

Potentially harmful chemicals found in oil field water used for irrigation

By Julie Cart

Testing of recycled oil field wastewater used on about 45,000 acres of farmland in the Central Valley shows the water contains small amounts of potentially harmful chemicals, including oil, benzene and acetone.

Local water regulators in April ordered comprehensive testing of the irrigation water to check for the presence of chemicals used in oil production.

As California's drought continues, more companies and irrigation districts are seeking permits to sell and use treated oil field water. The heightened interest has raised concerns over the adequacy of current safety measures to prevent produce from being contaminated by oil production fluids.

[California water board to growers: Stop pumping](#)

The Central Valley Regional Water Quality Control Board has formed a committee to examine the issue and analyze the recent test results. The group of experts from the California Department of Public Health and the state Department of Food and Agriculture will advise water officials about food safety.

Chevron sells 21 million gallons of treated oil field wastewater per day to the Cawelo Water District, which provides water to 90 Kern County farmers. Before releasing it to the district, Chevron treats the wastewater in settling ponds and through other processes designed to remove contaminants.

Chevron submitted results of its wastewater tests to the water board on Monday, the deadline for filing the data.

According to the 138-page report, a laboratory analysis found acetone at levels ranging from 31 parts per billion to 150 parts per billion. Acetone is a powerful industrial solvent.

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Benzene, a carcinogen, was present in trace amounts in the samples, according to the lab report. California regulations do not allow benzene at any level in drinking water. There is no state standard for benzene in irrigation water.

For the record

June 20, 9:37 a.m.: An earlier version of this post described acetone as a carcinogen. It has not been classified as such. The post also failed to note that benzene is a carcinogen.

All of Chevron's samples contained oil molecules called total petroleum hydrocarbons, but at concentrations considered safe for drinking and well below the maximum level set in the water recycling program's permit.

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"All test results showed that water supplied by Chevron to the Cawelo Water District is in compliance with its existing permit," the company said in a statement. "Chevron's water reuse operation has run appropriately for the benefit of California agriculture and in accordance with all regulatory requirements."

The samples were taken from five different points, including ponds that contain water from Chevron's oil operations and a reservoir that contained water from Chevron and other oil producers. The samples were analyzed by Amec Foster Wheeler Environment & Infrastructure Inc. in Fresno.

The water board and the advisory committee have not yet reviewed all the test results submitted by Chevron and other oil producers. Hundreds of samples were tested from various Kern County oil field wastewater sites.

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"We are working our way through the process," said Clay Rodgers, assistant executive officer of the regional water board. "This is a priority issue for us. If the food safety experts find a problem, we will stop it and we will stop it immediately."

Even if irrigation water contains toxic substances, experts say that microorganisms in soil can consume some impurities and plants have the ability to process certain contaminants. It's not clear whether oil field waste can make its way into the roots or leaves of irrigated plants, and then into the food chain.

"There's not an abundance of knowledge," on the topic, Rodgers said.

What is known, he said, is that exposure to chemicals such as acetone may lead to long-term, chronic ailments and should be monitored over time.

David Ansolabehere, general manager of the Cawelo Water District, said the agency is evaluating the test results.

Some of the chemicals identified in the Chevron report were also found in water samples that were collected in March and tested by environmental nonprofit Water Defense. Chevron has questioned the group's sampling methods and the lab results.

Water Defense's testing detected acetone and methylene chloride, a powerful industrial solvent, in treated water drawn from Cawelo's irrigation canal. Chevron did not provide lab results for that chemical in test results reported this week.

Rodgers said he asked both firms to test for methylene chloride and report the results to the water board.

Chevron said in its statement that it would provide test results on methylene chloride.

The lab report Chevron submitted suggested that the source of the acetone was not the company's operations, but that it was a byproduct of a naturally occurring breakdown of hydrocarbons.

That is one possible explanation, said John Griffith, coordinator of molecular technology at the Southern California Coastal Water Research Project, a publicly funded research agency. But no matter its source, he said, the acetone is toxic.

Until this spring, the water agency only required testing for the presence of naturally occurring contaminants such as benzene and salts. In part because of the urgency to use recycled water, the agency is now asking oil companies to test the water more broadly for chemicals used to drill and maintain wells.

"We need to make sure we are sampling for the right stuff," Rodgers said.

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