

**DEP considers rules on tremors and fracking (Pittsburgh Post-Gazette)** -- The closest earthquakes presumably caused by hydraulic fracturing stirred about a mile west of the Pennsylvania border, but regulators felt the reverberations in Harrisburg.  
[http://powersource.post-gazette.com/powersource/policy-powersource/2014/07/08/DEP-considers-rules-on-tremors-and-fracking/stories/201407080021#/powersource/policy-powersource/2014/07/01/Bill-to-split-conventional-shale-well-regulations-added-to-companion-bill-to-state-budget/stories/201407010168?&\\_suid=140481979842207131016049277454](http://powersource.post-gazette.com/powersource/policy-powersource/2014/07/08/DEP-considers-rules-on-tremors-and-fracking/stories/201407080021#/powersource/policy-powersource/2014/07/01/Bill-to-split-conventional-shale-well-regulations-added-to-companion-bill-to-state-budget/stories/201407010168?&_suid=140481979842207131016049277454)

July 8, 2014 12:15 AM

---

By Laura Legere / Pittsburgh Post-Gazette

□ [Power Source: PG energy coverage](#)

The closest earthquakes presumably caused by hydraulic fracturing stirred about a mile west of the Pennsylvania border, but regulators felt the reverberations in Harrisburg.

The Pennsylvania Department of Environmental Protection is considering creating rules for the first time for wells in “seismic hazard areas” — places that may be susceptible to tremors triggered by well stimulation techniques like fracking.

The agency floated the proposal in recent weeks in a paper outlining conceptual changes to the state’s oil and gas well regulations under the heading “TBD – Induced seismicity.”

A lot remains to be determined, including what “seismic hazard areas” are and where they might be, if the state has them at all.

DEP’s chief of oil and gas compliance and data management, Joseph Lee Jr., said the language is a placeholder for now, but the department and its partners are beginning a massive data-mining project to fill in the blanks.

The issue arose after a series of earthquakes in March were linked to fracking at a Utica Shale well pad in Ohio. “The question is: Are these conditions that can occur in Pennsylvania?” Mr. Lee said.

The U.S. Geological Survey, Pennsylvania Geological Survey, universities and the natural gas industry measure the faintly shaking earth from dozens of points in the state and historical records for seismic events stretch back centuries. The state plans to compile those records and compare them to the completion reports filed by drilling companies that detail where and when wells were fracked to look for potential relationships.

Before they can draw any connections, researchers will also have to weed out other kinds of earth-shaking human behavior, like blasting and mining.

“It would be like diagnosing a disease,” said Kristin Carter, assistant state geologist in the Pennsylvania Geological Survey’s economic geology division. “Sometimes you have to use a process of elimination to eliminate the things that aren’t the culprit and then get to the cause.” Pennsylvania is not known for earthquakes. Maps of past seismic activity show that when quakes have originated here, they have been clustered in the northwest and southeast parts of the state, “the exact opposite,” Mr. Lee said, of the Marcellus Shale gas drilling fairway that extends roughly diagonally from the southwest to northeast corners.

The state’s largest recorded quake — a magnitude 5.2 event — began in Crawford County near Pymatuning Lake in 1998. Although several Utica Shale wells have been drilled in that region, none have triggered any noticeable shaking, Mr. Lee said.

Ms. Carter said nothing in the data she has seen indicates areas of seismic concern in the state related to oil and gas production.

“We’ve had decades and decades of oil and gas industry experience here with no major or notable seismic events related to that particular activity,” she said. “The best we can do as a survey then is to be cautious.”

Just because an area has no record of past seismic activity, she said, “doesn’t necessarily tell you it is not going to be an issue today.”

Fracking, the practice of cracking oil- and gas-bearing rocks with a high-pressure injection of chemically treated water and sand, has only rarely been suspected of directly triggering earthquakes. Researchers have identified fracking as the probable culprit in a few cases, in England, British Columbia, Oklahoma and Ohio.

More often, oil and gas activity has been linked to earthquakes when waste fluids are injected into deep disposal wells designed to allow fluids to seep into permeable rock and stay there. That has caused faults to slip in some cases. Quakes have been reported in Ohio, Oklahoma, Texas, Colorado and Arkansas in recent years.

The few oil and gas wastewater disposal wells in Pennsylvania are regulated by the U.S. Environmental Protection Agency and they are not the focus of DEP’s study.

Ohio regulators announced new permit conditions for drilling near faults and sites of past seismic events in April when they reported that a series of small earthquakes in Mahoning County showed “a probable connection” to fracking at a Utica Shale well near a previously unknown microfault. Five quakes ranged in magnitude from 2.1 to 3.0, according to USGS records.

Under the new rules, oil and gas companies in Ohio have to install seismic monitors to drill horizontal wells within three miles of a known fault or the site of a past earthquake greater than magnitude 2.0. If the monitors pick up a seismic event larger than magnitude 1.0 — generally well below what humans would feel — well site activities would be put on hold for an investigation. All completion operations would be suspended if the investigation revealed a probable connection to fracking.

Pennsylvania regulators want to know more before they consider following Ohio’s lead, including what might have happened to cause the quake and what new rules or monitoring requirements would be appropriate if they do find areas of risk.

“There is a flip side to what Ohio is trying to do with their monitoring scheme,” Mr. Lee said. “You start putting out the seismographs, you are going to start seeing something and it is not necessarily caused by humans. It could be natural occurrences of seismic activity.”

And then there is the question of how to minimize the risk of damaging quakes without overreacting to tremors too subtle to affect people.

If there’s an earthquake and no one feels it, in other words, does it shake the ground?

*Laura Legere: llegere@post-gazette.com*