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Doubts Still Swirl to Surface

Recycled wastewater's `yuck!' factor slows push to recharge aquifers for drinking supplies.

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The talk was of psychology, dead cockroaches and disgust.

A small gathering of water managers and consultants met in the South Bay for an unusual session a couple of years ago. They were seeking insight into the resounding public "yuck!" that has thwarted efforts to turn the steady stream from Californians' toilets, showers and kitchen sinks into drinking water.

In a semi-arid region such as Southern California, where most of the water is piped in from far-flung rivers, recycled water — a.k.a. treated sewage — is in many ways a utility's dream.

It's locally produced. As long as people keep flushing and bathing, it will keep flowing. Agencies would like to use more reclaimed water, not just on freeway landscaping and golf courses but for drinking supplies, by pumping it into groundwater basins and surface reservoirs.

Parts of Southern California have been doing that, without controversy, for a long time. Some 5 million people drink from regional aquifers partly recharged with treated wastewater. But over the last decade, similar projects in the San Fernando Valley, San Diego and Northern California have triggered a collective gag reflex from the public.

In early 2004, the research arm of the nonprofit WateReuse Assn., a national

group that promotes water reclamation and desalination, convened a panel of psychologists at a South Bay water agency to understand why.

One of the speakers, Paul Rozin, a University of Pennsylvania psychology professor and expert on contagion, related an experiment he has conducted numerous times.

In front of a group of students, he briefly dips a dead cockroach into a glass of juice. Then he offers the students a sip. Everyone refuses. He tells them the bug has been sterilized with the same kind of equipment hospitals use to clean surgical tools. Still no drinkers.

"They say it's because they think cockroaches are vectors of disease, but of course since it's sterilized, that can't be," Rozin recalled. "It's the idea that a cockroach was in there. That sense does not go away with time."

Recycled water can't escape its past, despite stringent state regulation and assurances by officials that today's sophisticated treatment technology can scrub sewage to better-than-drinking-water standards.

Settling tanks, sand filtration, chemical disinfection and naturally occurring bacteria are conventionally used to clean wastewater. Those methods do not remove all traces of the pharmaceutical products that researchers are finding in sewage. But studies indicate that more advanced treatment, consisting of reverse osmosis — pushing the water through ultra-thin membranes — and disinfection with ultraviolet light and peroxide can reduce such contaminants to undetectable levels.

Even then, it's against state policy to send reclaimed water directly to household taps. It must make an intermediate stop in a reservoir or aquifer, where it is mixed with other water sources.

But that's still not enough to counter the bathroom imagery.

"I just look at what goes down my toilet," said Mary Quartiano, spokeswoman for the Revolting Grandmas, a San Diego civic organization that opposed a late 1990s proposal to pump purified wastewater into a city reservoir. A local advisory group has tentatively revived the idea, but if the city pursues it, Quartiano predicted, "it will get shot down again."

Said Rozin: "People say they're worried about the safety of recycled water. But a good part of it is not the safety, it's the idea — like the cockroach."

He and several other researchers led by Brent Haddad, an associate professor of environmental studies at UC Santa Cruz, are embarking on a project, commissioned by the WateReuse organization, to study ways of making reclaimed water more palatable to the public.

"In a sense it's a battle for minds," Rozin said. "How do you change the way people think?"

Along with Texas, Florida and Arizona, California is a national leader in using reclaimed water. Still, less than 2% of the state's urban and agricultural water is recycled. And most of that is used to irrigate farmland and landscaping. A 2003 task force concluded that if California quadrupled its reclaimed use over the next 30 years, the water saved would amount to as much as half the supplies needed to satisfy the demands of projected population growth during that period.

"The potential for reusing water in California is enormous," said Peter Gleick, president of the Pacific Institute, an Oakland-based think tank. "We spend billions capturing water we've used for some purpose, treating it to a very high standard and then throwing it away. We can no longer afford to do that."

The most economical way to use large amounts of recycled water is to "put it into a groundwater basin," said Virginia Grebbien, general manager of the Orange County Water District.

Her agency began using reclaimed water in the 1970s to recharge a coastal basin threatened by seawater intrusion. In a major expansion of that project, the district plans by the end of next year to send 70 million gallons a day of cleansed sewage into an aquifer used by more than 2 million people in north-central Orange County.

There has been no significant opposition, thanks in part, backers say, to an exhaustive outreach program. The district's staff made 120 presentations a year for seven years, to a wide range of groups in Orange County, including the Daffodil Society, Kiwanis clubs and PTAs.

"This is the future. More will follow," district communications director Ron Wildermuth said of the recharge project.

Actually, the future began in 1962 in southeast Los Angeles County, when sanitation districts started to use treated wastewater to partly replenish an aquifer that provides drinking water to 3 million people.

That program, too, has been largely free of controversy, though more than a decade ago Miller Brewing Co. sued, with partial success, to block an expansion that the company claimed would have tainted the underground water source for its Irwindale plant.

Water reclamation was discussed as early as 1948, when local officials started talking about "mining the sewers," said Earle Hartling, water reuse coordinator of the County Sanitation Districts of Los Angeles County.

"All the water we have is all the water we've ever had or ever will have," Hartling mused as he dipped a glass flask into a treatment tank at a reclamation plant near Whittier that sends releases downstream to aquifer spreading grounds. "This is from Napoleon's last bath."

Still, the public seems to prefer that nature do the recycling.

When local opposition killed a plan by the Dublin-San Ramon Services District to inject a relatively small amount of treated wastewater into a drinking water aquifer in the Bay Area in the late 1990s, general manager Bert Michalczyk puzzled over the reaction.

After all, he pointed out to a friend, a good deal of California's municipal water comes from rivers, such as the Sacramento and Colorado, that are at the end of the outlet pipe from big-city sewage-treatment plants.

"It's OK if Mother Nature has touched it," his friend explained. "But going right from your treatment plant, Mother Nature has not touched that and blessed it."

Indeed, Haddad says a way of gaining acceptance may be to use more visible natural processes in water reclamation — mimicking, for instance, river flows.

He doubts that sanitized phrases like "showers to flowers" will change many minds.

Not that language isn't powerful. In Los Angeles, three little words — "toilet to tap" — were effectively used by critics who in 2001 helped quash a $55-million plan to use treated wastewater to partly recharge an east San Fernando Valley aquifer that provides roughly 15% of L.A.'s water.

"Makes me gag," "outrageous," "aesthetically offensive" and "gross" were some of the public comments that appeared in newspaper coverage of the proposal.

David Spath, who until he retired late last year headed the state health department's drinking water and environmental management division, said there are legitimate issues associated with supplementing drinking supplies with reclaimed water.

Treatment equipment can break down. The proportion of wastewater mixed into groundwater basins or reservoirs is often greater than the percentage of sewage in big rivers like the Colorado.

Still, Spath concluded, the risks "are essentially — I won't say nonexistent — but no greater and probably in some cases better than what people may be drinking from river systems around the country …

"[It] continues to be more an emotional/political issue than a technical one."