

# States Confront Worries About Fracking & Earthquakes

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AZLE, Texas (AP) — Earthquakes used to be almost unheard of on the vast stretches of prairie that unfold across Texas, Kansas and Oklahoma.

But in recent years, [temblors](#) [1] have become commonplace. Oklahoma recorded nearly 150 of them between January and the start of May. Most were too weak to cause serious damage or endanger lives. Yet they've rattled nerves and raised suspicions that the shaking might be connected to the oil and gas drilling method known as hydraulic fracturing, especially the wells in which the industry disposes of its wastewater.

Now after years of being harangued by anxious residents, governments in all three states are finally confronting the issue, reviewing scientific data, holding public discussions and considering new regulations.

The latest example comes Thursday in Edmond, Oklahoma, where hundreds of people are expected to turn out for a town hall meeting that will include the state agency that regulates oil and gas drilling and the Oklahoma Geological Survey.

States with historically few earthquakes are trying to reconcile the scientific data with the interests of their citizens and the oil and gas industry.

"This is all about managing risks," said Oklahoma Corporation Commission spokesman Matt Skinner. "It's a little more complicated than that because, of course, we're managing perceived risks. There's been no definitive answers, but we're not waiting for one. We have to go with what the data suggests."

Regulators from each state met for the first time in March in Oklahoma City to exchange information on the quakes and discuss toughening standards on the lightly regulated business of fracking wastewater disposal.

In Texas, residents from Azle, a town northwest of Fort Worth that has endured hundreds of small quakes, went to the state Capitol earlier this year to demand action by the state's chief oil and gas regulator, known as the Railroad Commission. The commission hired the first-ever state seismologist, and lawmakers formed the House Subcommittee on Seismic Activity.

After Kansas recorded 56 earthquakes between last October and April, the governor appointed a three-member task force to address the issue.

Seismologists already know that hydraulic fracturing — which involves blasting water, sand and chemicals deep into underground rock formations to free oil

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and gas — can cause microquakes that are rarely strong enough to register on monitoring equipment.

However, fracking also generates vast amounts of wastewater, far more than traditional drilling methods. The water is discarded by pumping it into so-called injection wells, which send the waste thousands of feet underground. No one knows for certain exactly what happens to the liquids after that. Scientists wonder whether they could trigger quakes by increasing underground pressures and lubricating faults.

Another concern is whether injection well operators could be pumping either too much water into the ground or pumping it at exceedingly high pressures.

ExxonMobil subsidiary XTO Energy has pumped an average 281,000 gallons — about 94 tanker truckloads — of wastewater into its Azle wells nearly every day for more than two years, according to data published by the Railroad Commission earlier this month.

In recent weeks, nighttime shaking in Oklahoma City has been strong enough to wake residents. The state experienced 145 quakes of 3.0 magnitude or greater between January and May 2, 2014, according to the Oklahoma Geological Survey.

That compares with an average of two such quakes from 1978 to 2008.

Oklahoma Gov. Mary Fallin approved new testing and monitoring rules for injection wells that require well operators to collect daily information on well volume and pressure, instead of monthly. The rules take effect in September, Skinner said.

Southern Methodist University researchers have recorded more than 300 quakes around Azle since early December, with some days experiencing swarms of hundreds of microquakes and other days none.

The geophysicists are measuring the earthquakes to plot out an ancient fault line and developing models that look at how fluids flow through the layer of rock where the earthquakes are originating.

Researchers are also looking at whether fluids from disposal wells in Azle and around North Texas moved through the ground and helped stimulate that fault, or if earthquakes are occurring naturally.

Members of the SMU team previously studied two other earthquake sequences in North Texas and concluded that there was a plausible link between the earthquakes and nearby injection wells. North Texas has had 70 earthquakes since 2008 as reported by the USGS, compared with a single quake, in 1950, reported in the region before then.

Still, seismologists — and the oil and gas industry — have taken pains to point out that a clear correlation has not yet been established.

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"The link between injection wells and earthquakes is something we are still in the process of studying," said Heather DeShon, associate professor of geophysics at SMU.

Nationwide, the United States has more than 150,000 injection wells, according to the Society of Petroleum Engineers, and only a handful have been proven to induce quakes.

Nonetheless, ExxonMobil is supporting the SMU study, company spokesman Richard Keil said.

"We're sort of in wait-and-see mode," he said.

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[1] <http://dictionary.reference.com/browse/temblor>