



product like Clean Power “activated

ceramic laundry disks” sounds too good to be true. It promises to clean your clothes, save money, and be kinder to the environment.

The laundry disks are hollow plastic shells filled with small granules and surrounded by a ring of foam. They are sold in sets of three, priced at about \$50, through stores and mail-order catalogs that specialize in environmentally sensitive products. The notion of an effective, less-polluting way to wash clothes appeals to millions of Americans who are concerned about natural resources. Companies that make laundry detergents took notice of the consumer interest in products with fewer additives and introduced detergents without fragrances or coloring agents. But the ceramic laundry disks go further, claiming to clean clothes without any detergent at all.

Toss three of these disks into your washing machine, and your laundry will come out as clean and fresh as ever. What’s more, they’re supposed to last for 500–700 wash loads, or about two years for most families.

## How do they work?

Pacific International Group, the San Clemente, California, company that imports the laundry disks from Japan, provides some extraordinary scientific-sounding explanations. According to the company’s product information:

- Metallic elements, including copper and silver, in the activated ceramic release electrons, which in turn, produce ionized oxygen. This form of oxygen is a totally natural cleanser that breaks up dirt and organic compounds.

- The activated ceramics also emit “far-infrared electromagnetic waves,” which cause water molecule clusters to separate, allowing much smaller individual water molecules to penetrate into the innermost part of the fabric and remove dirt.

# Laundry Disks: Miracle or Money Down the Drain?

by Bruce Goldfarb

- When water contacts the activated ceramics, an abundance of  $\text{OH}^-$  ions is produced, reducing the surface tension of the water and greatly increasing its penetrating power. Ordinary detergents make use of this same principle, but do so by using harsh chemicals.

This all sounds impressive, but is it good science? Not according to Bob Allen, PhD, a chemist at Arkansas Tech University in Fayetteville. “Their explanation of the science behind it is nonsense,” he says. “Absolutely nutty.”

Allen contacted Real Goods of Ukiah, California, one of the companies selling the ceramic laundry disks. “I don’t mind people hawking a product,” he says, “but when they try to wrap it in scientific nonsense, that irritates me.” Real Goods responded by giving Allen a set of disks so his chemistry students could perform tests under controlled conditions in a classroom laboratory.

Some of the claims about the laundry disks seem plausible, but others stretch scientific reasoning beyond its snapping point. For example, the “far-infrared electromagnetic radiation” referred to by the company sounds suspiciously like ordinary heat. Far infrared, the coolest part of the infrared spectrum, is emitted by most ordinary objects, including your body, the chair you’re sitting in, and the rocks on the ground outside. If far infrared had any special cleaning power (which has never been observed), you could get the same effect by tossing three rocks into your washer.



PHOTO BY MIKE CIESIELSKI

It’s quite possible that the laundry disks could produce a tiny amount of heat energy as they are agitated in water, says University of Colorado chemical physicist George Lawrence, who is a member of the Committee for the Scientific Investigation of Claims of the Paranormal.

“Agitating water with *anything* will increase its temperature,” says Lawrence. But any heat that could be produced by the laundry disks would be insignificant compared with the energy of the warm water used to wash clothes and the far more powerful agitation of the washing machine itself, he adds.

And while it’s true that water consists of polar molecules that tend to stick together—giving it surface tension—the laundry disks could not produce enough energy to separate water molecules to any meaningful degree, according to Lawrence. “It takes a lot more energy than far infrared” to dissociate water, he says.

Lawrence also doubts that the laundry disks produce an abundance of hydroxyl ions,  $\text{OH}^-$ . "The claim that it breaks water up into  $\text{OH}^-$  just isn't possible."

As founder of the firm EcoWorks, Albert Donnay was one of a growing number of environmental product marketers with serious doubts about the laundry disks. In a meeting with Pacific International president Takashi Shioya, Donnay asked questions about how the disks worked.

"Why three disks? I'm always looking to reduce, reuse, and recycle. I wanted to sell them one or two at a time," recalls Donnay. "Why do they need to float? Why do they stop working? What's in them that is depleted after a year or two? Are they affected by the pH or temperature of the water? [Shioya] couldn't answer any of our questions."

In the absence of concrete scientific information, Donnay decided not to sell the laundry disks through the EcoWorks catalog.

Shioya admits that many people have questions about his laundry disks, of which he has sold more than 120,000. "I'm not going to deny that the claim is weak," he says. "Of course it's weak. But we're making it better."

Shioya says that he is creating new product packaging that "does not claim to make an electromagnetic wave." He still insists that the laundry disks ionize water and separate water molecules from one another; "It's just how much that's being questioned."

Perhaps more important than the scientific theories behind the ceramic laundry disks is the question of whether they actually work. Although sales material promoting the laundry disks has plenty of testimonials from satisfied customers, good data from controlled scientific evaluations are not readily available. The proof will come out in the wash.

One such evaluation was done by chemist Paul Sosus, of Scientific Detergent Research Associates in Fair Lawn,

New Jersey. Sosus, who has worked in laundry detergent research and development for 40 years, used standardized methods for a controlled, double-blind test of the laundry disks. "When we tested them, we didn't find them having any value at all," he says.



PHOTOS BY MIKE OEBELSKI

**One way to examine an advertising claim is to place a Clean Power disk in pure water overnight, then measure the pH (above). The vendor claims the disks produce an abundance of  $\text{OH}^-$  ions. The hollow disks are filled with dimpled beads of unknown composition (top right).**

Similar findings were discovered in experiments done by a private laboratory hired by Seventh Generation, an environmental products company located in Colchester, Vermont. The lab found that the laundry disks were "no better than plain warm water," says Seventh Generation president, Jeffrey Hollender. "We discontinued the item, even though it was making more than \$100,000 a year for the company. . . . It would have been unethical to sell something that didn't work."

#### REFERENCES

"LAUNDRY DETERGENTS: DO GOOD THINGS COME IN SMALL PACKAGES?" *CONSUMER REPORTS* 1995, 60(2), 92.

REAL GOODS HOME PAGE HAS INFORMATION ABOUT CLEAN POWER PLUS LAUNDRY DISKS. [HTTP://WWW.REALGOODS.COM](http://www.realgoods.com)

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The reason why the laundry disks rate such glowing testimonials is that "people don't appreciate how effective just washing clothes in warm water is," says Hollender. Clothing washed with the laundry disk appears clean because the fabrics contain residual detergent, says Albert Donnay. "Most of us wash clothes that have been washed before, and clothing contains soap residue."

Donnay did a test in which he stopped using detergent and washed his family's clothes in plain warm water. While the washing machine emptied into a utility sink, he observed the rinse water. "For weeks after we stopped using detergent, the water was still full of soap," he says. "People use too much detergent. That's the dirty little secret of the detergent industry . . . . Detergent is strong stuff, and it cleans clothes. Two tablespoons are all you need."

This is an interesting point. While the advertisements say that the laundry disks will clean clothes without detergent, the instructions that come with the disks tell a different story. First, the instructions recommend treating any stubborn stains with a stain remover. Second, for dirtier clothes, you are told to add a teaspoon of *detergent* to the washer along with the disks. Perhaps how they "work" is not such a mystery after all.