



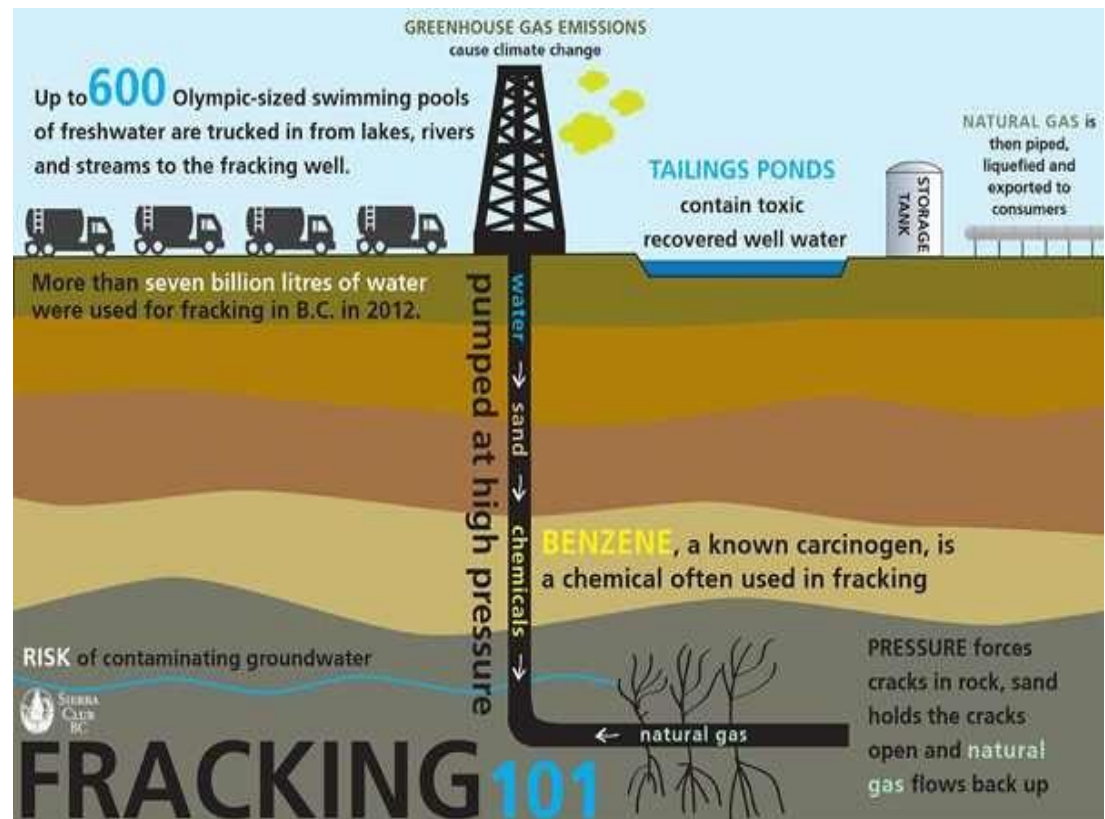
AB 159

Prohibition of Hydraulic Fracturing

What is Hydraulic Fracturing?

- Hydraulic Fracturing or “Fracking” is the process of pumping fluid into or under the surface of the ground to create fractures in the rock to facilitate the production or recovery of oil or gas.

Over the past decade, directional drilling has been combined with high-volume hydraulic fracturing and clustered multi-well pads as novel technologies for extracting dispersed oil and natural gas, primarily in shale formations



Why Now?

- Current regulations in NRS 522 are quite strict and were a compromise reached in the 2013 session
- At that time scientific data was incomplete:
 - ▣ More studies published in 2014 than all of 2009-2012
 - ▣ 2015 surpassed 2014 by 10%
 - ▣ More than 200 independent studies published in 2016
- Evidence shows that no amount of regulation can eliminate the harmful effects on human health that result from fracking

Global Movement

□ Bans on Fracking

- France
- Bulgaria
- Vermont
- New York
- Australia

□ Moratoriums

- Scotland
- Wales
- New Brunswick
- Maryland
- Germany
- 6 counties in California

Risks Associated With Fracking

- **Evidence shows dangerous to people and their communities:**
 - Earthquakes
 - Water contamination
 - Air pollution
 - Geological changes
 - Adverse affects on Human Health

Water Impacts

Hydraulic Fracturing has an impact on water resources and water quality.

- Each well uses between 3-5 million gallons
- Over half of fracturing mixtures use methanol, hydrochloric acids, hydro treated light petroleum distillates, and other toxic chemicals

Water Contamination

- **Mechanisms of Contamination:**
 - Spills of fluid and fracking wastewater
 - Discharge into rivers streams, or irrigation
 - Underground migration of chemicals, including gas, into drinking water wells
- **EPA (2016 Study)**
 - “Changes that have the potential to limit the availability of drinking water or alter its quality are more likely to occur in areas of relatively high hydraulic fracturing water withdrawals and low water availability, particularly due to limited or declining ground water resources.”

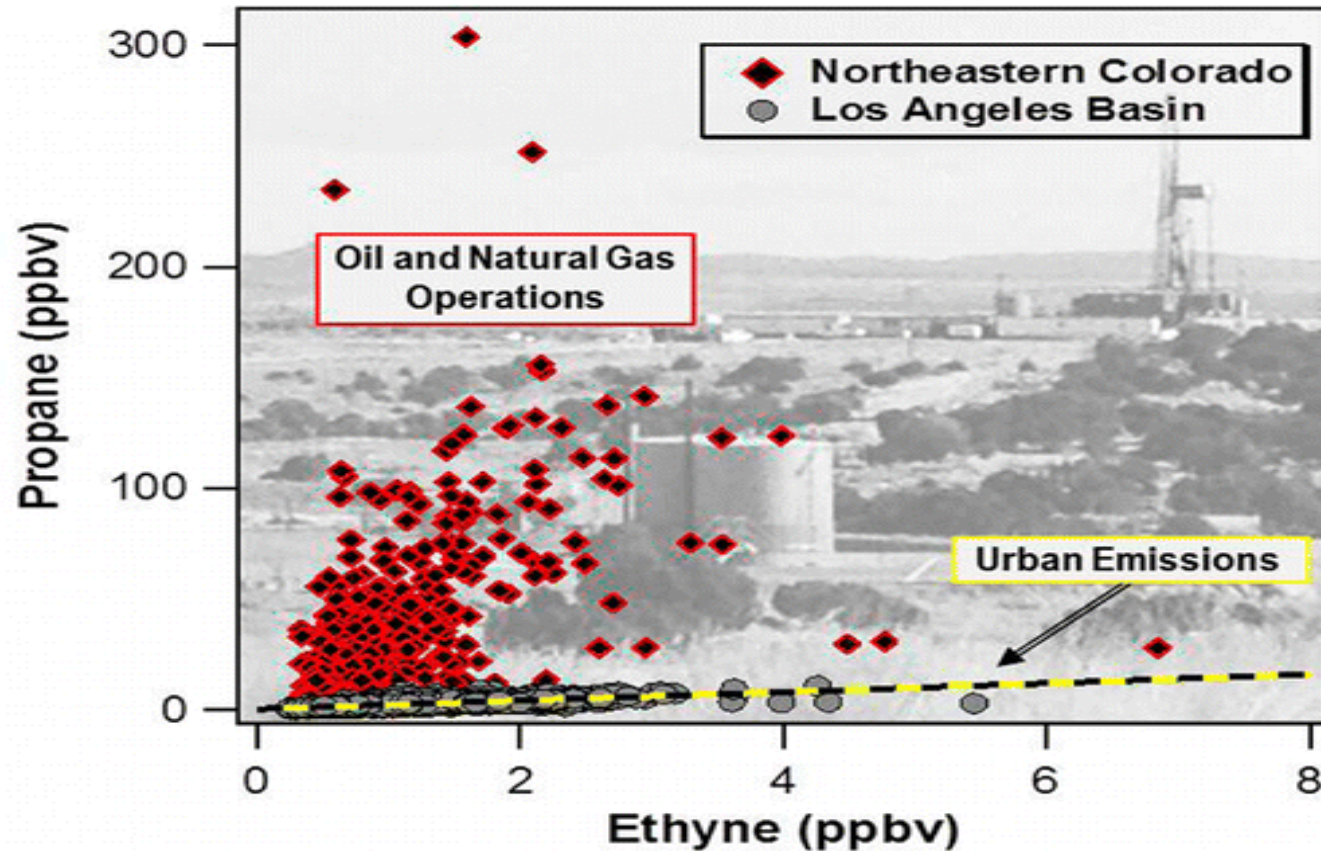
Water Contamination

The EPA Water Impact Assessment:

- *“EPA has found scientific evidence that activities in the hydraulic fracturing water cycle can impact drinking water resources under some circumstances.”*
 - ▣ 13% of fluid or wastewater spills reached surface water; one of which reached ground water
 - ▣ 18% of spills in California impacted waterways
 - ▣ 19 different fracking-related contaminants found in hundreds of drinking water samples in a Texas aquifer

Air Pollution

- Comparison of Oil and Natural Gas Operations versus urban emissions of volatile organic compounds (VOCs)



Air Pollution Impacts

- Increase in air pollutants and proximity to fracking site impacts public health
 - ▣ 1.5 - 4 times more likely to suffer asthma attacks
 - ▣ Twice as likely to suffer migraine headaches, chronic nasal and sinus symptoms, and severe fatigue
 - ▣ Yale study linked proximity to fracking sites to increase in childhood leukemia
 - ▣ Increase likelihood of congenital heart defects
 - ▣ 30% more likely to have congenital heart defects
 - ▣ 40% increase in the likelihood of giving birth prematurely
 - ▣ 30% increase in the likelihood of a “high-risk” pregnancy
 - ▣ Up to 4 times more likely to suffer from asthma attacks

Worker Safety and Health

OSHA Findings

- Risk of exposure to toxic chemicals and accidents
- Increase risk of lung disease
- Found workers in North Dakota were **7 times** the national fatality rates in this industry, which itself has more deaths from fires and explosions than any other private industry
- Increase of workplace deaths in West Virginia

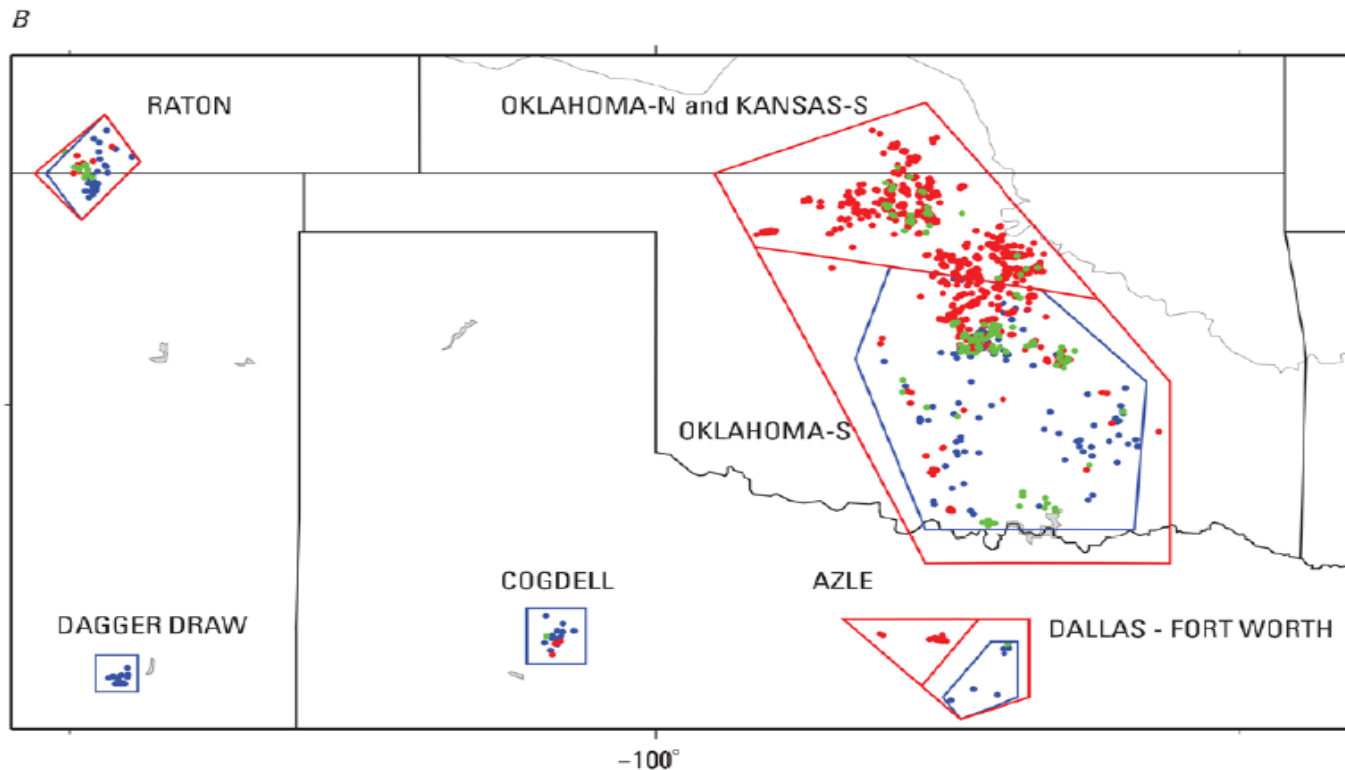
Earthquake Concerns

The USGS reported in their study:

- Earthquakes are stimulated by injection of wastewater in deep disposal wells (Fracking)
- New areas of induced seismic activity have been found; all near deep fluid injection wells

Earthquake Consequences

- Oklahoma's increase in Earthquakes
- Red = 2014 Green = 2013 Blue = 2012



Public Policy Considerations

- Promote renewable energy sources
- Protect public lands
- Conserve and protect our precious water sources
- Protect and promote clean air initiatives
- Promote public health

Sources

- *Compendium of Scientific, Medical, and Media Findings Demonstrating Risk and Harms of Fracking (Unconventional Gas and Oil Extraction)*, Concerned Health Professional of New York & Physicians for Social Responsibility (2016, November 17)
<http://www.psr.org/resources/fracking-compendium.html>
- *Hydraulic Fracturing for Oil and Gas: Impacts from Hydraulic Fracturing on Drinking Water Resources in the United States (Final Report)*, U.S. Environmental Protection Agency (2016, April 15)
<https://cfpub.epa.gov/ncea/hfstudy/recordisplay.cfm?deid=332990>
- *Incorporating Induced Seismicity in the 2014 United States National Seismic Hazard Model*, U.S. Geological Service Open-File Report (2015)
<http://www.psr.org/resources/fracking-compendium.html>