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## Hydraulic-fracturing spotlight widens to waste disposal as regulators consider revisions

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Disposal wells are ordered shut, old rules are revised, and new studies are launched as state regulators respond to public concerns about pollution and earthquakes, and to the political headwinds that come with anything related to hydraulic fracturing. In the meantime, the oil and gas industry expresses concerns, but little opposition, to rules changes.

The most activity on the disposal and injection-well issue comes from states with a history of opposition to oil and gas or in states where fears of earthquakes or drought are added to misunderstanding of hydraulic fracturing.

In either instance, operators and service providers are advised to remain alert for new rules while assuring compliance with old ones. In this article, we have rounded up the latest changes in some of the most active states.

### **Crackdown in California**

After a yearlong crackdown on improper disposal of produced water and concerns over possible contamination of deeper aquifers, the California Division of Oil, Gas and Geothermal Resources (DOGGR) in July ordered the immediate closure of 11 disposal wells east and northeast of Bakersfield.

The enforcement push comes as drought-pressed agriculture interests look for new sources of irrigation water from previously untapped aquifers.

The division later lifted the closure orders for two of the 11 wells, but warned that it is reviewing an additional 95 Class II disposal wells originally exempted from Safe Drinking Water Act restrictions.



The division stated it is investigating the wells for possibly injecting produced water into potential drinking-water zones. Some of the wells were permitted for disposal into areas that were not considered at the time as potential freshwater sources.

Although it has found no evidence of produced water contaminating a drinking-water aquifer, DOGGR has not ruled out the possibility during its ongoing investigation.

In a July 17, 2014, letter, EPA Regional Administrator Jared Blumenfeld criticized DOGGR for lax oversight of disposal-well operations. The letter notes that the EPA's review of California's Underwater Injection Control (UIC) Class II program found deficiencies in administration and questions about the proximity of some disposal wells to drinking-water wells.

"The review raised questions about the alignment of Class II injection wells with approved aquifer exemption boundaries," the letter states.

DOGGR then initiated a broad review of its Class II program to ensure existing approved wells were actually within the boundaries approved by the EPA. The investigation determined that it had, in fact, authorized some injection wells to operate in areas with non-exempt aquifers containing high-quality water.

Additionally, DOGGR identified the presence of water-supply wells in the vicinity of some of the injection wells. On July 1, 2014, the state issued orders requiring the affected operators to cease injection in non-exempt, freshwater aquifers and to submit operational data to allow assessment of "the potential threat to human health and potential impact to water quality."

Fluids disposal in California's traditional production basin in Kern County was also under fire recently when a report by Clean Water Watch, a Washington, D.C.-based organization, called attention to 400 unlined water-storage impoundments and the threat they pose for groundwater contamination.

Referred to as "sumps," the impoundments handle brine from the hundreds of producing wells across California's Central Valley. The environmental group's report cites research conducted by the local regulatory agency that it claims show fluids from a few of the impoundments migrating underground toward the Kern River flood channel.

A request that the Central Valley Regional Water Quality Control Board immediately order the closure of all sumps was rejected. Retention ponds handle a variety of fluid compositions, are in several locations across the valley and on different types of soil, according to a statement from the board. It has launched its own program of monitoring and inspection, and offered that ponds found to be in violation will be closed.

Rules governing operation of water impoundments are already in effect and are adequate to protect the environment, says Rock Zierman, president of the California Independent Petroleum Association. Zierman points out that companies must obtain discharge permits before disposing produced water, and sumps are regularly inspected.



## **Texas Adds to Permits**

In October, the Texas Railroad Commission approved additions to its rules for UIC Class II well-permit applications. It also increased reporting requirements for operators and gave staff the authority to change or suspend permits if a well is found to be contributing to seismic activity.

“These disposal rules represent the fourth significant rule amendments over the last three years,” notes Commissioner Barry Smitherman. “With these seismic-related rules, we are maintaining the commission’s commitment to best practices for the industries we oversee.”

The rules, which went into effect Nov. 17, 2014, will:

- Require permit applications for new disposal wells include a search of U.S. Geological Survey seismic database for historic earthquake activity within 100 miles of the well;
- Authorize RRC staff to “modify, suspend or terminate” a disposal-well permit if the well is likely to cause seismic activity;
- Require operators to report volumes and pressures more frequently than the current annual reporting if staff determines a need;
- Authorize staff to require additional information on pressure-front boundaries if needed to demonstrate disposal fluids will not migrate outside confinement areas.

Earlier, the director of EPA’s regional headquarters office in Dallas said the regulations were reviewed and approved by EPA engineers. “All applauded the RRC’s efforts to ensure it has sufficient regulatory authority to respond to any event.”

Since 2009, the number of new disposal wells permitted annually in Texas has doubled, according to RRC records. This coincides with an increase in well development in the Barnett Shale and a period of increased earthquake activity from the Dallas-Fort Worth area to around San Antonio.

In response to criticism from local governments and in the press, the commission in April brought in a seismologist to study possible links to wastewater disposal and earthquakes. At an RRC hearing in August, the scientist, Dr. Craig Pearson, testified that earthquakes are regularly recorded, but most are too small to be felt.

Pearson noted that the state’s UIC regulations were designed to protect against groundwater contamination, but not seismic activity.

“Because we’re now dealing with induced seismicity, the worry is not only about water moving up, but out to dormant faults,” he said.

After the latest reported earthquakes, a 3.3-magnitude quake on Nov. 22 followed the next day by a 2.2-magnitude quake near Irving, Todd Staples, the incoming president of the Texas Oil & Gas Association, told a Dallas radio station that “industry agrees recent seismic activity warrants robust investigation to determine the precise location, impact and cause or causes of seismic events.”

## **Ohio Well Closures**

As development of the Utica Shale has ramped up over the past four years, an increase in seismic activity in parts of Ohio led the state to require more stringent permit standards and to increase monitoring and oversight of both well completions and disposal wells.

During its 2014 session, the state legislature passed a bill strengthening Ohio's solid-waste disposal regulations and clarifying how solids are to be classified and handled.

In September, the state ordered temporary shut-ins of two disposal wells after 2.1-magnitude earthquakes were recorded near Warren. One of the disposal wells had recently been permitted to increase injection pressure.

Two years earlier, the state withdrew permits before operations could begin at four new wells near Youngstown over concerns they could induce earthquakes. The owner of the wells was later indicted for illegal dumping and filed for bankruptcy. At the trial, his lawyers said that without use of the disposal wells, he ran out of storage. At his sentencing hearing, the man apologized to the community, saying his actions were "irresponsible and foolish."

### **Other State Responses**

In Oklahoma, Arkansas and Kansas, an increase in seismic activity has led to zones of exclusion and additional reporting requirements for operators.

The Oklahoma Corporation Commission in March approved new rules intended to provide additional data as researchers look for a possible connection between disposal wells and a spate of earthquakes that have occurred since 2010.

Injection and disposal-well operators are now required to record volume and pressure readings daily, rather than monthly as in the past, and to provide the data whenever the commission requests. And although commission rules are not specific, permit applications for new wells in areas that are considered earthquake prone are likely to be delayed, according to published reports.

In Kansas, just hours after Gov. Sam Brownback announced a program to operate a network of six portable seismic monitors in three southern counties, a 4.2-magnitude earthquake rumbled through the region. The monitoring program was recommended by a task force Brownback appointed to study an apparent increase in seismic activity and is expected to be operational in early 2015.

In Arkansas, a moratorium on new injection wells and closure of four operating disposal wells was enacted in 2011 following a series of earthquakes across an area of 1,150 square miles in the center of the state. The following year, seven families filed suit against two operators claiming injection wells caused the earthquakes that damaged their homes. Two of the families settled for an undisclosed amount in October 2013.

### **Congressional Investigation**

Waste disposal has also caught the eye of a congressional subcommittee.

Rep. Matthew Cartwright, D-Pa., a member of the House Subcommittee on Economic Growth, Job Creation and Regulatory Affairs, has ordered an investigation into disposal-well monitoring, compliance and enforcement in Pennsylvania, Ohio and Virginia.

He points out that while more new wells are drilled in his home state, Ohio and Virginia have many times more disposal wells and accept waste fluids from other states, including Pennsylvania. And while industry and government figures show disposal wells pump many times more produced water than flowback, Cartwright called for the investigation because "fracking waste can cause harm to human health and the environment" if not properly disposed.

The investigation includes requests to state regulators for answers to a series of questions on disposal-well inspections, monitoring, compliance and agency funding.

With authority for regulating UIC Class II wells mostly under state jurisdiction, the subcommittee investigation signals new concerns by federal regulators that states have the means to “to ensure accuracy, completeness and compliance with applicable environmental laws,” notes Cartwright. ♦