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Tainted valley groundwater could stymie banking deals

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The California Aqueduct hauls water south from the Sacramento-San Joaquin Delta to Los Angeles. This photo is looking south off of Lokern Road in western Kern County. CREDIT: Lois Henry

The big kahuna of California water — Metropolitan Water District of Southern California — has stopped taking supplies from one Kern County groundwater bank because the water is heavily tainted with a cancer-causing agent that is pervasive in Central Valley's aquifers.

While only one banking program has been affected so far, the emergence of this issue could have huge implications for water storage and movement in the Central Valley.

Increased underground storage has been key for agricultural water districts scrambling to comply with the state's Sustainable Groundwater Management Act, which mandates balanced aquifers by 2040.



...happened with water. Metropolitan had banked with Arvin Edison Water south of Bakersfield.

What's in the water?

Specifically, the water is contaminated with 1,2,3 trichloropropane (TCP).

It is a chemical that was included in a nematode fumigant made by Shell Oil and Dow Chemical companies and applied liberally to the Central Valley's vast farmland from the 1950s through the 1980s.

Even a tiny bit of TCP is too much, according to the California State Water Resources Control Board Division of Drinking Water.

In 2017, the division set the maximum level of TCP for drinking water at five parts per trillion — the equivalent of five grains of sand in an Olympic-sized swimming pool.

Drinking water providers throughout the Central Valley have been grappling with TCP contamination for several years.

Irrigation water doesn't have the same requirements, except when it comes in contact with municipal water.

The tainted water in Arvin's groundwater banking project became an issue earlier this year for Metropolitan, the main water wholesaler for dozens of southern California drinking water agencies.

This is the first dry year that Metropolitan has had to call on its banked supplies from Kern County since TCP was regulated.

A blow to the program



Arvin-Edison's groundwater has multiple wells with TCP levels measured in the 100s of parts per trillion, according to Jeff Kightlinger, General Manager of Metropolitan.

"Obviously, this is a blow to the program," Kightlinger said. "This may make storage between ag and urban users less viable in the future, no doubt."

Metropolitan also has banking arrangements with Semitropic Water Storage District and Kern Delta Water District.

While both of those districts also have TCP in their groundwater, they have been able to get by using other sources for water banking return purposes so far this year.

Exchange bank

At the end of May this year, [Metropolitan knew it was facing a 234,000-acre-foot gap](#) between supply and demand.

It had planned to make up that gap, in part, by using supplies from its banking partners.

But TCP meant it was able to take zero acre feet of the 143,000 acre feet it has stored in Arvin-Edison.

Instead, Kightlinger said, Metropolitan will use "exchanges" to get back some of that water.

Under an exchange, Arvin-Edison would let all or some of its share of State Water Project water flow past Kern in the California Aqueduct down to southern California.

Considering the state is only delivering 20% of contracted allotments this year, that gives Metropolitan a trickle of what it would get if Arvin-Edison could simply pump into the California Aqueduct.



igh for both Metropolitan and Kern water agencies.

Kern holds most of Metropolitan's stored groundwater – nearly 600,000 acre feet. That's enough to serve an urban population of 800,000, such as the metro Bakersfield area, for two and a half years.

Kightlinger said Metropolitan is working closely with all its Central Valley banking partners on this issue.

Though TCP hasn't affected operations at Kern Delta, which has the chemical in three of its wells, water managers are watching the situation.

"Foundationally, TCP in our water at all is a serious concern for us," said Steve Teglia, General Manager of Kern Delta, one of Metropolitan's partners.

Metropolitan has 189,000 acre feet stored in Kern Delta, just east of Bakersfield.

Calculating blame

Representatives from Arvin-Edison, Semitropic and Rosedale-Rio Bravo Water Storage District, which has groundwater banking operations with other municipal users, referred questions to their attorney, Todd Robins.

Robins has represented numerous drinking water agencies in lawsuits against Dow and Shell.

"This is a bad news, good news story," Robins said. "TCP poses a serious problem, that's the bad news. But the good news is there is a solution."

TCP can be removed by running water through granular activated carbon. Building required treatment facilities, though, is costly.



to use their pesticide for waste disposal," Robins said.

He referred to the fact that TCP didn't actually kill nematodes.

It was a chemical created in the manufacture of fumigants that could have been removed before the pesticide was sold. Instead, it was kept in the fumigant and listed as an active ingredient.

Both Dow and Shell declined to comment.

While numerous drinking water agencies have received settlements from Dow and Shell for treatment, similar treatment plants may not work with the massive volume of water moved in banking operations.

Typical domestic wells pump 800 to 1,000 gallons per minute.

A single groundwater banking well can move five times that amount of water.

"This is a whole new frontier," Robins said.

Canal quality

Another potential impact of TCP in banked water could be water movement.

Water that goes into California's canals has to adhere to state drinking water quality standards, including TCP.

That goes for the California Aqueduct, Delta-Mendota Canal, Friant-Kern Canal and even regional canals such as the Cross Valley Canal, which moves from the Aqueduct east into Bakersfield.

It's unclear, though, how much oversight is applied to those water quality requirements.



ment of Water Resources spokesperson in an email when asked about the issue of TCP being pumped into the California Aqueduct.

In Metropolitan's case, Kightlinger said, it was his agency that decided against using Arvin-Edison water because it didn't meet Metropolitan's standards.

"It's not so much an issue for DWR as among the State Water Project contractors. We have worked together on an anti-water degradation policy," he said. "As part of that, we have urged DWR not to use the canal for dilution of crummy water."

In the federally owned Friant-Kern Canal, the users have sometimes policed each other.

In fact, Arvin-Edison sued, successfully, a few years ago over water quality in the Friant-Kern.

Two other Friant contractors, Delano-Earlimart and Pixley irrigation districts, had a plan to capture high-flow San Joaquin River water, bank it in their districts and then pump it back into the Friant-Kern Canal for use by other irrigators.

Arvin-Edison balked, arguing that banking in those aquifers would lace the water with nitrates, boron, chlorides and other elements harmful to crops. Districts should not be allowed to use the canal for dilution of bad water that would, subsequently, degrade water quality for end users of the canal, Arvin-Edison noted in the suit.

Arvin-Edison won that lawsuit in 2018.

Friant contractors are currently working on a policy governing allowable water quality for pumping into the canal.

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This story was written by Lois Henry, CEO/Editor of SJV Water.

Henry is also the president of Brock Mutual Water Company, which has 1,2,3-TCP in its wells above the maximum contaminant level allowed by California.

In 2016, Brock hired Attorney Todd Robins who sued Dow Chemical and Shell Oil companies on Brock's behalf for 1,2,3-TCP contamination.

A settlement was reached in 2019.

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