

Oklahoma oil, gas regulators order changes after earthquakes

January 5 2016, by Tim Talley

The state commission that regulates Oklahoma's oil and natural gas industry ordered some injection well operators to reduce wastewater disposal volumes on Monday after at least a dozen earthquakes hit an area north of Oklahoma City in less than a week.

The Oklahoma Corporation Commission said it was implementing a plan that affects five wastewater injection [wells](#) operating within 10 miles of the center of [earthquake activity](#) near Edmond, a northeast suburb of Oklahoma City. Among the recent quakes to hit the area was a 4.2 magnitude temblor on New Year's Day that caused minor damage but no injuries.

"We are working with researchers on the entire area of the state involved in the latest seismic activity to plot out where we should go from here," Oil and Gas Conservation Division Director Tim Baker said, adding that responding to the swarm of earthquakes in the region was an ongoing process.

Oklahoma has become one of the most [earthquake](#)-prone areas in the world, with the number of quakes magnitude 3.0 or greater skyrocketing from a few dozen in 2012 to more than 800 in 2015. Many of the earthquakes are occurring in swarms in areas where injection wells pump salty wastewater—a byproduct of oil and gas production—deep into the earth.

George Choy, a U.S. Geological Survey seismologist in Denver, said

studies indicate that earthquakes in certain areas have been induced by wastewater disposal. About 200 million barrels was disposed in the state each month in 2015, he said.

"Ceasing activity or slowing it down would be a prudent measure," Choy said. "The science here is still developing. What we need to know is more about the geology, more about the existence of faults."

At least three earthquakes were recorded Monday in the Stillwater area, about 50 miles northeast of Edmond. The largest was a magnitude 3.2 quake, according to the U.S. Geological Survey. Baker said his agency also was looking at the new seismic activity.

The response plan announced Monday calls for one well located 3.5 miles from the center of earthquake activity near Edmond to reduce disposal volumes by 50 percent and four other located between six and 10 miles away by 25 percent. Other wells within 15 miles of the activity will conduct reservoir pressure testing.

Compliance with the plan is voluntary at this point, though none of the operators have raised objections. The commission said the operator of the well closest to the earthquake activity, Pedestal Oil Company Inc., has agreed to suspend operations entirely to assist the agency's research effort.

The operator of another well, Devon Energy Production Co., has also agreed to suspend operations, and no objections have been raised by the operators of the other wells, agency spokesman Matt Skinner said.

Other changes had already been made in response to the quakes. Over the past year, agency directives resulted in 197 wastewater disposal wells reducing the depth of their operations and 14 wells reducing disposal volumes by half, according to the commission.

In addition, applications for disposal wells are reviewed for potential seismicity, and wells operating in earthquake-prone areas have to record and report their volumes and pressures to be analyzed by researchers.

Art McGarr, a USGS seismologist in Menlo Park, California, said geologists have recommended better monitoring to identify at an early stage which wells are capable of inducing a damaging earthquake.

"We've pointed out that the earthquakes are increasing dramatically, and they are continuing to increase," McGarr said. "Injecting at different depths may or may not provide a solution to the problem."

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