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Fuel additive found in wells

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A rocket-fuel additive known to cause thyroid disorders has been found in East San Gabriel Valley ground water, forcing the closure of some wells and complicating plans to clean up the water basin.

Perchlorate was discovered last month in levels above state standards in wells operated by the La Puente Valley County Water District. Suburban Water

Systems and the San Gabriel Valley Water Co., prompting them either to shut them down or blend the water with other sources. The discovery may also force the La Puente district to raise its rates.

Health officials say the chemical does not pose an imminent health threat, but its effects, especially on pregnant women and infants, are not fully known.

"I got a phone call with the results and within a minute I ordered the wells shut down,"

said Mike Berlien, general manager of the La Puente district. "We did not see this one coming. I went to a meeting at the end of May, and we were told state health would be testing for perchlorate. We said, 'What's perchlorate?'"

A chlorine derivative added to rocket fuel and explosives, perchlorate was found in the highest concentrations south of Arrow Highway between an area bordered by La Puente and Sunset avenues north of La Puente.

It is the same area where 18 years ago carcinogenic industrial solvents, called volatile organics, were discovered, causing the area to be named to the Superfund cleanup list.

"This is a potential new threat. I think from a risk standpoint it is probably a lesser threat (than the solvents), because it is in low concentrations, and once you are removed from it the effect stops," said David Spath, chief of the state Department of Health Service's Division of

Drinking Water and Environmental Management, which conducted the tests.

How long the perchlorate has been in the ground water is unclear; it could possibly have been there for decades.

Most affected is the small La Puente district, which serves some 2,300 customers in that city's southern area. After shutting down all its wells two weeks ago, it is purchasing water at a higher price from

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neighboring purveyors.

The district plans to purchase clean water from other suppliers indefinitely and is already considering a possible rate hike of as much as 25 percent or more.

The three wells, located next to each other on La Puente Avenue near Francisquito Avenue, had perchlorate levels of 55-159 parts per billion, the highest in the Valley and well above a temporary state standard of 18 parts per billion, officials said.

The much larger San Gabriel Valley Water Co. had to shut down one well it operated near La Puente's after tests showed the well had perchlorate concentrations of up to 77 parts per billion.

Serving some 46,000 people in 11 cities from West Covina to Santa Fe Springs, the El Monte-based company has 36 total wells and the shutdown has not affected operations, said President Michael Whitehead.

Suburban Water Systems, a large, private La Puente purveyor with 65,000 customers, discovered that a well further up La Puente Avenue it is leasing from the Valley County Water District had concentrations of up to 40 parts per billion.

The company is able to blend

that water with other sources in its California Reservoir, bringing the concentrations down under the state standard, said Eugene Shafer, the company's quality assurance manager.

Valley County Water District, based in Baldwin Park, also had a well that tested at 61 parts per billion, but it is a test well and has not been in regular use, said Barbara Ware, the district's general manager.

The chemical has also been found in other valley wells but at levels below the state standard, officials said.

Testing begins

State health officials decided to begin testing for the chemical after it was detected in February in drinking wells in eastern Sacramento County.

The discovery was made possible by the development of new tests that could detect the chemical at 100 parts per billion level. Those tests have been improved to detect it at 4 parts per billion, officials said.

The Sacramento contamination was found near an Aerojet manufacturing plant, which operates another plant in Azusa and has been named by the EPA as one of 18 companies potentially responsible for polluting the San Gabriel Valley with industrial solvents.

The tests also have found contamination at one now-closed well operated by the city of Pasadena south of the Jet Propulsion Laboratory, in addition to wells in Newhall and in the Redlands area, according to

health officials.

State health officials are now wrestling with the question of just how hazardous perchlorate might be.

The chemical inhibits the absorption of iodine by the thyroid, slowing its production of thyroxin, which regulates growth and metabolism, said Dr. Steven Book, a state health department toxicologist.

As a result it has been used as a treatment for the hyperthyroid condition known as Graves disease at concentrations that would be the equivalent of 49,000 parts per billion in water, he said.

Ingested in such concentrations in a healthy person, perchlorate can cause a enlargement of the thyroid, sluggishness and even depression, health officials said.

After the pollutant was found in the Sacramento area, a standard of 18 parts per billion was set. Since the standard is temporary pending further studies, water over that amount can be delivered to customers but they must be informed of the contamination, officials said.

The standard was set very conservatively at an amount 300 times lower than at which documented thyroid effects occur, but Book agreed it is unclear if the chemical has other effects, especially on infants and pregnant women.

That is something the Air Force — the primary rocket customer nationwide — wants to find out, prompting the military to commission animal studies.

Health effects uncertain

Dr. Joan Dollarhide, a Cincinnati toxicologist helping develop the studies, said the studies will help answer questions about other effects and the potential sensitivity of infants and pregnant women.

In addition, they will seek to determine if perchlorate is toxic at very high levels, she said.

U.S. physicians stopped using it as a treatment for hyperactive thyroids in 1961 when it was learned seven patients using perchlorate died of acute anemia when their bone marrow stopped producing red blood cells, Dollarhide said.

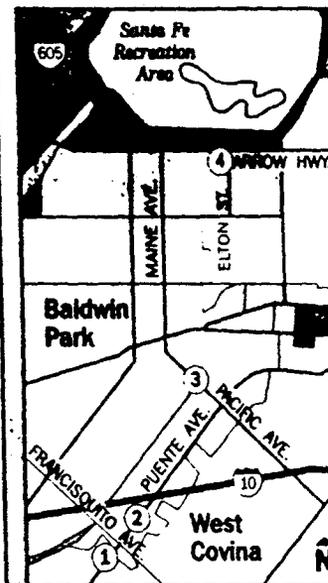
However, the drug has returned to use in Europe, and no patients have died there leading some to believe impurities in the U.S. preparation might have been the cause of the earlier deaths, she said.

The question with infants and pregnant women is whether perchlorate can inhibit thyroxin to the extent that growth is stunted. Cretinism, which includes mental retardation and physical deformities, is a documented effect of such thyroid problems, she said.

"The standard the state is using is so far below the probable cutoff you need, I personally wouldn't be worried — but then I am not pregnant and I do not have an infant," Dollarhide said.

State health officials, however, do not plan epidemiological studies of residents to determine if there have been health effects, saying it would not be

Perchlorate: The Valley's latest threat to drinking water



Source: State Department of Health Services; local water officials

Tests conducted by the state Department of Health Services over the last two months have found perchlorate at levels above state standards in wells south of Azusa. The chemical is used as an oxidizer in rocket fuel, munitions and fireworks, some of which has been used or manufactured in the Valley. Officials are unsure how long perchlorate has been in the ground water.

Perchlorate slows the thyroid gland's absorption of iodine and its production of thyroxin, which regulates growth and metabolism. It has been used as a medical treatment for hyperactive thyroids, and cause sluggishness and depression in others. At extremely high levels it may be toxic. Its effect at lower levels on pregnant women and infants remains unclear.

Water experts have not as yet developed a good way to extract the chemical from water, as they have with industrial solvents that are responsible for much of the Valley's underground water pollution.

Wells found contaminated by perchlorate

1. La Puente Valley County District: All three of its wells are now shut. Levels up to 55-159 parts per billion.
2. San Gabriel Valley County Water District: One well shut. Up to 72 parts per billion.
3. Valley County Water District well, leased to Suburban Water Systems: Well still in use, water blended to safe levels. Up to 40 parts per billion.
4. Valley County Water District: Test well operated by San Gabriel Basin Water Quality Authority, not in regular use. Levels up to 61 parts per billion.

Staff graphic by MANUEL AMAR

worthwhile given the low concentrations of perchlorate found and its so-far limited, known effect.

"I am not sure what the benefit might be to look at what

has gone on in the past," Spath said. "It's a resource issue. I don't have a lot of resources and it would take them away

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Experts: toxin level likely not dangerous

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from our efforts to establish prospective standards to prevent future contamination."

The other major unresolved issues are how to clean up the perchlorate — and to find out who is responsible for it.

Perchlorate does not respond well to carbon filtering, which is now being used to draw the industrial solvents out of the water and was being considered by the EPA as the technology for a new cleanup plant.

"Here we are ready to build the biggest Superfund treatment plant in world history, and we have this chemical we can't figure out how to treat it," said Jim Goodrich, executive director of the San Gabriel Basin Water Quality Authority, created by the Legislature to facilitate the cleanup.

But Elizabeth Adams, the EPA's section chief for Southern California cleanup operations, contended it is too soon to say that the construction of the Baldwin Park plant

will be delayed.

"It is not obvious that traditional treatments won't treat it as well," she said. "We are going to look at the treatability studies. It may not delay it at all."

With the EPA taking bids on the design of the plant when the contamination was found, the plant was perhaps six months to 18 months from operation, she said.

Aerojet officials say it is unfair to assume the company's West Hollyvale Street plant is responsible for the Valley's perchlorate problem just because the chemical was found in ground water near its other facility.

Eddie Cartwright, spokesperson for the Sacramento-based company, said the firm manufactures propulsion components, such as the second stage of the Titan rocket, in the Sacramento area. In the San Gabriel Valley it manufactures sensors for surveillance in space.

"We have not manufactured rocket engines there since the early 1960s, and there was another company (in the San Gabriel Valley) that manufactured high quantities of munitions there during World War II," Cartwright said.
