

Housekeepers at the Sheraton Delfina hotel in Santa Monica, Calif., fill spray bottles with 'el liquido milagroso' electrolyzed water.

Miracle water answers prayers

The recipe is simple: Add salt to tap water and electrolyze it

BY MARLA DICKERSON

LOS ANGELES

It's a kitchen degreaser. It's a window cleaner. It kills athlete's foot. Oh, and you can drink it.

Sounds like the old *Saturday Night Live* gag for Shimmer, the faux floor polish plugged by Gilda Radner. But the elixir is real. It has been approved by U.S. regulators. And it's starting to replace the toxic chemicals Americans use at home and on the job.

The stuff is a simple mixture of table salt and tap water whose ions have been scrambled with an electric current. Researchers have dubbed it electrolyzed water — hardly as catchy as Mr. Clean. But at the Sheraton Delfina in Santa Monica, some hotel workers are calling it "el liquido milagroso" — the miracle liquid.

That's as good a name as any for a substance that scientists say is powerful enough to kill anthrax spores without harming people or the environment.

Used as a sanitizer for decades in Russia and Japan, it's slowly winning acceptance in the United States. A New York poultry processor uses it to kill salmonella on chicken carcasses. Minnesota grocery clerks spray sticky conveyors in the checkout lanes. Michigan jailers mop with electrolyzed water to keep potentially lethal cleaners out of the hands of inmates.

In Santa Monica, the once-skeptical Sheraton housekeeping staff has ditched bleach and

pungent ammonia for spray bottles filled with electrolyzed water to clean toilets and sinks.

"I didn't believe in it at first because it didn't have foam or any scent," said housekeeper Flor Corona. "But I can tell you it works. My rooms are clean."

Management likes it too. The mixture costs less than a penny a gallon. It cuts down on employee injuries from chemicals. It reduces shipping costs and waste because hotel staffers prepare the elixir on site. And it's helping the Sheraton Delfina tout its environmental credentials to guests.

The hotel's kitchen staff recently began disinfecting produce with electrolyzed water. They say the lettuce lasts longer. They're hoping to replace detergent in the dishwasher. Management figures the payback time for the \$10,000 electrolysis machine will be less than a year.

"It's green. It saves money. And it's the right thing to do," said Glenn Epstein, executive assistant at the Sheraton Delfina. "It's almost like fantasy."

Actually, it's chemistry. For more than two centuries, scientists have tinkered with electrolysis, the use of an electric current to bring about a chemical reaction (not the hair-removal technique of the same name). That's how we got metal electroplating and large-scale production of chlorine, used to bleach and sanitize.

It turns out that zapping salt water with low-voltage electricity creates a couple of powerful yet non-toxic cleaning agents. Sodium ions are converted into sodium hydroxide, an alka-

line liquid that cleans and degreases like detergent, but without the scrubbing bubbles. Chloride ions become hypochlorous acid, a potent disinfectant known as acid water.

"It's 10 times more effective than bleach in killing bacteria," said Yen-Con Hung, a professor of food science at the University of Georgia-Griffin, who has been researching electrolyzed water for more than a decade. "And it's safe."

There are drawbacks.

Electrolyzed water loses its potency fairly quickly, so it can't be stored long. Machines are pricey and geared mainly for industrial use.

The process also needs to be monitored frequently for the right strength.

Then there's the "magic water" hype that has accompanied electrolyzed drinking water. A number of companies sell so-called ionizers for home use that can range from about \$600 to more than \$3,000. The alkaline water, proponents say, provides health benefits.

But Richard Wullaert, a Santa Barbara, Calif., consultant, said consumers should be careful.

"Some of these people are making claims that will get everybody in trouble," said Wullaert, whose nonprofit Functional Water Society is spreading the word about electrolyzed water. "It's time for some serious conferences with serious scientists to give this credibility."

Most of the growth has happened outside the United States.

Russians are putting elec-

trolyzed water down oil wells to kill pesky microbes. Europeans use it to treat burn victims. Electrolyzing equipment is helping to sanitize drinking water in parts of Latin American and Africa.

It's big in Japan. People there spray it on sushi to kill bacteria and fill their swimming pools with it, eliminating the need for harsh chlorine. Doctors use it to sterilize equipment and treat foot fungus and bedsores. It's the secret weapon in Sanyo Electric Corp.'s "soap-less" washing machine.

In the U.S., the Department of Agriculture, the Food and Drug Administration and the Environmental Protection Agency have approved electrolyzed water for a variety of uses.

Minnesota food scientist Joellen Feirtag said she was similarly skeptical. So she installed an electrolysis unit in her laboratory and began researching the technology. She found that the acid water killed *E. coli*, salmonella, listeria and other nasty pathogens. Yet it was gentle enough to soothe her children's sunburns and acne.

She's now encouraging food processors to take a look at electrolyzed water to help combat the disease outbreaks that have roiled the industry. Most are dubious. "This sounds too good to be true, which is really the biggest problem," said Feirtag, an associate professor at the University of Minnesota. "But it's only a matter of time before this becomes mainstream."

Los Angeles Times