

## HOW TO QUIT FLUSHING THE GOOD STUFF

Waste  
Not



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Claudia Rowe

In a large greenhouse two hours north of New York City, banana trees, flowers, and other tropical plants grow amid frogs, fish, and burbling waters. Outside, bullrushes and cattails wave in the Hudson Valley breeze. Each year, more than 20,000 people travel to the Omega Institute for Holistic Studies for yoga retreats, wellness workshops, and conferences on how to live simpler, cleaner, better.

And each year, they stop in their tracks, stunned to learn that those lush gardens are actually sewage-treatment plants at work. At Omega, plants, animals, and microorganisms annually transform 5 million gallons of human feces, urine, and other waste into water rated pure enough to drink (though Omega uses it for irrigation).

"It looks like it came out of your kitchen faucet—there's no odor, it's perfectly clear," says Omega's CEO Skip Backus. "It's really sort of a life-changer for people."

Since 2009, when Omega's leaders discovered that their 50-year-old septic system was falling apart, the forward-thinking institute has been at the forefront of a slowly growing international movement built on the idea that conventional sewage treatment—dependent on water- and energy-wasting technology—is unsustainable. To be blunt, there are better ways to handle our shit.

At Omega, the result is a 4,500-square-foot solar-powered greenhouse fed by a system of tanks, lagoons, and sand filters that process up to 52,000 gallons of human waste a day. When it enters the so-called "living machine," the stuff is as rank and nasty as you'd imagine.

"We give people tours—we want them to see the stinky brown start of the process, and then the constructed wetlands, the reeds, brush, cattails," says Backus. "At the end, there's this sense of awe and wonder. They say, 'Really, this is my waste from last night?' And we tell them, 'yeah.'"

In communities from upstate New York to Ohio, Minnesota to Hawaii, a >>

network of scientists, architects, and engineers has been rethinking the way we process our waste because the need is extreme. Jason McLennan, an architect, chief executive of the Cascadia Green Building Council, and one of YES! Magazine's "Breakthrough 15," points out that instead of taking our cues from nature—which processes waste on the spot and recycles the nutrients—every flush of a standard toilet takes a several-ounce problem and turns it into a several-gallon problem by adding clean water to feces and transporting the whole mess to treatment facilities via a Byzantine network of aging sewers.

"This system is nothing less than insane," McLennan writes in "Flushing Outdated Thinking," his manifesto for change.

Meanwhile, untreated effluent, pharmaceutical drugs, and whatever else we flush leaches from our 600,000-mile maze of pipes into rivers, farm fields, and, yes, tap water. An Associated Press study from 2008 found traces of prescription drugs—including antibiotics, anti-convulsants, mood stabilizers, and sex hormones—in the drinking water of 41 million Americans. The Environmental Protection Agency estimates that, within the next eight years, America's deteriorating sewage system could cost \$82.6 billion to fix.

Finally, our treated waste is dumped, rendering useless such elements within it as nitrogen and phosphorus, which could be valuable as fertilizers.

Perhaps the most intriguing characteristic of an answer like Omega's is its rudimentary technology—if you can even call it that. In living machines, bugs, plants, and bacteria break down excrement similar to the way nature handles animal droppings in the wild. Composting toilets, too, mimic natural processes by covering the feces with sawdust and letting microbes digest the mixture, producing enough heat to neutralize pathogens.

But combine the word "feces" with composting and even the most progressive thinkers are likely to blanch.

Describe the kind of eco-machine in use at Omega, and risk being tarred as a stinky, starry-eyed dreamer.

"This is a cultural thing. People have been taught that their feces are something evil and dreadful," sighs Gene Logsdon, author of *Holy Shit*, a book on rethinking our handling of waste, both human and animal. "For years, shit has been seen as something so repugnant that the word itself was scrubbed from polite conversation."

Logsdon, a plainspoken Ohioan who spent most of his life as a farmer, insists, however, that there is gold in feces, and he is not one to mince words. "Cities and villages have been putting human waste—not even all that well treated—on farmland for centuries," he said. "You don't hear anyone talk about it or suburbanites would lose their minds. But it's commonly done. They take it out in trucks—it's a liquid—and spread it on farm soil that's going to be planted with corn or wheat."

In California, Logsdon writes, half of the state's annual haul of dried sludge—some 375,000 tons—is applied to the land. For him, practicality trumps all, and the soaring cost of chemical fertilizer makes its own argument for composting.

To get a sense of scale, consider that the average household flushes about 160 gallons of water to handle three pounds of poop and a gallon of urine each day. An equation that imbalanced strikes even the most conventional thinkers as hopelessly inefficient.

"It's absolutely insane the amount of water we use to flush toilets in the U.S.," says former Naval officer Todd Foret, who is working with the U.S. Department of Agriculture to reclaim wastewater for irrigation. "It's sad. We commingle super-contaminated stuff with greywater from your dishwasher and shower that's easy to treat. It's just crazy."

Mark Buehrer, a civil engineer based in Bellingham, Wash., is so deep into the field that he doesn't even like to use the word "waste." "There is no such thing," he says. "I look at human waste as, really, a resource. We can't just keep

flushing our nutrients into the oceans and rivers."

True believers can talk even the most squeamish past their misgivings. The real battleground is politics, where a tangle of regulations designed to keep us healthy thwart even the most ingenious inventors.

Still, there may be room for new thinking. Washington state Representative Kevin Ranker (D-Orcas Island) asked Buehrer to help draft legislation that would loosen composting regulations. A housing development in Vancouver, B.C., uses sewage to generate heat for 26,000 homes. A Norwegian firm has invented a composting toilet that captures methane for cooking.

All well and good as an experiment, perhaps, or out in the country. But how practical is composting for city dwellers?

That question led Seattle's Bertschi School to install a vacuum-powered composting toilet in its new science wing. Similar to an airplane commode, the Envirolet whisks waste into a heated chamber where bacteria attack the feces.

"Some parents were intrigued," said Stan Richardson, director of technology and campus planning at the private school. "Others thought we were crazy."

Results after the first year have been mixed. The toilet demands regular maintenance, is prone to clogging, and requires 1,100 watts of energy to run. But when greener toilets do shrink costs, conserve water, and safely replenish soil, sooner or later other arguments fall away.

"Mainstream developers come into our office, and I know they're not here to save the environment," says Buehrer in his soft-spoken way. "That's fine. Now that we've shown that we can do these designs better, at lower cost, they can raise their green flag for that." ❶



**Claudia Rowe** has been an award-winning social issues journalist for more than 20 years. Her work has appeared in *Mother Jones*, *The New York Times*, *The Seattle Times*, and *The Seattle Post-Intelligencer*.

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