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JPL toxins contaminate water

NASA seeks aid in water clean-up

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The National Aeronautics and Space Administration has asked for help from the U.S. Army to finance a portion of the cost to clean-up Pasadena water wells contaminated by chemicals dumped by the Jet Propulsion Laboratory in the 1940s and '50s, a JPL spokesman said Monday.

The laboratory was working under an Army contract when Prochloralethylen (PCE), Trichlorethylene (TCE) and Carbon Tetrachloride — toxic chemicals used in cleaning solvents — were dumped into cesspools near the Arroyo, said Fred Felberg, institutional director of the lab.

Toxic chemicals such as TCE and PCE are still used at the lab, but the wastes are now collected and disposed of by firms that contract with JPL, he said.

The damage from the earlier dumping, however, caused their shutdown.

Studies conducted in 1980 showed that four wells near the Arroyo were so contaminated with the chemicals that they had to be closed last year, said Ed Aghjayan, deputy coty manager of Pasadena.

"When we shut down the wells it was not a question of safety, but one of meeting health guidelines. We took the action as a matter of water quality," he said.

Two of the wells were under the jurisdiction of the city of Pasadena, the other two were controlled by Lincoln Water Co. The water from the wells was used in the northwest Pasadena and Altadena areas, Aghjayan said.

The city now pumps water from two other wells to make up for the loss, while Lincoln Water gets it's replacement water from the Metropolitan Water District.

"We can't do that forever," Aghjayan said.

Pasadena has contracted with Montgomery Engineering to perform tests to see if the water can be purified by utilizing a new technique using ozone and ultraviolet light.

The laboratory has agreed to pay 47.5 percent of the $140,000 needed to conduct the test, which, if successful, may serve as a model for the entire clean-up program. The bigger clean-up project, however, could cost between $3 and $5 million, Aghjayan said.

The test will involve bubbling ozone (a gas related to oxygen, but which is made up of three oxygen molecules) through contaminated water while exposing it to ultra violet light, said Peter Kreft, engineering supervisor at Montgomery.

Used alone, bubbling ozone through water will break down organic chemicals to carbon dioxide and water. Exposing the water to ultra violet light speeds up the process by allowing the use of a smaller reaction.

Kreft said the technique is often used by companies to clean up industrial waste, but is not usually utilized by municipal water districts.

However, water municipalities in Europe use the ozone method (without the ultra violet light) and the Los Angeles Department of Water and Power will do the same to purify its water once its $100 million plant is completed in Simi Valley, he said.

The advantage to these methods is that so far they appear to be inexpensive and neither creates more toxics in the process. For example, an alternative method, Granular Activated Carbon Absorption, in which contaminated water is forced through carbon which absorbs the toxins, is expensive and the toxins collected in the carbon must still be disposed of, Kreft said.

The engineering company experiment will be conducted in the next month or two in a trailer placed in the Arroyo. Water from Devil's Gate Reservoir, which has much smaller amounts of the chemicals in it than the water in the wells, will be spiked with the well water and pumped through a 1 to 2 cubic foot water tank, Kreft said.

If the test is successful full scale systems will be set up at each of the well sites, he said.

It has not been determined yet how much JPL will pay for the full system.

"At the present time we have not entered a specific discussion beyond the pilot program. Neither ourselves, nor the city are sure what the project will show us," Felberg said.

"There will be capital and ongoing costs. We will have to discuss with the city how the challenge might be met, particularly if government funds are used through JPL."

"NASA is taking preliminary steps to explore funding," he said.

Money for the clean-up project may also be available through funds that are earmarked for federal agencies that need to eliminate toxic wastes, he said, adding that the Army already has been contacted.

"NASA has made overtures to see if Army funds would be available. They've acknowledged they've received the inquires," he said, but no funds have yet been promised.

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the construction cost of the tower by about $100,000 and also creates a disposal problem.

Wong said the $2-million North Hollywood facility, which is scheduled to be completed late this year, is a city's first attempt to solve the pollution problem in the San Fernando Valley and will probably be followed by other purification facilities.

He said that Los Angeles considered the UV-ozone process but rejected it because preliminary tests suggested that it was not effective enough to purify drinking water. Wong said the city is monitoring the Pasadena project for any new information that could change that opinion.

"The door is always open to any new technologies," he said.

Wong said UV-ozone has a major advantage over the two other existing processes because it creates no additional pollution or disposal problems, and would probably be more acceptable to residents.