

Oil, gas wastewater disposal causes cascade of Oklahoma quakes, USGS says

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Underground disposal of wastewater from oil and gas drilling likely triggered a series of earthquakes in central Oklahoma in November 2011, according to a study from the U.S. Geological Survey that will add to the controversy surrounding the impact of the U.S. energy boom.

A magnitude 5.0 earthquake on Nov. 5 near Prague, Oklahoma, which has already been linked to oil and gas wastewater disposal nearby, likely caused another magnitude 5.7 quake the next day. That, in turn, caused "thousands of aftershocks", the USGS said in a statement last week.

The report adds to previous studies suggesting that pumping millions of gallons of drilling fluids underground puts stress on fault lines and can cause earthquakes.

While the USGS study concentrates on wastewater, it also draws attention to the oil and gas production technique known as fracking, which involves pumping a mix of chemicals, water and sand deep underground to release oil and gas. Much of that water flows back to the surface and is disposed of in caverns.

The USGS said the 5.7 magnitude quake was the largest earthquake associated with wastewater injection, but said that the earthquakes have not been directly linked to fracking.

"The observation that a human-induced earthquake can trigger a cascade of earthquakes, including a larger one, has important implications for reducing the seismic risk from wastewater injection," Elizabeth Cochran, USGS seismologist and coauthor of a study on the earthquakes, said in the release.

Officials at the USGS were not immediately available to identify the companies involved in the Oklahoma wastewater injections in November 2011.

In response to the earthquake, the Oklahoma Corporation Commission in January proposed tighter regulations for injection wells, Addison Armstrong, senior director of market research at Tradition Energy, said on Tuesday in a note.

In addition, the Texas Railroad Commission said it will hire a seismologist to study the link between the underground disposals of wastewater and earthquakes, Armstrong said.

Historically, earthquakes in the central United States have been uncommon. Yet in the year 2011 alone, numerous moderate-size earthquakes occurred in Colorado, Texas, Oklahoma, Ohio and Arkansas, the USGS said.

Oklahoma, the nation's fifth-largest oil-producing state, recorded 238 earthquakes through Nov. 18 last year. More than 100 of those were at least a magnitude 3.0, tremors large enough to be felt. From 1991 to 2008 there were no more than three quakes a year of that size in the state.

Many of these earthquakes occurred near waste-water injection wells, and some have been shown to be caused by human activities, the USGS said.

In August, five Arkansas residents who sued oil companies Chesapeake Energy Corp and BHP Billiton Ltd ,

claiming wastewater disposal wells from fracking caused earthquakes that damaged their homes, settled with the companies for an undisclosed sum.