combinations commonly used in fracking fluids.

This industry claim also deliberately glosses over the fact that, whilst some fracking chemicals may be found in the home, some are known to be toxic and many others have not been assessed for their long-term impacts on the environment and human health. For instance, fracking compounds used in Australia have been shown to include many hazardous substances, including carcinogens, neurotoxins, reproductive toxins, irritants/sensitisers, and endocrine disruptors. It is also worth noting that some of these chemicals are toxic even in extremely small concentrations.(4)

- (1) Hazen and Sawyer, December 22, 2009. Impact Assessment of Natural Gas Production in the New York City Water Supply Watershed.
- (2) Gallegos et al, 2015, Hydraulic fracturing water use variability in the United States and potential environmental implications, Water Resources Research Journal.
- (3) Concerned Health Professionals of New York & Physicians for Social Responsibility. (2015, October 14). Compendium of scientific, medical, and media findings demonstrating risks and harms of fracking (unconventional gas and oil extraction) (3rd ed.). <http://concernedhealthny.org/compendium/>
- (4) Caram, Moss & Blashki, 2014 “Harms UnKnown: health uncertainties cast doubt on the role of unconventional gas in Australia’s Energy Future”, Medical Journal of Australia; National Toxics Network: Toxic Chemicals in the Exploration and Production of Gas from Unconventional Sources