



# Fact Sheet

## Frequently Asked Questions about Recycled Oilfield Water for Crop Irrigation

In California, oil wells extract far more water than oil from underground oil-bearing geologic formations. The water that is brought to the surface during oil and gas production activities is called “produced water.” Produced water is first separated from the oil and is then disposed of in injection wells, treated and discharged to percolation ponds, or is treated and reused. One way this water is reused is by using the produced water to irrigate crops in the areas east and north of Bakersfield. This practice has occurred for 30+ years.

Currently, there are three oil companies that send oilfield produced water to four irrigation districts. The Central Valley Water Board requires that these oil companies monitor the produced water in order to ensure that there will not be any negative impacts associated with the use of their produced water. To date, no evidence has shown that irrigating food crops with produced water poses any threats to public health.

Nonetheless, water quality advocates have contended that the monitoring requirements are not enough to conclude that irrigating with produced water is safe, and some have urged regulatory agencies to ban this practice entirely. In the interest of ensuring public safety and confidence in the practice, staff of the Central Valley Water Board convened a Food Safety Expert Panel to seek input from epidemiologists, toxicologists, and other experts in this area.

### How Much Water is Produced During Oil Production?

In 2017, approximately 1.9 billion barrels of water (about 240,000+ acre feet) were produced during the production of approximately 131 million barrels of oil (a barrel is equal to 42 gallons) in the Central Valley. In Kern and Tulare Counties, approximately 39,000 acre-feet of produced water was blended to irrigate approximately 90,000 acres of cropland. The remaining produced water was either reused in oil operations, disposed in permitted underground injection wells, or disposed of through surface disposal (primarily ponds).

### What about Fracking?

Hydraulic fracturing, or “fracking,” is a process where fluids are injected into the subsurface at high pressures in order to create fractures in geologic formations, which can stimulate oil and gas production. Oil wells that have been fracked also generate produced water. The Board and the public have concerns about produced water from fracked wells being discharged to the land surface. Produced water and oil that comes up from fracked wells may include trace amounts of chemicals that had been injected into the ground as part of the fracking process. Because there are questions about the toxicity of these fracking fluids, the Board has never authorized the use of produced water from fracked wells on food crops.



## How is Oilfield Water Treated and Regulated?

Produced water delivered to irrigation districts may have low concentrations of residual additives or naturally-occurring constituents. The produced water is first treated (gravity separation, dissolved air flotation, and in some cases, walnut shell filters) before it is sent to the irrigation districts for blending. The treated water is then blended with surface and groundwater before used for crop irrigation. These practices are regulated by Waste Discharge Requirements (WDRs), which set requirements to protect water quality and which require extensive monitoring. The water is sampled and tested at various points, including after treatment and before irrigation. Analytical results are submitted in reports which are reviewed by Central Valley Water Board staff.

The ability to reuse produced water depends on its quality. Reuse of water is encouraged by State policy to supplement California's limited water supply, as long as the water is suitable for the intended use. The [Water Quality Control Plan for the Tulare Lake Basin](#) (Basin Plan) provides that "blending of wastewater with surface or groundwater to promote beneficial reuse of wastewater in water short areas may be allowed where the Central Valley Water Board determines such reuse is consistent with other regulatory policies set forth or referenced herein." The Basin Plan designates beneficial uses, establishes water quality objectives, contains implementation plans and policies for protecting waters of the basin, and incorporates by reference plans and policies adopted by the State Water Board.

## What Type of Data is Collected on the Use of Recycled Oilfield Water for Crop Irrigation?

The Water Boards collect quarterly discharge data on flow and oilfield constituents and expanded this list to include oil field additives in 2016. Monitoring and reporting results for the discharges of oilfield produced water to agriculture are available for review at the Central Valley Water Board's Fresno Office. Water quality data are also available on the Central Valley Water Board's [Food Safety web page](#). The Central Valley Water Board has also provided a list of known oil field additive constituents on its Food Safety web page and is updating monitoring and reporting programs to require sampling for select oil field additive constituents.

## What Will the Food Safety Expert Panel do?

Since the State Water Board and Regional Water Boards are not responsible for crop safety (that responsibility generally falls to the California Department of Public Health) the Central Valley Water Board staff convened the Food Safety Expert Panel to gain advice on food safety matters from outside experts. The Board will work with the Panel to investigate whether recent allegations concerning potential threats to food safety from oilfield produced water have merit.

The Food Safety Expert Panel is looking at the use of produced water for reuse on agricultural fields and whether any chemicals in the water poses a threat to public health. If a threat to public health is discovered, the Board will immediately take action to shut down the practice.

The Board has required crop sampling in the irrigation districts that accept produced water for irrigation. Thus far, citrus, almonds, carrots, garlic, pistachios, grapes, tomatoes, and apples

have been sampled. The Food Safety Expert Panel provides the Board with suggestions on sampling and members review analytical results. Crops irrigated with produced water have been tested for a wide range of oil field associated constituents, including some additives. Crop sampling is being conducted to ensure that constituents are not accumulating in crops at levels that pose a risk to human health. Thus far, analytical results from crop sampling have found no evidence that consuming crops irrigated with produced water poses any threat to public health. Reports on crop sampling, including analytical results, are available on the Central Valley Water Board's Food Safety web page.

Who sits on the Food Safety Expert Panel?

The Food Safety Expert Panel includes representatives from the California Department of Public Health, Food and Drug Branch; the California Department of Food and Agriculture; the California Department of Fish and Wildlife, the California Office of Environmental Health Hazard Assessment, the United States Army Corps of Engineers, the United States Environmental Protection Agency, Exponent, Lawrence Berkeley National Laboratory, and PSE Healthy Energy. You can find the Food Safety Project Charter on the Central Valley Water Board's Food Safety web page.

How Can I Stay Informed?

Visit the Central Valley Regional Water Quality Control Board's web page on [Food Safety](#) for more information. Members of the public are welcome to attend meetings of the Food Safety Expert Panel, where progress of the Food Safety Project is reported. You can also sign up to be on the Food Safety email list by visiting the State Water Board's [Lyris web page](#).

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