



**THE SOIL DOCTOR**  
Compost ferments in these industrial shipping containers.

## THE VIRTUES OF HUMAN WASTE

Sasha Kramer got a Ph.D. from Stanford University and went on to install toilets. Now her work may help Haiti deal with its food, health, and environmental woes.

BY JOCELYN C. ZUCKERMAN

**A**MAZING!" DECLARES SASHA Kramer as she emerges from a small outdoor toilet in the Port-au-Prince slum known as Cité Soleil. "It's completely clean," she says. "Come smell it!"

Not the most enticing invitation (though the place does turn out to be surprisingly welcoming), nor would you expect latrines to be of such passionate interest to a 34-year-old American who looks as though she would be better suited to modeling yoga gear. But Kramer believes them to be absolutely a subject worth getting excited about.

It was back in 2004, while pursuing her doctorate in ecology at Stanford, that the New York native first became preoccupied with human waste.

"I wasn't thinking about the poop as poop," she explains. "I was thinking about it as nitrogen. It made sense to me that, if I'm eating all this nutrient-rich food, then I'm producing all this nutrient-rich waste, and there must be some way to kill the pathogens and reuse the nutrients."

Around the same time, Kramer began making trips to Haiti to volunteer as a human rights monitor in the aftermath of the coup that removed the country's president, Jean-Bertrand Aristide, from power. Eventually, she says, it occurred to her that "really the most pervasive human rights abuse was the poverty and the lack of access to basic services or to food." When her own rudimentary accommodations left her in need of a toilet, she says, "it became clear to me how important it was, not just for health but for dignity."

And so in 2006, Ph.D. in hand, Kramer and a friend cofounded SOIL (Sustainable Organic Integrated Livelihoods) and moved to Cap Haïtien, in the north of the ecologically devastated country, to begin building public toilets whose waste they planned to channel into agriculture. When the earthquake hit last January, Oxfam asked SOIL to build toilets in the displaced-persons camps that had begun to dot Port-au-Prince, the ravaged capital.

"This is where we built our first toilet," says Kramer, navigating the muddy walkways between

## Please Pass the Oregano

WHEN LOOKING FOR WAYS to combat climate change, most scientists explore things like clean energy or efficient vehicles. Not Alexander Hristov. He raided the kitchen and took the oregano out to the barn.

Microorganisms in the rumen—a compartment in the stomach of cows and other ruminants—break down feed into digestible components, producing methane, a gas that traps heat 21 times more effectively than carbon dioxide. All told, raising livestock produces more methane than any other single human activity—80 million metric tons of it annually. And animals on high-fiber, nutrient-poor diets produce more methane than others.

Hristov figured there must be something he could feed cows to reduce methane production. The benefits would be more than environmental; making methane uses energy that could go toward producing milk, for example. His team screened more than 200 products, from onions to lavender oil, mixing them with rumen contents to test their effects on digestion and fermentation (what happens in the rumen).

When oregano showed promise, the researchers added about a pound of it to each cow's 55 pounds of daily feed, measuring the gas that came out both ends. The results were encouraging: methane production was reduced by up to 40 percent.

The researchers aim to isolate the beneficial compound in oregano to develop better feed products—a win-win for farmers and the environment. —GENEVRA PITTMAN

LEFT: PHOTOGRAPH FOR ONEARTH BY RANIN TALAE, OPPOSITE, TOP: SHUTTERSTOCK, BOTTOM: PHOTOGRAPHY BY MIKO PHOTOGRAPHY, INC.



the tents of the camp in her plastic flip-flops. With a Haitian toddler perched on her hip, she stops every few feet to kiss another cheek and banter animatedly in Creole. SOIL carpenters have built more than 200 of these simple composting latrines, she explains; once a week, collectors pick up a waste-filled 15-gallon drum from each station and replace it with a fresh one filled with aromatic sawdust (used for “flushing”). The drums are sent to one of three composting facilities around the city.

“Come on up,” Kramer calls from the top of a waste-filled shipping container at the main composting site. She opens a

manhole she had custom-built into the top of the container and sticks in a two-foot-long thermometer. “That’s hot!” she declares proudly. Four to six months and a couple of simple steps later, the waste will have decomposed completely and will be pathogen free. “You get a really nice fertilizer,” Kramer says.

SOIL collects some thousands of gallons of waste a week, which will eventually yield the same amount of fertilizer. Kramer is now in talks with the United States Agency for International Development to distribute the fertilizer to farmers at minimal cost. In the meantime, several other nongov-

ernmental organizations working in Haiti are looking to copy SOIL’s ecological sanitation, or eco-san, model (Kramer is happy to hand over the plans). She hopes to set up community-run businesses that will employ locals to collect and treat waste and, in turn, profit from fertilizer sales.

The quick-to-laugh free spirit acknowledges that toilets are maybe not the sexiest sell on the planet. “But if you go into a community and say, ‘You can be a part of changing the agricultural landscape of this country, you can be a part of fighting hunger through using these toilets,’ ” she says, “people get really excited.”



## Calling Superman

**HERE’S HOW TO SINGLE-**handedly save the planet from climate change: play *Fate of the World*, a computer game developed by the company Red Redemption. The game, which will be released to the public in early 2011, puts policy decisions in the hands of players who must manage environmental, economic, and political challenges to prevent climate change and resource depletion.

Gobion Rowlands, the company’s chairman, says the game inspires players to think critically about the ramifications of a changing climate. “Every decision you make has a distinct impact,” he says. The game “gives you control over what could otherwise be a very impersonal issue.”

Players choose a specific mission, such as rainforest preservation. The challenge is to save land from development while preventing climate change from destroying forest life. To maintain power, players negotiate issues from nuclear armament to hunger and oil spills.

The game’s climate model was developed by scientists at the University of Oxford, and Red Redemption also has a climate scientist on staff—Rowlands’s wife, Hannah. Her research suggests gaming can affect players’ attitudes toward the climate crisis.

“The game has real-world impacts in addition to entertainment impacts,” Gobion Rowlands says. —G.P.

## YOUR RIDE IS WAITING

YOUR ASSIGNMENT (AND YOU WILL CHOOSE TO ACCEPT IT) IS TO TAKE THIS TRUCK AND TURN IT into a living room. That’s pretty much what the celebrated 3-D visual artist Kevin O’Callaghan told his students at the School of Visual Arts in New York City. He gave his 22 students two weeks to find one aging, gas-guzzling monster truck, buy it on the cheap (which they did, on Craigslist, for \$500), and work collaboratively to redistribute and recycle parts into objects and installations that would heighten the viewers’ consciousness about consumption and waste. The students left nothing behind but the dipstick. So test yourself, dear reader: can you identify the fender, the exhaust pipe, the tire, and the driver’s door in this picture?

