

# INJECTION WELLS & INDUCED EARTHQUAKES

## 7,535 M2.5+ SINCE 2011

### HIGH-PRESSURE INJECTION WELLS

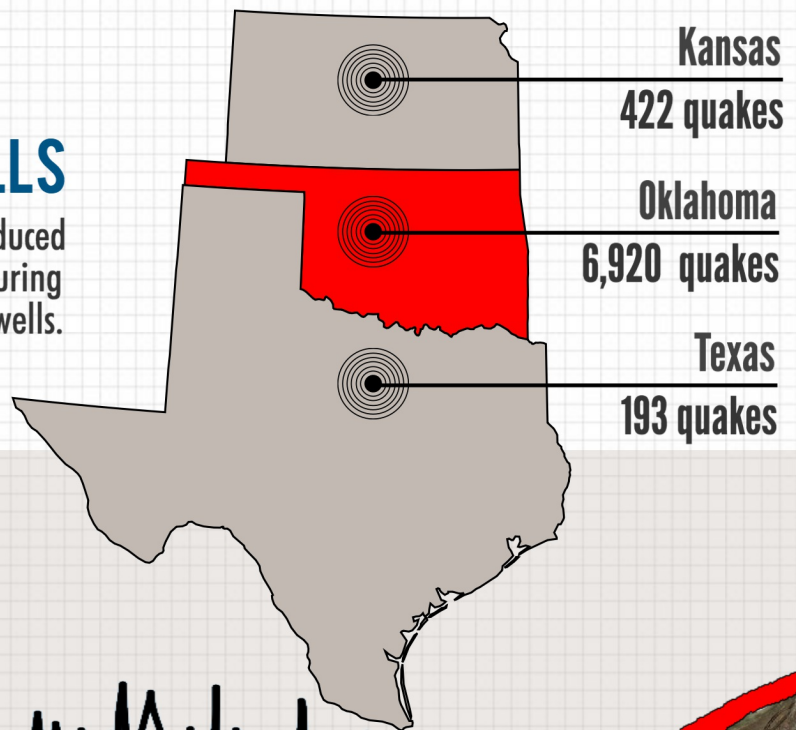
Growing evidence points to the relationship between induced seismicity and injecting high volume hydraulic fracturing (HVHF) oil and gas extraction waste into class II injection wells.

### Notable 2016 Oklahoma Earthquakes

Sept. 3rd: A 5.8 magnitude earthquake in Pawnee was the most violent example of induced seismicity activity in U.S. history.

Nov. 1st: A 4.5 magnitude earthquake led the U.S. EPA to restrict the use of injection wells within a 10 mile radius of Pawnee.

Nov. 6th: A 5.0 magnitude earthquake shook ground only a mile west of the Cushing Hub, one of the largest commercial crude oil storage facilities in North America.



### INCREASING FREQUENCY

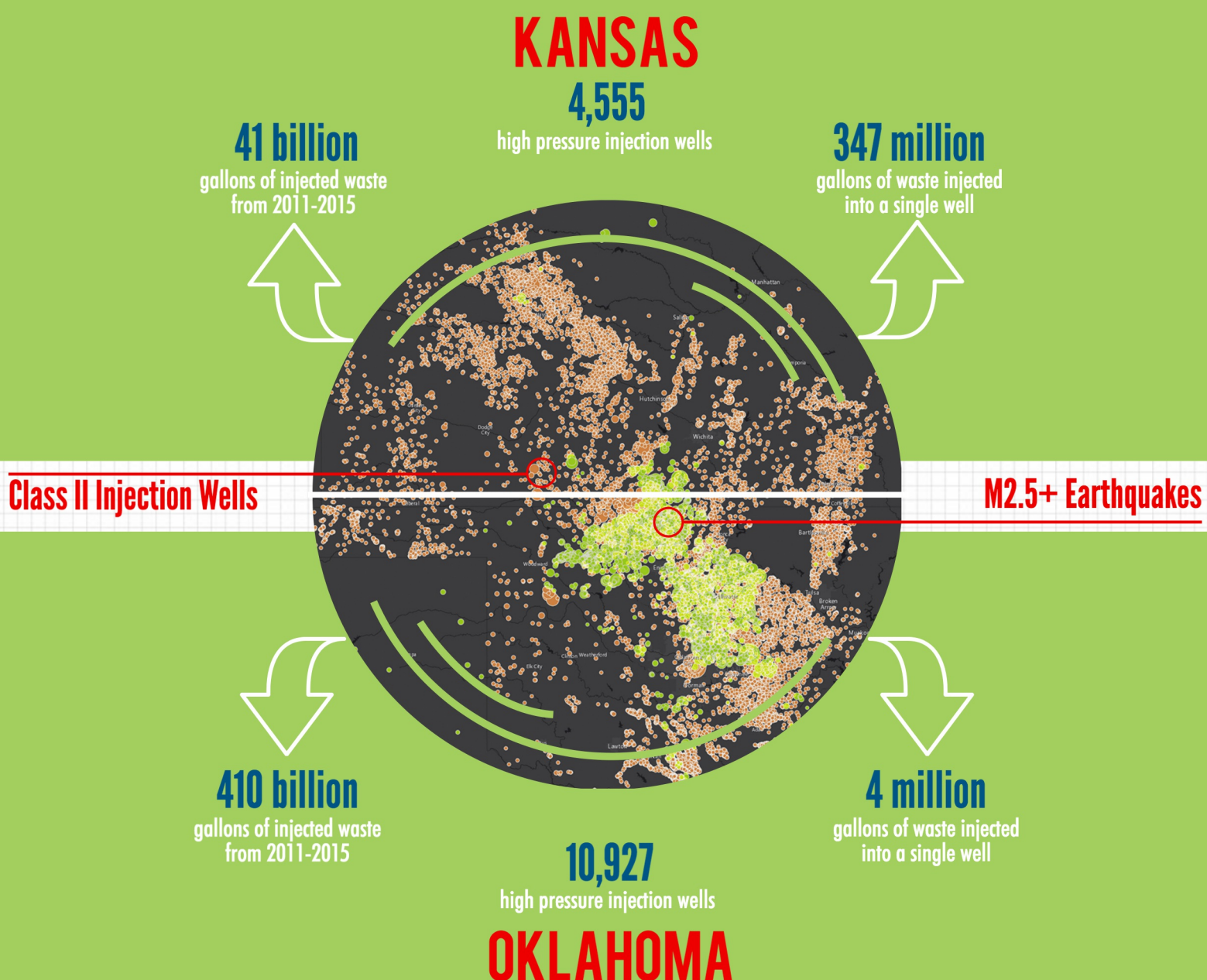
The USGS reports an exponential rise in induced seismic events since 2011. Man-made earthquakes will continue to increase in frequency given that:

- ⇒ Freshwater demand for fracking is rising all over the country
- ⇒ The amount of waste increases in tandem with freshwater demand
- ⇒ The industry is using more water to explore the periphery of primary shale plays and in less productive secondary plays

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### INJECTION VOLUMES MATTER

The EPA estimates that more than 2 billion gallons of wastewater are injected in the United States every day. Kansas and Oklahoma account for nearly 20% of this volume based on FracTracker analysis. A significant induced seismicity accident in such a high-risk region would disrupt fuel supplies, threatening national security, and cripple our economy.



For more information on Class II injection wells, as well as maps and analysis on other oil & gas related activity visit [www.fractracker.org](http://www.fractracker.org).

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