

## As California Begins Regulating Fracking, Agricultural Concerns Arise

By James Andrews  
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Last month, California Governor Jerry Brown signed into law a bill that will enforce the nation's toughest restrictions on hydraulic fracturing, a process through which oil and natural gas is extracted from rock deposits in the earth.

The technique – commonly known as “fracking” – had not been regulated in the state until the signing of the new law, called SB-4, which the oil industry opposed.

But when it comes to SB-4, no one is completely satisfied. A number of groups on the other side of the issue have come out in opposition to allowing any fracking at all, including members of California's food and wine industry, who expressed concerns that fracking poses a threat to the state's agricultural health.



Five days after Gov. Brown signed the new fracking regulation into law, a group of California-based chefs released a petition asking the food industry to join them in opposing fracking in the state. The group, led by Alice Waters of Chez Panisse in Berkeley, has also asked the governor to place a moratorium on fracking.

The group said that California's Monterey Shale is now being targeted for fracking. The shale is a 1,750-square-mile area that may contain as much as 15 billion barrels of crude oil. It also happens to rest below a sizable portion of California farmland.

### **Wastewater at center of disagreement**

Little is known about the extent of fracking in California because no infrastructure exists to track it, according to Patrick Sullivan, media specialist for the Center for Biological Diversity. The industry has voluntarily reported at least 1,173 oil and gas wells in 10 California counties, but the real figure could be much higher, Sullivan said.

Of concern for the chefs and environmental groups is the potential for fracking operations to pollute groundwater and use up agricultural water resources. While not the result of fracking, in 1999 oil industry wastewater contaminated with chemicals such as chloride and boron was found to have seeped into ground wells and destroyed one central California farmer's crops of pistachios, almonds and alfalfa.

The process of fracking uses similar techniques and creates a significant amount of wastewater, Sullivan said.

"As the industry fracks more, there's more wastewater, and it's going to be contaminated with all kinds of dangerous chemicals like benzene," Sullivan said. "Fracking also uses a tremendous amount of water. It can take millions of gallons to frack a well, and, when our state is in an ongoing water crisis, our farmers already don't have enough water."

After years of fracking practices occurring in the state, there have been no instances of water contamination directly from the practice, a representative of the California Department of Conservation told Food Safety News.

In California, fracking is primarily used for oil and is collected hundreds of feet below the water table, where natural geologic barriers protect water supplies, according to Don Drysdale, spokesman for the department.

While legislation specific to the practice of fracking has not existed until SB-4, the state does have regulations on the books governing oil and gas wells more generally.

"The division's well-construction standards are designed to protect public health and

safety and the environment, under all well operation conditions," Drysdale said. "That includes the use of hydraulic fracturing and other well-stimulation techniques."

Drysdale said existing rules already require that injected fluids go into the intended hydrocarbon zone and prevent those fluids from contaminating water sources.

While the chefs have gained the support of environmental, public health and consumer organizations, a petroleum industry representative told Food Safety News that it was ironic for the food industry to oppose the oil technology it depends on to harvest and transport its products.

"For the last year, the California legislature, advocacy groups, and the governor's office have been developing what are now the strictest regulations on fracking in the country," said Tupper Hull, vice president of strategic communications for the Western States Petroleum Association. "The legislature and the governor have made it quite clear that while they felt it necessary to increase regulation on fracking, they were not interested in banning a technology that has proven itself to be safe and effective."

### **Full impact largely unknown**

The effects of fracking contamination on farmland have not been extensively studied, according to Seth Shonkoff, Ph.D., executive director of Physicians, Scientists and Engineers for Healthy Energy.

A study published in 2012 by Michelle Bamberger and Robert Oswald documented the effects on farm animals of fracked fluid spills, finding a notable increase in stillbirths, disease and death, Shonkoff said.

Aside from the chemicals used in the fluids, Shonkoff cited concern over the geological compounds washed up in fracking wastewater, which could include heavy metals such as arsenic and naturally occurring radioactive materials. There's also a lot of salt in underground formations.

"If there's a [wastewater] spill and then rain or a storm and that water gets taken from the well pad out into an adjacent field, salt is more difficult to mediate than almost any other chemical around," Shonkoff said. "From an agricultural perspective, that's it for the soil."

The developmental impact of trucking equipment in and out of drilling areas poses another concern for agricultural land.

"If you're going to frack in the middle of an agricultural area, you're going to have to move a whole lot of soil aside," Shonkoff said.

Oil and gas fracking on shale also emits so-called ozone precursors such as nitrogen oxides and volatile organic compounds, which react in the sunlight to form tropospheric ozone. In turn, tropospheric ozone is known to reduce agricultural yields, Shonkoff said.

Over at the Department of Conservation, Drysdale reiterated the importance of agriculture to California and said that the state did not have a reason to believe oil drilling, including fracking, would adversely impact it.

"The agriculture industry is huge in California," Drysdale said. "We're very mindful of that."

Relevant state departments are currently drafting up companion regulations to SB-4. Those drafts should be out before the end of the year and will soon after be subject to a public comment period.