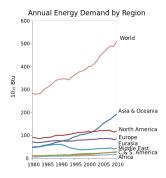
INTRODUCTION
CLAIMED ADVANTAGES
RISKS
BIG OIL
CONCLUSION

FRACKING

Nakul Joshi

October 3, 2013

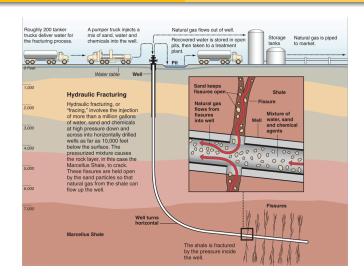
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Year	Fossil	Renewable	Nuclear
1990	83.4	6.1	13.1
2000	94.5	7.9	15.3
2008	117.1	8.3	18.5

TABLE: Global energy use in petawatt-hours

ENERGY DEMAND FRACKING PROCESS



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- America has large reserves of natural gas in shale beds.
- Shale reserves can provide upto 70% of North America's natural gas.
- Banning fracking would cut production by half in five years.

- Reduce prices of natural gas
- Job creation
- Stimulation of economies from investments.

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HOW NATURAL GAS DRILLING CONTAMINATES DRINKING WATER SOURCES 11. Toxic fracking fluid waste is dumped 1. A mixture of millions of gallons of in poorly constructed and sometimes water, chemically treated sand and toxic chemicals is injected under high pressure unlined pits and seeps into local waterways and aquifers into drilling well 10. Concentrated methane gas creates 2. Toxic fracking fluid spills from pipes. flammable water and poisonous fumes open valves and transporting vehicles and contaminates local waterways 3. Fracking fluid leaks though fissures and contaminates aquifer 4. Fracking fluid is pumped 7000 ft or more down and a similar distance 9. Residential wells pump water horizontally to release natural gas unsafe for use from contaminated aquifers into homes Gas producing rock formation 8. Toxic fracking fluids, benzene methane and other carcinogens pierce and pollute local aquifers Proppants like chemically treated 7. High pressure creates more sand and ceramic keep fractures open fractures, releases methane gas and forces toxic fracking fluid upwards 5. Fracking fluid injected at high pressure creates fractures and releases natural gas 6. The majority of fracking fluid remains in the ground and is not biodegradable checks and balances project, or q

- Fracking fluid composition is proprietary
- Known to contain several dangerous materials, including:
 - Acids
 - Biocides
 - Organometallic compounds
- Fluid can also force out materials from shale:
 - Heavy metals
 - Salts
 - Radioactive material
- Materials can be mutagenic, carcinogenic, toxic

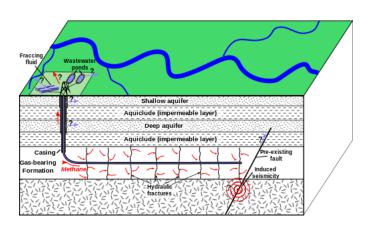


FIGURE: Seismic interactions

- Fracking increases the frequency of quake incidence
- Earthquakes might compromise fluid containment systems
- Highly unpredictable and hard to plan against

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Big oil has managed to lobby for exemptions from most environmental regulation.

- Safe Drinking Water Act
- Clean Air and Clean Water Acts
- Energy Act ("Halliburton Loophole")
 - Passed by Dick Cheney
 - Former executive of Halliburton

- Industry-funded research advocates fracking, but cannot be trusted
- Conflicts of interest are not reported
- Example: UT Austin Study

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- The transient benefits of fracking do not justify the long-term risks
- The industry cannot be trusted with regulation
- We should be looking for solutions that can secure our future, not threaten it...

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"The use of solar energy has not been opened up because the oil industry does not own the sun." – Ralph Nader